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Abstract

I examine the Neapolitan public banks, a group of non-profit institutions that emerged in the late sixteenth century, in the context of the early public banks that existed elsewhere in early modern Europe. In terms of size and stability they compare well with their peers, in spite of a difficult political and economic environment. They were also remarkably financially advanced for their time. Their success is likely due to their ownership structure, governance, and well managed relationship with the monarchical authorities.

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

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1 Introduction

The purpose of this essay is to place the public banks (*banchi pubblici*) of Naples (sixteenth to eighteenth centuries) in the broader context of the public banks of early modern Europe and highlight their specificity.

If we go back far enough in time—say, to the 12th or 13th century—what banking activities we find are performed by the private sector. But as we return back to the present we quickly see the public sector scrutinizing, regulating, and intervening. Today the banking sector remains more regulated than most. Indeed a special form of banking, called "central," is (but hasn't always been) performed by special institutions, which are (but haven't always been) at some arms' length from political authorities. One might read this history as a gradual understanding, driven by experience and necessity, that some functions of banking require a public actor, but of a rather special kind. The content and accuracy of this accumulated knowledge is what a history of central banking might attempt to recover, by trying to map over time the shifting boundaries between private and public banking. In such an enterprise, the Neapolitan public banks deserve a special place.

The origins of central banking in Europe are to be found in a large array of publicly sponsored institutions that first appeared in the early 15th century. Broadly speaking, one can distinguish two "generations" on the basis of both chronology and of the nature of their liabilities. The first generation arose in merchant cities such as Barcelona and Genoa, Venice, Amsterdam and Hamburg, and provided means of payment on their ledgers. The second generation arose in the late seventeenth century in monarchical states, first Sweden and England, and later Austria, France, and Prussia, and was characterized by liabilities circulating hand to hand (notes). All were "public" in the sense that they were either chartered (privileged) or owned outright by the local public authority, but their ownership could be private or public, their purpose could be profit-making or only providing a public service, and their assets consisted of a varying mix of public and private debt as well as coin or bullion. The reasons for establishing them varied, but a theme recurs, particularly for the first generation: providing a reliable means of payment, in the sense of being safe, liquid, and stable in value. The fortunes of these institutions varied: the two main sources of difficulties or outright failures were monetary disturbances (fluctuations in the prices of various coins) and demands from fiscally pressed governments.

The public banks of Naples are chronologically between the two generations. They emerged in an important economic center but also in a monarchical state; they were also unique in being a collection of independent entities rather than a single bank, and in being owned by charitable corporations rather than by a government or by shareholders maximizing private gains. The Neapolitan banks thrived within a context arguably more difficult than those of their peers, buffeted by revolutions and plagues, held back by long periods of stagnation, and subject to both monetary disturbances and heavy fiscal demands from the crown. Yet they were also successful relative to their peers. They experienced suspensions of payments, but no worse than others, and only one was shut down. Their total liabilities surpassed those of the Amsterdam Wisselbank and compared favorably with those of the Bank of England, the two giants of seventeenth and eighteenth century Europe. They were also remarkably innovative, for example circulating paper liabilities long before the better known examples in Stockholm and London.

In this essay I will first summarily review the European public banks of the time.[1] I will then present the Neapolitan banks, detailing their origin and summarizing their aggregate history. The next section details the specificities of the banks, focusing on their resilience in the face of multiple idiosyncratic as well as aggregate shocks, investigating their governance and relation with political histories, and detailing some of their more remarkable financial innovations.

2 The Public Banks of Early Modern Europe

Private banking emerged early on in the Middle Ages out of money-changing and deposit-taking. The use of the *depositum irregulare* wherein the exact objects deposited were not returned, but ones of similar quality, led to fractional reserve banking and financing of both private and public debt. Developments in accounting led to the use of payment by transfer on the books of bankers. None of this required the emergence of public banks—yet, by the early 15th century, the need for stable, long-lived, and privileged institutions manifested itself. In addition, neither private bankers nor government authorities had yet found a lasting solution to the provision of a stable unit of account in a world of multiple coins (Sargent and Velde 2002). For the most part these institutions emerged in city-states (Venice, Genoa) or commercial cities with strong autonomy (Catalonia) and merchant oligarchies (Amsterdam, Hamburg).[2] Naples was a large city (Table 1) but not a city-state or merchant city; yet it witnessed the creation of a system of banks that was both unique and functionally similar to the other public banks.

	1500	1600	1650	1700	1750	1800
Amsterdam	–	54		200	210	217
Genoa	58	63		65	87	90
Barcelona	–	32		–	50	100
Venice	100	150		138	150	138
London	50	200		575	675	950
Naples	125	275		300	340	430
Naples (alt)	48	230	400	210	320	420

Table 1: Population of European cities with public banks, in thousands. Sources: Bairoch and Pierre Chèvre (1988) and Fusco (2009) and Muto (2013) for the alternate Naples estimates.

2.1 Genoa

Genoa's public bank, the *Banco di San Giorgio*, started as a side business of another remarkable institution, the *Casa di San Giorgio*, essentially a syndicate of government cred-

[1] I draw largely on previous work (Roberds and Velde 2016a, 2016b, 2016c) and refer the interested reader to the works cited therein, as well as to the surveys of Van Dillen (1934) and Ugolini (2017).

[2] Less prominent institutions nevertheless arose elsewhere, such as Palermo (1552), Milan (1599), and Rome (see the contributions in this volume by De Luca and Lorenzini (2018) and Pezzolo (2018)).

itors that in time took over direct management of the collateral behind its assets, namely tax revenues. There are two banks under that name, one running from 1408 to 1444 and the second from 1530 to the end of the Republic in 1805, although it seems that the Casa continued to provide payment services on its books in the interim.

The explicit purpose of the first bank was to assist the government to enforcing legal tender laws. As elsewhere in Europe the multiplicity of media of exchange (gold coins, large and small silver coins) entailed a multiplicity of relative prices, or exchange rates between coins, and governments often resorted (ineffectually) to fixing the rates by law. In 1444 the city government gave it the choice between enforcing a fixed rate for the appreciating gold coin and giving up the banking license, and the Casa chose the former. For the next century there was no "public" bank (open to anyone) but the Casa, by its very nature, did business with tax farmers and the city, extending trade credit to the former or short-term loans to the latter, as well as bondholders to whom it made interest payments. The habit of keeping credit on the books of the Casa rather than demanding cash payment led to giro transfers between bondholders, and claims on the Casa (the *lire de paghe*) became a ledger money.

From 1530 the Casa ran again a deposit bank, but (rather than confronting exchange rate risk directly) it segregated deposits by coin: first gold coins, then silver coins. Only in 1675 was a general deposit bank opened, the key provision being that the bank had a choice of which coins to pay out. The bank also had a number of features common to early public banks, such as a requirement that bills of exchange be settled on its books, protection from judicial seizure. But it was not allowed to open a Lombard bank, nor was it granted the monopoly on foreign exchange it requested. It was only allowed to lend to the city, with approval from the Casa. Finally the 1675 reform of the bank included an explicit import from Naples (Sieveking 1899, 2:216–17, 259): the *biglietti di cartulario* were imitated from the Neapolitan banks' *fede* (see below).

The general deposit bank's opening coincided with a monetary reform (broadly similar to the one that Naples implemented in the 1680s) that temporarily put an end to the rise in the price of large silver coins. When the rise resumed in 1709, the bank's unit of account did not follow and an exchange rate between bank balances and current money developed, the so-called *agio*.

The bank was generally successful, just as Genoa successfully navigated the complicated international politics of the time. But when the city was subjected to a large war indemnity in 1746 the bank experienced a run and all accounts were frozen and converted into bonds, repaid over several decades. The bank disappeared when the old order was turned over by the occupying French in 1797 and the Casa itself disappeared.

2.2 Venice

Venice had two public banks, the *Banco della Piazza di Rialto* (1587–1638) and the Banco Giro (from 1619) of quite different structures and purpose, although both were ledger money banks.

The first was created in response to repeated failures of the private sector, and its purpose was to provide a secure payment system. The Venetian Senate approved its founding after years of contentious debates that revealed its reluctance to get involved in banking. Consequently the bank was organized as a "narrow bank", with 100% reserves: although private, it was tightly supervised, with the charter up for renewal every three years and forced liquidation as a form of extreme auditing. Among its notable features, in common with other early public banks, was a requirement by the State to enforce legal coin parities, a monopoly on foreign exchange clearing, an immunity of balances from judicial seizure. As we will see in the Neapolitan case, Venice in the late sixteenth century also struggled with a poor coinage and alternated between forcing the bank to deal only in full-weight coins and allowing it to accept bad coins by weight.

The Banco Giro was quite different, and arose separately (and initially alongside) its predecessor. A large government creditor (supplier of silver to the mint) offered to not request payment in cash but be allowed to use his claims, in the form of book entries in a bank, to pay others. The bank, run out of the mint, was from the start not a narrow bank, and the Senate explicitly allowed it to create new entries to pay creditors of the State: but it initially appropriated enough monthly sums to maintain convertibility on demand. It seems that the bank had freedom to choose in which coins to pay, and an agio over current money soon developed. The Banco Giro, however, only became a deposit bank (i.e., sold bank balances for cash) in 1645.

While the Banco Giro was successful enough that it put the older bank out of business, its fortunes were closely tied to those of the Most Serene Republic and its numerous wars. The government did not hesitate to use it as a source of wartime financing, and the bank underwent several suspension of payments and partial defaults: suspension from 1648 to 1666, with resumption of nominal payments indexed to a debased coin, and from 1714 to 1739.

2.3 Aragon

The municipalities of the crown of Aragon (comprising Catalonia as well as Valencia and Majorca) enjoyed a high degree of financial autonomy, and as many as a dozen opened public banks at some time between 1400 and 1650. The best known is the one located in Barcelona.[3]

There were two official motivations for the creation of Barcelona's Taula de Canvi (1401): one was a response to failures of private banks and the city's need for a reliable bank; and the second was to help financing the city debt more cheaply than with annuities. The bank had no capital and was wholly owned by the city: it was run by city-appointed officials, and the deposits were guaranteed by city. However, unlike the Venetian and Dutch models the bank not only accepted deposits, but also issued annuities, hence was not 100% reserves. It was also in principle only allowed to lend to the city, but in practice private loans and overdrafts were made. One of the big sources of funding were judicial

[3]See Hernández Esteve (2002) for a summary of the literature and a comparison with Naples.

or conditioned deposits, on which it had a monopoly. Deposits were made safe from judicial seizure in 1468. Although not an initial motivation, dealing with coin valuations and enforcing legal tender laws soon became part of the Taula's obligations, as with public banks elsewhere. Eventually Barcelona created another municipal bank, the Banch de la Ciutat, in 1609 to deal with copper coinage.

Ostensibly created to remedy the failures of the private sector, its relation with the latter were contentious. At various times the city used its regulatory powers to restrain competition from private bankers or prevent them from using the municipal bank as a clearing institution. The back-and-forth between restriction and tolerance continued until 1615, when private banking disappeared in Barcelona.

In spite of being wholly owned by the city, the relations between city and bank were subtle. Early on it was apparently used as a delegating device: when municipal finances were reformed in 1412, monitoring the city's accounts was delegated to the Taula. In practice, however, the Taula became a financing arm of the City under exceptional circumstances. There were three major episodes when the Taula provided wartime financing (1463–68, 1640–53, 1706–13), with all resulting in a suspension of payments, and conversion of deposits into bonds with haircuts. The second episode, which coincided with the war of independence against the Castilian crown and a massive overissue of copper coinage, inflicted lasting damage to Barcelona's Taula and to similar banks elsewhere in Catalonia. The third episode, in which Catalonia sided with a rival claimant to the throne of Spain, ended in disaster for the banks as for Catalonian institutions as a whole.

2.4 Northern Europe: Amsterdam and Hamburg

Amsterdam's *Wisselbank* was founded in 1609 on the model of the first bank of Venice, the *Banco della Piazza di Rialto*, although it was wholly owned and managed by the city. The context was once again one of monetary instability, with competing coinage of unstable relative values. The purpose of the bank was to take the business of settling foreign bills of exchange from the private bankers and enforce the legal parities. As in other instances several measures were enacted to make the bank's balances a desirable instrument, notably immunity from seizure by creditors, and a requirement to clear bills above a certain size through the bank. On the other hand, hefty fees were charged for withdrawing coins.

Over time several innovations allowed the bank better to manage the relation between its balances and the circulating currency. One was the emergence of a discount on current money, the *agio* which had also emerged in Genoa and in Venice as a consequence of debasements. The other, in 1683, was to create a negotiable receipt for new deposits of coins, which allowed the bearer to withdraw coins for a smaller fee. In effect the receipt system disconnected bank balances from redeemability: only balances coupled with a receipt entitled to withdraw cash. Eventually the bank learned to manage the agio, or relative price between (effectively fiat) balances and current money, through the forerunner of open-market operations, buying and selling current money on a discretionary basis. Later, in the eighteenth century, the bank engaged in several instances of crisis management, lending against collateral during financial crises in 1763 and 1773 (Quinn and WIlliam Roberds 2018).

The bank was initially supposed to be a narrow bank like its Venetian model, but soon it started lending to the city and later to the Dutch Indies company and other privileged entities. These pressures increased greatly at the end of the eighteenth century, during the Anglo-Dutch war and the early stages of the war against France in 1792.

The Hamburg bank was founded in 1619, during the period of copper debasement in Germany known as the *Kipper- und Wipperzeit*. It was closely modeled on the successful bank of Amsterdam, although it also operated a lending facility, mostly geared toward providing loans to the municipality. As elsewhere an agio developed on bank balances relative to current money, which the bank managed through discretion in the coins it paid out for deposits. Contrary to Amsterdam it encountered several periods of suspension (1672, 1755–61, 1766–68). A reform of 1770 led it to establish a silver-bullion standard which proved successful and laster until 1875, in spite of crises in 1848 and 1857.

2.5 The second generation

The second generation of public banks begins in the mid-seventeenth century, and is marked by two changes: a shift from city-states and merchant republics to large monarchies (Sweden, England, Austria, France, Prussia, Denmark, Spain), and the use of a different financial instrument, the circulating note.

There is no simple pattern of public or private ownership, although the forerunners (Stockholm, England, France) were private ventures and later ones tended to be publicly owned. The circulating note, in spite of its usually large value, expanded the customer base beyond the wealthy merchants typical of Amsterdam or Venice: after the failure of John Law's bank in 1720 claimants (largely note-holders) numbered a half million. Although some continued to provide deposit and giro services, this was a minor line of business. The Bank of England and its French counterparts (Law's short-lived bank and the more successful *Caisse d'Escompte* eventually reincarnated as the *Banque de France*) became bankers' banks and governments' banks in varying proportions. As problems with coinage had been largely solved the payments function was not a motivation. Government financing, on the other hand, was an explicit selling point. The Bank of England (like Law's Bank) was essentially a potentially lucrative banking license stapled to a debt issue as inducement for investors. Keeping at bay the fiscal pressures that had threatened the first-generation banks at various times was an even greater challenge for the second-generation banks, as governments saw the user-friendly paper note as an efficient way to mobilize savings during wartime.

The cataclysm of wars that engulfed Europe from 1792 to 1815 was the ultimate test, which two banks in particular managed to pass for very different reasons: the Bank of England and the Banque de France, which provided templates for nineteenth century central banking. Of the first generation only Hamburg's bank survived until 1875 largely intact. The Neapolitan banks, also pressured into wartime service, were ultimately merged into the central bank of the Kingdom of Two Sicilies.

2.6 Common themes

Several common themes emerge from this survey that are pertinent to the Neapolitan experience.

The motivation for creating these public entities were of two types. One was a payments function, and stemmed from perceived failures of the private sector to supply a stable means of payment, along two dimensions.

The first, more obvious one, was the fragility of fractional reserve banking and its susceptibility to runs, best described in the debates in Venice over the creation of the Rialto bank. A long-lived institution, more or less backed by the State, closely supervised, and often required to maintain 100% reserves (though rarely held to that strict standard) was seen as a solution. This usually did not prove sufficient, and various benefits or privileges had to be granted on the banks' balances to enhance demand: recurrent features are immunity from seizure, obligation to use them for conditional deposits and for settlement of large payments or bills of exchange. Once in place, the banks were often very successful in providing an efficient means of payment, in the form of ledger money, although such centralized systems were mainly useful in small communities. Hence the early public banks remained for the most part merchants' banks, with a narrow clientele.

The other, more complex failure to provide a stable money stemmed from the nature of the monetary system of the time The advantage of a commodity money system is, in principle, the anchoring of the price system to a real value, but the complexities of a commodity money using several metals and denominations, coupled with the depreciation of coins through wear, debasements, and currency competition from foreign coins, resulted in unstable units of account (see Appendix 1 for the case of Naples). Regulations of relative prices by governments were understandably ineffective, and private bankers were often castigated for their unwillingness to enforce them. The hope, often expressed, that a public-minded institution would abide the laws proved unfounded, but over time public bank groped toward a solution, best exemplified by Amsterdam's fiat money whose value was actively managed through open-market operations. A key element in management was granting the bank discretion over the coins it paid out. A partial substitute could be found in the ability to buy and sell coin or bullion, and especially to engage in repurchase transactions. By the eighteenth century, however, improvements in technology and coin management made these problems obsolete, and the second-generation banks did not have to deal with them.

The second type of motivation appears more intermittently, but is never far from the scene: namely, government financing. In the case of the second Venetian bank it was front and center: the bank was created to make liquid a form of government debt. In other cases government finance came in from the wings: once a bank was up and running, and providing an easily produced but trusted medium of exchange, it was tempting to resort to it for financing emergencies. None of the public banks entirely escaped this pressure, and some (Venice, Barcelona) suffered acute reverses on this account. The second-generation banks were, by the circumstances of their origins in monarchical polities, even more exposed to this pressure. Their model, nevertheless, proved the dominant one after the upheavals of the wars of 1792–1815.

2.7 Naples in the European context

A quantitative appraisal

Tables 2–3 as well as Figure 1 provide a quantitative comparison of the Neapolitan banks with the public banks discussed above. The tables provide cross-section comparisons of size at various points in time (the points chosen as a function of data availability), using current exchange rates.

	year	thousand ducats	ducats /capita
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 2: Total assets/liabilities of various public banks, converted to Venetian ducats (a gold coin containing about 3.5g). Source: Roberds and Velde (2016b, Table 22.1).

	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
Banco de San Carlos, Madrid	2,260	791
Neapolitan banks	49,967	–

Table 3: Deposits and note issue of various banks in 1788. The amounts are converted to marcs banco of Hamburg at current exchange rates using Denzel (2010). Sources: Roberds and Velde (2016b, Table 22.2), Tedde de Lorca (1988, 186) (Spain), Balletta (2008) (Naples).

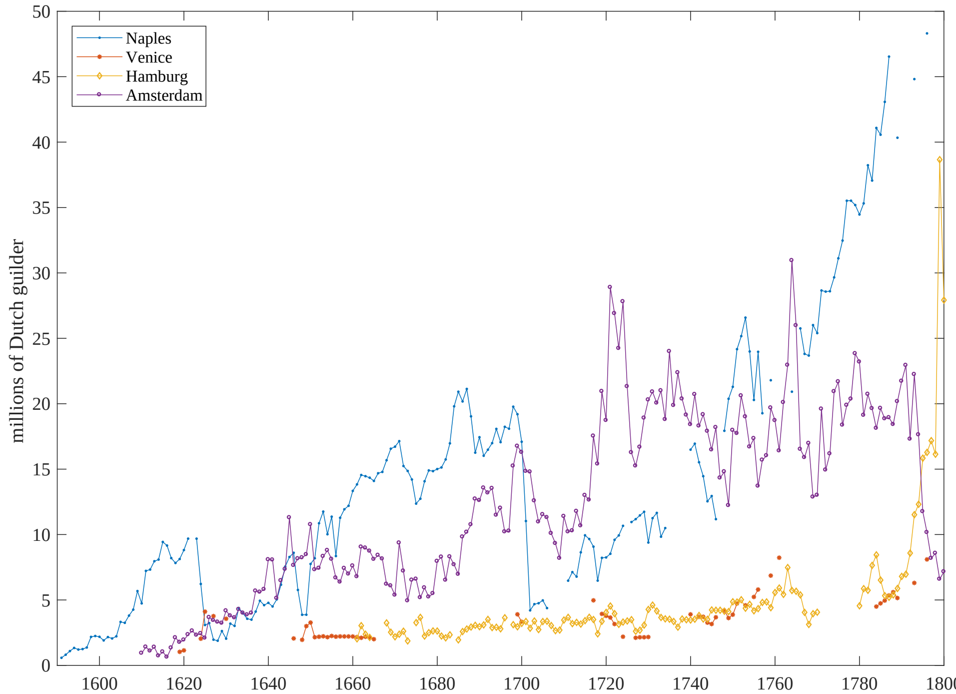

Figure 1: Bank balances of various banks, converted at Dutch guilder at current exchange rates (1591–1800). Source: Roberds and Velde (2014).

The figure is limited to those first-generation banks for which we have time series. In spite of the periodic reversals that will be detailed later, the Neapolitan banks in the aggregate held their own: they were considerably larger than Hamburg or Venice, and larger than Amsterdam for sustained periods of time. A comparison with the Bank of England, the most prominent second-generation bank (Roberds and Velde 2016b, Figures 22.1–2), would show that it surpassed the Neapolitan banks in size fairly quickly, just as it overtook the Amsterdam Wisselbank by 1720. Yet, as Table 3 shows, even as late as 1788 the Neapolitan banks were one third as large as the Bank of England. This alone justifies a study of the Neapolitan banks. As we will see, the services they provided were very similar to those of the other early public banks, and their financial engineering was in some cases superior.

In the remaining sections I delve into the history and specificities of the Neapolitan public banks.[4]

3 The Banks of Naples: Context and History

3.1 Overview

The kingdom of Naples, and independent kingdom (split from Sicily in 1282) was the object of a long contest between Aragon and France, until finally conquered by king Ferdinand of Castile in 1503. It became thereafter a dominion of the crown of Spain, ruled by the Habsburg descendants of Ferdinand's daughter Juana. As such, it maintained most of its institutions but the executive powers were in the hands of a Spanish viceroy answerable to the king of Spain. This situation of rule from abroad lasted until 1734 (with an Austrian episode from 1707 to 1734), when the younger son of the king of Spain, Carlo VII, conquered the kingdom and ruled from home.[5]

Thus, the general context in which the public banks emerged and first developed was one characterized by a monarchical system, increasingly absolutist but nevertheless bounded by the compromises needed to keep Naples as "fedelissima" as it ought to be. Throughout Spanish rule, Naples was at the periphery of a large empire and increasingly burdened by the costs of its maintenance. Naples itself ceased to be on the front lines of the Spanish empire, once France abandoned its Italian ambitions and the Turkish threat receded after the battle of Lepanto; but it remained an occasional source of military costs, for example the revolt of Naples in 1647 and the ensuing French invasion, or the revolt of Messina in 1674–78 again supported by France. Moreover Lombardy, to the north, remained a battlefield during the Thirty Years War, and the long conflict with the Netherlands (ended in 1648) and with France (ended in 1659) imposed fiscal pressure on Naples as on other realms.

3.2 Banking: the private sector before the public banks

First, a question of vocabulary. The term *banco pubblico*, in Neapolitan texts, appears long before the *banchi pubblici* which are the subject of this volume, and appears to denote a banker accepting deposits from the public. For simplicity, however, I will use the term to refer to the eight banks created in the late sixteenth century by charitable institutions, as described below.

[4]On the history of the banks, in addition to the contributions in this volume (Costabile and Nappi 2018; Balletta, Balletta, and Nappi 2018; Avallone and Salvemini 2018) see Somma (1860), Nisco (1866), Petroni (1871), Filangieri (1940), and Balletta (2008) and the overviews in Di Somma (1960) and De Rosa (2001, 2002). The documents in Tortora (1890) are particularly rich. On the securities (*fedi*) issued by the banks, see Ajello (1882) and Demarco and Nappi (1985) as well as Palmieri (1905) and L. De Simone (1922) for later aspects; on the banks' internal structure and accounting, see Rocco (1785), Di Somma (1960), Avallone (1991), and Demarco (1996). Studies of specific banks include De Rosa (1955b), Di Somma (1960), E. De Simone (1974), and Avallone (1995). On public finance see Bianchini (1859), Calabria (1991), Bulgarelli Lukacs (1993), and De Rosa (1997, 1998). Published statutes are in Vario (1772) and Giustiniani (1803–1804); see especially the titles *De Bancis*, *De Literis Cambii*, *De Monetis*, *De Nummularis.*

[5]When Carlo VII succeeded his brother as King Carlos III of Spain, he left the kingdom to his younger son Ferdinando I, who ruled until 1825 except during the French occupations of 1799 and 1806–15. The kingdom of the Two Sicilies (Naples and Sicily) was annexed by Italy in 1860.

Second, the term "non-profit" is ambiguous. I use it to distinguish the eight public banks from private bankers, which operated as partnerships. It does not imply that the public banks were not seeking to maximize profits: in fact, one of their motivations for providing banking services was precisely to generate additional revenues for their charitable activities.

Private bankers existed in Naples since medieval times (Silvestri 1950, 1951a, 1951b, and the contribution of Avallone and Salvemini 2018 in this volume). Private banking in Naples was dominated by the Aragonese during the 15th century, and by the Genoese during the sixteenth century.[6] Concerns about bank failures led to various regulations under Spanish rue. In 1549 a deposit of 50,000D was required from bankers, raised to 100,000D in 1553 and 150,000D in 1556, and, as in Venice and Amsterdam at the time, concerns about chain endorsements and the difficulty of being paid in cash led to restrictions on endorsements in 1579 (Tortora 1890, 113–17, De Rosa 2002). By 1604, however, private bankers (at least of the deposit-taking kind) had disappeared. Whereas in Barcelona and Amsterdam it had taken active prohibitions of private bankers, this disappearance seems to have been a natural displacement by the emerging public banks.

3.3 The beginnings of non-profit banking

Naples in the sixteenth century had a large network of nearly a hundred confraternities providing welfare services, largely managed by members of the middle class such as lawyers, merchants, and craftsmen (Muto 2013, 48, Campanelli 2002, and the contribution by Di Meglio 2018 in this volume). Some provided only to a limited set of recipients, such as members of a specific guild, but others had a broader constituency. Of the eight historic public banks, seven were founded by such charitable institutions (I will come to the eighth one later).

The *Casa dell'Annunziata*, founded in the 14th century, was one of the most prominent charitable institutions in Naples. Its focus was on foundlings as well as poor young women. The hospital of *Sant'Eligio* had been founded in 1270 by French companions of king Charles of Anjou to assist their impoverished countrymen, but after the fall of Naples to the Spanish crown it had turned into an hospice sheltering orphans and also a nursing school. The Spanish viceroy established a similar hospital for Spanish soldiers and dedicated it to the patron saint of Spain, *San Giacomo*. The hospital of the *Incurabili* had been founded in 1519 for invalids, and was one of the two largest in Naples with Annunziata. The confraternity of the *Spirito Santo* had been founded in 1555 by a Dominican monk and had established a shelter (*conservatorio*) for the children of prostitutes.

Whereas these five institutions provided shelter, medical assistance, and education, others were from the start providing financial assistance as part of their mission. The first was the *Monte di Pietà*, founded in 1539 to combat usury by providing small interest-free loans collateralized by personal property.[7] The other was the *Monte dei Poveri*, founded in

[6] See the list of names in Rocco (1785, 3).

[7] Many early authors thought that its foundation was a consequence of the expulsion of the Jews from Naples by Charles V, but this has been disproved (Tortora 1890, 3–11). Similar institutions had been created throughout

1563, according to the traditional story by a lawyer who had heard the pleas of a debtor imprisoned for a mere five carlini: being targeted toward imprisoned debtors, it was located from its origin near the courts.

When these institutions went into the business of deposit banking is less clear because the surviving account books do not go back earlier than 1573. But recent research (Silvestri 1953; Demarco and Nappi 1985) finds the oldest traces of such activity with the Annunziata, with examples of loans as early as 1462, deposits (1463), and interest on deposits (1482). Di Meglio 2018 documents how extensive the deposit activity was in the late 15th century, with 350 depositors. The activity appears to be uninterrupted and fairly well established, with mention of a "cascia deputata a depositi [da diversi particolari]" (1557) and a "banco" or "bancho" (1517, 1553). Demarco and Nappi (1985) also found a certificate of deposit (*fede di deposito*) issued by the Annunziata in 1564. These documents clearly confirm the representation made by the Annunziata in 1580 to the Viceroy that it "has and has always had the ability to receive deposits, issue certificates therefor and present those in the royal courts and they have always been accepted like those of public banks" (Tortora 1890, 122). By the mid-sixteenth century other institutions also received deposits and made payments on written orders (the Incurabili in 1560, Sant'Eligio in 1570). It seems, therefore, that charitable institutions had begun early on to provide the same kind of safe-keeping and escrow services as private bankers, on the margin of their other activities. The banking activity, however, only became quantitatively important in the late sixteenth century.

Perhaps the Monte di Pietà (which was housed in the building of the Annunziata) took matters a step further. Tortora (1890, 25) cites a document of 1578 stating that the Monte had been operating a distinct *cassa dei depositi* since before 1574, and in fact Demarco and Nappi (1985, doc. 89–93) documents the earliest known certificates issued by it: a *fede di deposito giudiziario*, or escrow certificate in 1569, a certificate of conditional deposit in 1573, a *fede di credito* in 1573, a *madrefede* in 1573, and a *fede di credito* payable to order in 1574. Some documents (Tortora 1890, 64–65) suggest that Annunziata did not operate its own bank at the time but used a private banker, and even agreed in 1580 to use only the bank of the Pietà for a period of three years.

The same Monte di Pietà was the first to receive a formal banking license, in 1584.[8] It was followed in rapid sequence by the Annunziata, which opened a bank under the name of *Ave Gratia Plena* or AGP in 1587, San Giacomo sometime before 1589, the Incurabili under the name of *Santa Maria del Popolo* or Popolo in 1589, Spirito Santo in 1590, Sant'Eligio around 1591, and finally Monte dei Poveri in 1599 (Tortora 1890, 49, 50, 61, 65, 83, 93, 94).

There are two possible reasons for this rush. One is an attempt by four private bankers to create a monopoly on deposit banking in 1580. It failed in the face of spirited resistance by the charitable institutions (Pietà and Annunziata) and after an appeal to Madrid (Tortora 1890, 118–123). The Annunziata was able to secure a statement from the Viceroy protecting its right to "receive money from those who wish to deposit it and spend it by

Italy in the fifteenth and sixteenth centuries (see Barile 2012 for a recent survey).

[8] Filangieri (1940, 14); Demarco and Nappi (1985) says that the original document is not known and the motivations unclear.

means of your cassa and issue certificates of deposit at the request of others" (Tortora 1890, 122), and this recognition may have prompted the Pietà formally to seek a banking license. But soon after, the Pietà sought an injunction against the Poveri's deposit business (Tortora 1890, 49). This points to the second possible reason: just as private bankers had presented a threat, the Pietà's formal recognition now created the threat of another monopoly and induced the other institutions to secure their customary rights, beginning with the oldest, the Annunziata.

The eighth and last bank was of a very different nature. Salvatore was founded in 1640, not by a charitable institution but by the farmers of an indirect tax on flour, who not only had to manage their inflows and outflows, but also pay interest on debt backed by the revenues of the tax. Claiming to be ill-served in their operations by existing banks they asked for permission to establish a *cassa di credito*, which immediately engaged in pawn lending although the license was silent on this activity. Because of its origin it eventually did much of the business associated with tax farms, although its history was perhaps more checkered than others (Tortora 1890, 97–106). Salvatore, while different in origin from the other banks, is highly reminiscent of the second Venetian bank of 1619, the *Banco Giro*, which may have inspired it.

3.4 Overview of the banks' history

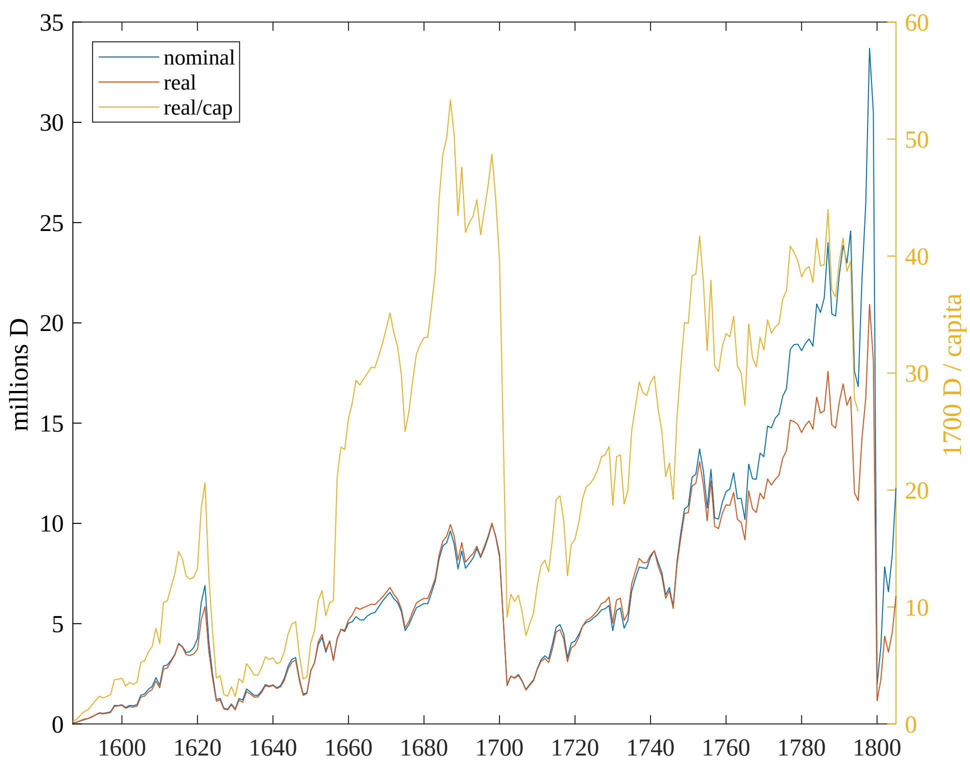

Figure 2: Aggregate balances of the Neapolitan banks: nominal, real (left axis), and real per capita (right axis). Source: Balletta (2008) for balances, Muto (2013, 43) for population, and Appendix 2 for prices.

Figure 2 will serve as a rough overview of the Neapolitan banks' history.[9]

First, to get a sense of magnitude, the metallic money stock in Naples was estimated to be somewhere between 3 and 6 million ducats in the early seventeenth century (see Appendix 1): the banks' balances were therefore of the same order of magnitude as coin balances.[10]

Over two hundred years, the story of the banks is one of strong and persistent growth punctuated by a few very sharp crises (1622, 1647, 1701, 1798) and less dramatic but still significant fluctuations. This growth is not purely due to inflation: even in real terms, the annual growth rate is 7.2% between 1590 and 1620, 2.9% between 1625 and 1695, 2.4% between 1705 and 1785. In per capita terms[11] one's view might depend on whether one focuses on the peaks or the slopes. The peak of the late 1690s is similar to, in fact higher than, the peak of the late 1780s, and the whole eighteenth century might seem to be just a long recovery from the shock of 1701–02. Still, from 1705 to 1785 the growth rate of per capita balances was a respectable 1.6%, during a period of essentially no economic growth (Malanima 2011).

Strikingly, from this long-term perspective a number of crises do not register significantly or persistently. For example, Sicily's revolt in 1674 and the ensuing Messina War lead to a sharp contraction of about $1/4$ but growth resumes rapidly. The start of the War of Polish Succession in 1733 (which led to the conquest of Naples by Carlo VII) also leads to a 18% contraction but it is quickly reversed. The War of Austrian Succession contracts balances by a third, but they rebound very quickly. The Seven Years War (in which Naples remained neutral) leaves balances stagnant. Even the effect of Masaniello's revolt, which cuts balances in half, is reversed within two years.

This resilience (in the aggregate) is all the more striking since it does not correspond in any obvious way to the cycles of growth and decline identified by the historiography: the second half of the seventeenth century is no different than other periods, and the solid growth in the second half of the eighteenth century stands in contrast with the lackluster performance usually associated with the Italian Mezzogiorno in that period.

This only leaves two catastrophic events, both of which reduced balances by around 80%: the crises of 1622 and 1701. They are, however, very different in nature: the first was an aggregate shock induced by (failed) monetary policy, leading to a bail-out of the seven existing banks and profound changes in their business, while the crisis of 1701 was

[9]I use each bank's "circolazione" series (Balletta 2008) and interpolate missing observations; see more recent estimates in the contribution by Balletta, Balletta, and Nappi (2018) in this volume.

[10]It is more difficult to compare the two monetary instruments in terms of transaction services: Costabile and Nappi 2018 provide an estimate of velocity of bank balances, but we lack a comparable figure for cash.

[11]There is a curious amount of variability in published estimates of the population of Naples. I have followed Muto (2013, 43); to his figures I added an estimate of 400,000 right before the plague of 1656 and 200,000 right after (Fusco 2009) and interpolated to get annual estimates.

a run-induced systemic financial crisis. I will discuss both in the following section.

4 Specificities of the public banks

4.1 Diversity and resilience

Some banks specialized in serving specific customer bases. As mentioned above, Poveri was founded by lawyers and located near the courts (*Tribunali*). San Giacomo, linked to Spanish institutions and located near the seat of the Spanish Viceroy, was the "bank of the court," as was to a lesser extent Spirito Santo, located on the elegant via Toledo. Salvatore had been founded by financiers and was closely linked to government finances. Popolo was seen as the city administration's bank (Tortora 1890, 80). Peri (1672, 2:126) notes that the Annunziata was (in his time) seen as the best, and that foreign merchants preferred Sant'Eligio and Popolo which gave the best services (*che danno maggior facilità*). In addition, coincidentally or not the eight banks were spread almost uniformly across the city: two (Poveri and Popolo) were located the upper via dei Tribunali, four (Annunziata, Pietà, Salvatore, and Spirito Santo) were along Spaccanapoli, with the last two, Sant'Eligio and San Giacomo, at the southeast (Mercato) and southwest of the city. This suggests a degree of geographical specialization suited to the "highly fragmented urban space" of Naples (Sabatini 2013, 93).

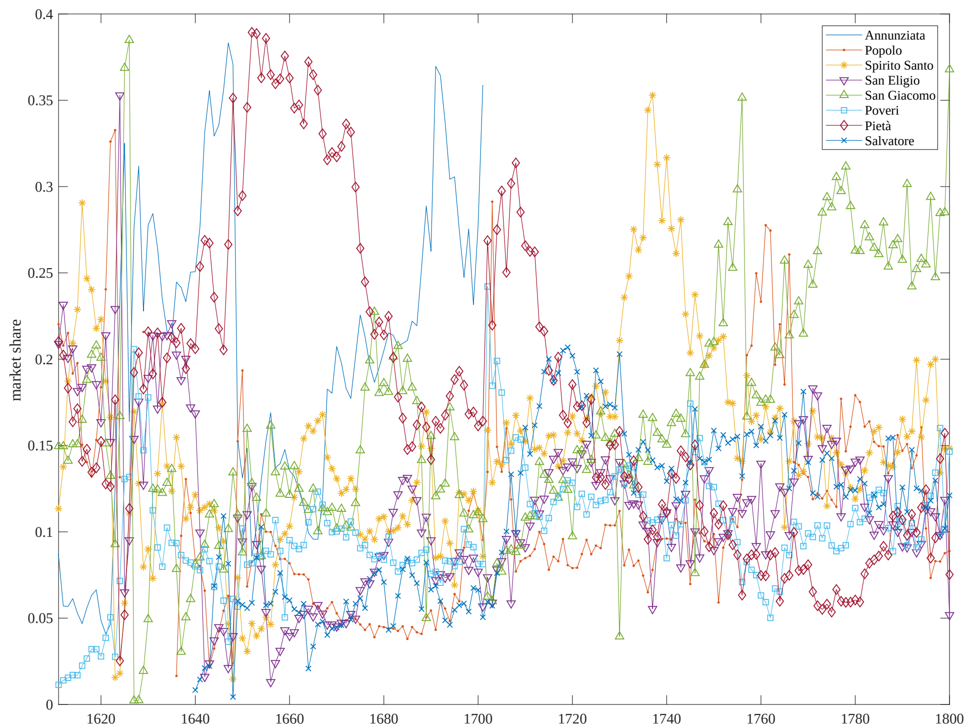

Figure 3: Shares of total circulation of the public banks. Source: Balletta (2008).

The geographical and customer diversity seems complemented with diversity in culture. Some banks definitely seemed better managed than others. Poveri, one of the strongest, also had a strong independent streak, perhaps due to the dominance of lawyers and jurists on its board. Others displayed repeated weaknesses, as will be discussed below.

Figure 3 shows the market shares of the public banks between 1611 and 1800. No one bank dominates the others for any sustained amount of time, although at times one bank or the other reaches a third of total circulation: the Pietà between 1650 and 1670, the Annunziata briefly in the 1640s and again in the 1690s (shortly before its failure), Spirito Santo in the 1730s. Only at the end of the eighteenth century does San Giacomo maintain a preeminence relative to the other banks for several decades. Moreover, there is no stable ranking of the banks in terms of size, as we see them rising and falling over time.

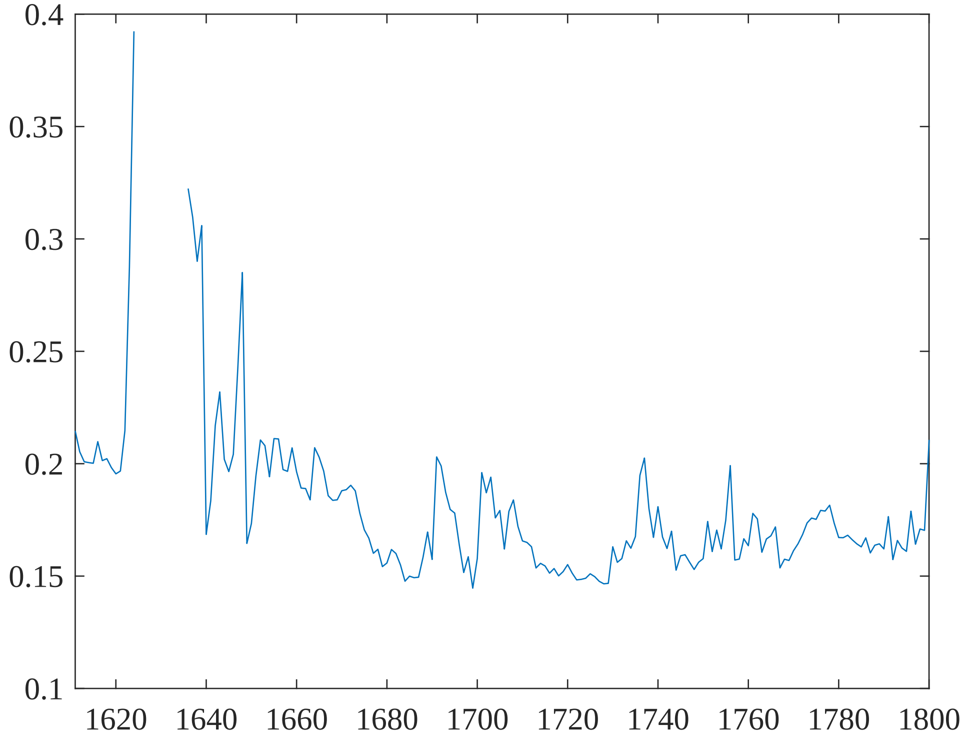

Figure 4: Herfindahl index of concentration. Source: Balletta (2008).

The lack of concentration is confirmed by Figure 4, which plots the Herfindahl index, a common measure of concentration in an industry.[12] Aside for the troubled period of the 1620s and 1630s, it is steady and remains between 0.1 and 0.2, in spite of the frequent changes in relative rankings shown in the previous picture.

Did this diversity make the system of banks more resilient? Deposits were demandable, and bank runs are part of the history of Neapolitan banks.[13] They could be caused by aggregate as well as idiosyncratic shocks.

Aggregate shocks

When faced with aggregate shocks, we see that the banks were variously affected, some coming out better than others, but the system as a whole surviving.

Aside from the crisis of 1622 discussed previously, Naples endured numerous shocks: earthquakes (1694, 1702), eruptions of the Vesuvius (1631, 1698, 1727, 1794) which had

[12]The Herfindahl index is the sum of squared market shares. See also the contributions by Balletta, Balletta, and Nappi (2018) and Costabile and Nappi (2018) in this volume.

[13]The Neapolitan term is *correria* in Neapolitan (Tortora 1890, 169, D'Ambra 1873, 145).

been quiet for half a millennium, revolution (1647), foreign invasions (1648, 1707, 1734, 1798), and the devastating plague of 1656 (Fusco 2009). The latter shock was not wholly adverse for the banks, as it gave rise to unclaimed deposits (*denaro demortuo*) over which the government and the banks fought (Balletta 2008, 71, Tortora 1890, 153–54, 203–15). But the main crises, after 1622, were 1647 and 1701 (Figure 2).

The revolution of 1647 (the Masaniello revolt) affected the banks severely, partly because some of their assets were pillaged either by the mobs (Pietà and Poveri) or by the Viceroy (San Giacomo and Spirito Santo). In the aftermath Poveri had to suspend its payments in 1648; San Giacomo failed and repaid its creditors 26 grani on the ducat, while Salvatore paid 60% and Spirito Santo repaid its creditors in full by ceding bonds in its portfolio and opened a new set of books (Di Somma 1960, 73); Pietà managed to continue payments throughout (Tortora 1890, 200–02).

The crisis of 1701 was a pure crisis of confidence, although triggered by an international crisis. The death of the king of Spain without immediate heir in November 1700 set into motion a European conflict over the division of his domains, but full-scale war did not break out until March 1702, and the fighting in Italy remained limited to northern Italy until 1707. It is true that a conspiracy favoring the Austrian rival of the new king of Spain Philip V was uncovered in September 1701 (*congiura di Macchia*), but it was quickly suppressed.

It remains that in this tense climate banks evidently faced increasing withdrawals. In March 1701 the Viceroy asked the banks to increase their cash reserves by calling in loans and also to accept each others' notes. The stronger banks resisted this last request, and repeatedly showed the Viceroy how the weak banks' debt to them kept increasing. Finally on December 2 the Viceroy prohibited reciprocal acceptance of notes and ordered the banks to settle their accounts half in cash and half in other assets. At this point the difficulties of the weaker banks increased considerably, and the Viceroy partially suspended payments on deposits, precipitating a run on the weak banks.

The Viceroy tried to coordinate a bail-out, leaning on the strong banks to lend to the weak ones, particularly Annunziata. Poveri was asked to lend 50,000D against collateral of its choosing on Annunziata's books, but the managers knew better and dragged their feet long enough for the inevitable to happen: Annunziata's creditors sued, and Poveri could then argue that the collateral was not free of lien (Tortora 1890, 244–53).

Several banks, like Poveri, emerged relatively unscathed. Others (Annunziata, Salvatore, and San Giacomo) had to suspend payments. Salvatore succeeded in securing an official moratorium on payments and was able to resume payments soon after. San Giacomo had to liquidate assets and convert part of the deposits into bonds repaid over 22 years. The worst hit was Annunziata, which had to be liquidated and most of its deposit business transferred to Poveri (Ferrandino 2009, fn 174).

The Crisis of 1622

The crisis of 1622 was an important and complex event. I present my interpretation in Appendix 1. Suffice it to say that it resulted from the government's inability properly to manage the currency system, especially in providing small coins. Responses to shortages left smaller coins overvalued, leading to occasional unanchoring of prices and exchange rates, above the normal level corresponding to large coins. In addition, increasing clipping left the currency stock in poor condition. A crisis point was reached in 1621–22 which bears remarkable similarities with the years preceding the Great Recoinage of 1695 in England (Sargent and Velde 2002, chapter 16). To reform the coinage required, as it did in England, a complete recoinage. The key question was, whether to debase the standard of coinage so as to leave prices unchanged and minimize the costs of reform. If a return to the old standard was demanded, as it was by the Spanish authorities, the question became: who would bear the cost of converting nominally overvalued coins into new coins? The viceregal government apparently intended to bear the cost, but was either unwilling or unable to do so, and expectations of the reform drove money demand down and prices up to an intolerable level, forcing the government to rush the reform and abruptly demonetize the small coins.

The crisis of 1622 had important consequences for the banks. The impact of the monetary reform on their balance sheets immediately threatened their survival, and the government had to take a number of measures to save them. In the long term, the business model of the banks was altered.

The bail-out

As Figure 2 shows the aggregate balances of the banks had grown rapidly, doubling from 1609 to 1615, then fallen back around 15% in 1616 and stabilized. From the end of 1620 to the end of 1621 they went up by 40%, as depositors exchanged currency for deposits. Some banks, such as Poveri, had started building up reserves by calling in loans (De Rosa 1987, 140). The banks' reserves, which had averaged 15% in the 1610s, reached a low of 10% at end 1620 but rose to 28% at end 1621. But the cash reserves resembled the money stock and consisted almost entirely of the small coins which were demonetized on March 2, 1622 (Di Somma 1960, 57), hence the banks were unable to maintain convertibility and had to close their doors for two days.

The first measure taken by the Viceroy was a "bank holiday" of eight days, followed by a limit of withdrawals to 5 ducats per day and to a maximum of two thirds of the deposit (De Rosa 1987, 141), the remaining third's fate left unspoken. In addition, payments above 30 ducats were required to be made through the banks and a 1% fee on all transactions was granted to the banks (Di Somma 1960, 51), but the protests of the community quickly forced the repeal of the fee (Palermo 1846, 240).

To accelerate the recoinage the government forced the banks to turn over their cash reserves to the mint in the summer 1622, over the banks' strenuous objections. The accounts of Spirito Santo show why: the total loss on their cash holdings was 69%, of which 14% was a nominal loss (the change in the legal value of the coins) and the rest due to the silver deficiency of the zannette.[14]

[14]The zannette, which were slightly overvalued (ME=11.61D/lb of standard silver) were demonetized and bought by the mint at 10.5D/lb, hence a 10% loss would be expected if they had been of full weight. Incredibly,

Ultimately the government bailed out the banks in several ways. First, all deposits as of March 1622 were frozen and written down by a third.[15] Second, the government levied taxes: one was a 25% tax on interest payments to foreigners for 4 years[16] to compensate the banks for the loss they suffered when they financed the import of silver in 1621. The other was a tax on wine to back bonds which recapitalized the banks. Small depositors were given the option to receive the bonds themselves in redemption of their claims. Finally, a clean break was made and new books were opened to receive deposits in the new money. The liquidation in cash of the pre-1622 balances, kept on separate books, was initially capped at 2% of balances per week; the task took a number of years but was ultimately completed (De Rosa 1987, 150–52).

In the end, the losses suffered by the banks were relatively limited because their cash reserves were relatively low, and the nominal depreciation was modest. In the case of Spirito Santo, an account by the Viceroy's commissioner shows that the write-down of deposits and taxes were sufficient to make the bank whole (Di Somma 1960, 58).

A changed business model

Were the banks innocent victims of circumstances, or did they play a role in the crisis? As early as 1604 the government accused their cashiers of removing the heavier coins from circulation, and later of trafficking in coins ((Pr. 7 and 14 De Monetis, Giustiniani 1803–1804, 7:257, 270). By 1621 Madrid had reached the conclusion that, since all payments were made through the banks, they handled all the cash of the realm and must be responsible for clipping and price increases. The regulation of banks sent from Madrid also hinted at another theory, since they restricted lending and non-cash payments. This theory, attributed by Biblia (1621, 20) to "certain Spaniards" blamed the high price of large coins on exchange rates and the latter on traders borrowing from banks. The jurist Tassone (1632, 363) was more blunt when he asserted that "all evils came from the banks because of the loans they made to private individuals to attract their business."[17] This theory has been defended since by De Stefano (1940) and De Rosa (1987, 128), who both blame the banks for increasing the money supply, fueling speculation and prices. Di Somma (1960, 45) disagrees: growing balance sheets were a consequence rather than a cause of the monetary situation, which he blames on the inadequate provision of small change and on recurrent current account deficits.

Rightly or wrongly, the government tried to rein in the banks' activities, both in terms of their role in the payments system, and in terms of their balance sheets. The restrictions on their payments activities probably did not last. By May 1622 the requirement that bills

their silver content fell short by two thirds, either because of extreme (!) clipping, or else counterfeiting.

[15]it seems that this was later modified by the next Viceroy (Tortora 1890, 187–90) to 40% for deposits made between July 1622 and February 1623. There were additional clawback provisions for deposits and transfers made in January and February 1622, widely believed to have been made in anticipation of the imminent reform, and there were suspicions that the banks accepted deposits of zannette even after the reform.

[16]This measure seemed to open a twenty-year long debt default (Calabria 1991, 128-29). The principal sums were not reduced, but interest payments were withheld frequently (continuously from 1630 to 1642) by a third or two thirds (Foscari 2006, 264–68).

[17]"Omniaque mala ex Bancheriis provenere, ex causa mutui, quod particularibus faciebant, pro concursu negotiantium in eis." Nihil novi sub sole. . .

Figure 5: Reserves as fraction of circulation. Source: Balletta (2008).

of exchange be settled only in coin was relaxed and allowed in bank, as long as post-reform balances were used; in 1632 settlement of domestic and foreign bills with bank balances was made mandatory (Pr. 7 and 8 De Literis, Giustiniani 1803–1804, 101–02). But the government also tried to bring the banks back to their charters, limit their investments to government bonds and reduce them so as to earn just enough to cover their expenses (which were also cut by reducing payroll); it even entertained the idea of prohibiting all loans to private individuals (De Rosa 1987, 142).

Figure 5, which plots the reserves ratio of the individual banks, shows that 1622 was indeed a turning point. Henceforth their assets were much more conservatively managed. Although they did not stop lending to individuals (De Rosa 1955b) their reserves remained at high levels, as was noted by Avallone (1991, 377–78). By the 1660s, Spirito Santo had become, in the opinion of Di Somma (1960, 85), a "simple deposit and transfer bank," a perhaps excessive simplification.

In order to provide the banks with more sources of income, and also because of the economic depression that seemed to follow the reform (De Rosa 2002, 455), the government allowed the banks in 1628 to lend against personal collateral (pawns) at interest. The fact that the collateral could be gold or silver, in bullion, wrought, or coined form, led to interesting innovations discussed below.

Idiosyncratic shocks

The banks also suffered idiosyncratic shocks, many due to fraud and mismanagement, or we would say today weak internal controls (Avallone 2017). News, or rumors, of malfeasance could prompt a run against one bank.

Popolo was placed under city administration from 1623 to 1636 and suffered a bank run in 1639 (Tortora 1890, 74–76). Spirito Santo was victim of serious embezzlement by the head cashier in 1691.[18] San Giacomo was victim of fraud in 1744 (its pawns were secretly "rehypothecated" by unscrupulous employees) and had to suspend payments in 1758 because of a run. Salvatore had a particularly troubled history, with a lengthy suspension from 1647 to 1650 after the Masaniello revolt, and again in 1664 because of embezzlement (Tortora 1890, 95–106).

In cases of idiosyncratic shocks there are a number of examples of forbearance by other banks, either at the request of the Viceroy or spontaneously. San Giacomo saved in 1758 when the other banks held back 400,000D in notes (Tortora 1890, 95, 301–02). During Spirito Santo's difficulties in 1691 Pietà stepped in and bought some of its assets to provide cash (Balletta 2008, 95). In 1769 one finds again the banks lending 200,000D to Spirito Santo in difficulty.

The bank runs arguably placed a form of discipline on the banks, since they sometimes prompted examination of the banks' books. This is also true of the 1701 systemic run, whose severe effect is partly blamed on prior mismanagement.

Risk-sharing

How well did the banks share risk? According to Tortora (1890, 302) "their entire history displays an admirable spirit of harmony, indeed solidarity" and Ferrandino (2009, 89) sees "an efficient and well-coordinated banking system, in which each bank, rather than competing against the other in search of supremacy, seemed to aim for unity and complementarity in the development of banking." This judgment appears on the whole warranted, although the case of 1701 displays the limits to that self-preservation placed on solidarity.

There was also some degree of risk-sharing with the government. The bail-out of 1622 shows how co-dependent the banks and the viceregal government had become. The resources that the government should have marshalled ex-ante to fund the reform were provided ex-post to the banks, in the form of dedicated tax revenues, a "bail-in" of depositors (partly justified by speculative deposits in the weeks before the reform began), and a remarkable tax on foreign creditors. In contrast the 1689–91 reform was much better managed, and on that occasion risk-sharing played in the other direction: the nominal capital gains made by the banks on the revaluation of their cash reserves were appropriated by the government (see Appendix 1).

4.2 Governance

In contrast with the other public banks of Europe, the Neapolitan banks emerged organically out of civil society. Non-profit institutions, independent of government, requested

[18] The fraud may have involved more than him; the fact that he died in prison two weeks after his arrest "trying to escape" suggests that he may have known too much (Tortora 1890, 88).

banking licenses from the government. They did so at a time when private banks existed, and were apparently only asking formal authorization to provide, as they had been doing informally for a while, some of same services as private bankers.

Charter and corporate structure

What did a banking license mean in late sixteenth century Naples?

The license granted to the hospital of the Incurabili to open the bank of Santa Maria di Popolo in 1590 (Tortora 1890, 69–71) did three things: it ratified a set of regulations for the banking business drawn by the hospital's officials, it gave them permission to receive of deposits of money, jewels, and fabrics, and it instructed all courts to accept as valid the certificates of deposits issued by the bank. In doing so it made explicit reference to the licenses previously granted to Annunziata and San Giacomo, and placed the new bank on an equal footing with them, suggesting that these two held similar licenses.

From a modern perspective one would want to know if the banks were corporations distinct from the founding institutions, who owned them, and what the liability structure was. This is perhaps too much of an anachronism, but there are indications that some at least were seen as distinct entities: the banks operated by the Annunziata and the Incurabili had distinct names (Ave Gratia Piena and Santa Maria del Popolo respectively) and Popolo was formally separated from the hospital in 1645 (Tortora 1890, 76). In terms of ownership, the regulations approved by the Viceroy specified that the hospital received the profits from the bank but could not use the money deposited (i.e., could not borrow from it) even in extreme circumstances. In terms of liability, the bank's senior employees were liable for any losses arising from mistakes in the books, counterfeit order payments, counterfeit coins or changes in valuation of coins.[19] There is evidence that the institution put up capital specifically to secure the banking business: 18,000D in the case of Spirito Santo (Tortora 1890, 82). When banks extended into Lombard lending, specific capital was assigned for that branch of business (Di Somma 1960, 65).

More broadly the institutions, if not the banks, were subject of canon law. Most, if not all, had at various times received recognition, protection, and privileges from both ecclesiastical and civil authorities: for example, the statutes of the Pietà were approved by the Pope in 1559 and those of the Poveri were approved by the Pope in 1572 and by the Viceroy in 1585 (Tortora 1890, 22, 45). This gave the institutions some measure of autonomy with respect to government authorities, particularly with respect to Spanish Viceroys and the Catholic Majesty they represented. Nor should one underestimate the prestige and holiness associated with the charitable activities. Significantly, in 1582 two private bankers asked the hospital of the Incurabili for the right to open a bank under its name, in exchange for an annual rent, although this may have been in part a manoeuvre to defeat a planned private banking monopoly (Tortora 1890, 125–26).

Protection from judicial seizure was a common benefit attached to early public banks elsewhere in Europe. Although I have not found evidence of similar privileges for the

[19] Senior employees were required to put up bond money; in addition they were personally liable up to the value of their estates (Avallone 2017).

Neapolitan banks,[20] the use of the phrase " deposits in sacred places" (*depositi poenes [sic; paene?] aedes sacras*) by Poveri (Tortora 1890, 120)) suggests an implicit reference to the papal bull "Clericis laicos" of 1296, which became part of canon law (De immunitate c. clericis, VI 3.23.3) and protected ecclesiastical property, but also deposits in sacred places, from secular taxation and confiscation. This, in addition to the goodwill generated by the sponsoring institutions' charitable purposes and the sense of contributing however indirectly to the relief of the poor, may have proven attractive to depositors (Avallone and Salvemini 2018).

Ecclesiastical privileges manifested itself in at least two occasions. The first was in cases of malfeasance by employees: whether bank premises that were adjacent to consecrated buildings were entitled to immunity from lay prosecution was not resolved until a concordat between Naples and the Holy See in 1741 (Avallone 2017, 12). The second, more pertinent (and somewhat less pleasant for depositors), was the failure of the Annunziata's bank in 1702, which immediately raised the question whether the Annunziata's assets could be used to compensate depositors and bondholders of the bank (Avallone 2013, 103). The Annunziata argued for the immunity of all its assets; the arbitrators appointed by the Viceroy rejected this but admitted that the assets that predated the opening of the bank were immune, to which the creditors responded that the bank had been created for the Annunziata's benefit and therefore it should bear any loss, and that the very existence of these pre-existing assets had impelled the public to trust the bank. In the end depositors received 46 grani on the ducat and secured bondholders reached a settlement with the Annunziata in 1714, approved by the Emperor as sovereign of Naples, his Viceroy, the Pope, and the archbishop of Naples (Tortora 1890, 263–89). The institution owner of the bank was thus held liable.[21]

Internal governance

The banks had similar internal organizations. The major decisions and oversight were entrusted to a board of governors (*governatori*), one of whom, the *mensario*, was delegated and on active duty for one month. The day-to-day operations were directed by a manager, the *razionale*, to whom the various cashiers reported (Rocco 1785, Demarco 1996, 17–36).

The board of the banks comprised between four and seven members. The details varied from one bank to another. The board of the Pietà's bank had three noblemen, two advocates and one merchant. After a two-year term, the outgoing member presented a list of six names to the Viceroy, who in practice always chose the first. The board of the bank of Spirito Santo, after it was formally separated from the *conservatorio* in 1629, comprised one nobleman, one advocate, and five commoners including a foreign merchant. Replacements were chosen by the incumbents and representatives of the city administration. The Popolo's board included two high magistrates, two untitled noblemen of the city, one advocate, and two merchants (one a foreigner). At Sant'Eligio four members were

[20] Rocco (1785, 2:23) explains the manner in which sequesters were placed on deposits when ordered by a judge.

[21] Final discharge took another two centuries, and the association of the creditors of A.G.P. was only dissolved in 1880.

chosen by the city administration and three by the Viceroy: a magistrate, a gentleman, and a representative of the cobblers' guild. At San Giacomo the governors supposed to turn over every two years as in other banks, but often didn't; only when difficulties arose did the Viceroy intervene to enforce the term limit. At Salvatore there were six, later four members chosen by the farmers of the flour tax, and who were subjected in 1758 to the two-year term limit like the other banks (Tortora 1890, 38–40, 53–58, 68, 84–85, 93, 94, 98).

Of course the banks were not entirely free of government oversight or interference. First, they held their charters from the viceroy, and were subject to his laws (*prammatiche*, *bandi*) and other commands. Second, from the mid-seventeenth century or earlier the Viceroy appointed a delegate,[22] who served two functions: one was to relay instructions from the Viceroy and monitor the banks' conditions, the other was to serve as judge over litigation involving the banks, with appeal only to the highest court, the *Sacro Regio Consiglio* (Tortora 1890, 299-300). In practice it seems that the second function was the predominant one. It's worth noting that the Poveri's viceregal delegate was in practice a member of the confraternity, even after Carlo III imposed the requirement in the 1730s that the delegates be magistrates of the *Camera della Sommaria* (Avallone 1995, 16, 38). Finally, by the eighteenth century the choice of governors had passed into the hands of the government, albeit from a list of names provided by the outgoing governor, which excluded relatives of any governor, debtors of the bank, and anyone subject to a serious conflict of interest (Tortora 1890, 300).

Whether this supervision was a good thing or not is unclear. Avallone (2017) takes a dim view of the Banks' internal controls, while Tortora (1890, 246) blames the government for having "placed the lawyerly sophistry of its delegates and the aristocratic indolence of the governors it approved in the stead of the vigilance, common sense, and benevolence" of the earlier governors. It may not be a coincidence that Poveri, run by lawyers, was considered to have the best track record.

Relations with Government

The relations between the banks and government are particularly interesting in the European context, because the banks were not created by government, and because government was less likely to have the same interests, in comparison with the banks of the city-republics of Genoa, Venice, and Amsterdam.

It's somewhat harder to discern the government's intentions or goals when granting the banking licenses than in the latter cases. But there was, early on, a recognition by Viceroys that the banks provided a useful payments function. Even before the first licenses were granted some legislation suggested a preference for deposits held in "banks without profit" (Pr. 3 De Numm., 1553, Giustiniani 1803–1804, 8:130). As mentioned above the publication of the early licenses required all the courts of the kingdom to "hold for true

[22] There is some disagreement over the exact date: Filangieri (1940, 93–94) places it in 1654, Di Somma (1960, 4, 71) in the mid-seventeenth century and no later than 1650, Avallone (1995, 14) in the 1630s at the latest, Sabatini (2013, 96) in 1606. After the 1622 crisis a banking committee (*Giunta dei Banchi*) was formed by the Viceroy to oversee the ensuing liquidation, initially composed of six magistrates and six merchants, then six magistrates only (De Rosa 1987, 151), but it seems that this committee was *ad hoc*.

and real" the certificates of the banks. Di Somma (1960, 13) and De Rosa (2002, 477) interpret this as making the banks' certificates legal tender. The state administration also quickly manifested its preference for handling debt payments through the banks because they were deemed "most secure and pious places" (Silvestri 1951a, 2). As in other public banks (like Genoa) the government also hoped that its currency laws could be better enforced, hence the placement of coin weighers in the banks.

Yet in the late sixteenth century Viceroys seemed uncertain whether to back the emerging public banks or to turn to another arrangement. Spanish authorities were at the time entertaining plans for privileged private banks in Spain (Hamilton 1949; Cano Borrego 2014). Two attempts at setting up a private monopoly on banking in Naples are known, in 1580 at the behest of a consortium of Genoese bankers (Tortora 1890, 118–19, 127–31) and in 1598 possibly fueled by the viceroy's desire to curb bank lending (Tassone 1632, 363), but both were fought off by the banks and their supporters throughout the city. Indeed the second attempt led to a recall of the Viceroy, hinting at the degree of political support that the banks already garnered. As mentioned above, the banks' governors judiciously included representatives of the most powerful groups in the city, notably the urban nobility and the *togati*, magistrates and lawyers of the courts.[23]

In the late eighteenth century the government's views of the banks may have evolved. They came under repeated criticism from various quarters (Tortora 1890, 297–306) and in 1772 the government set up a commission, the *Giunta suprema degli abusi dei banchi* in 1772 (Tortora 1882, ccxl). When the emergencies of the 1790s came the government rapidly took control of the banks (Balletta, Balletta, and Nappi 2018).

Government debt

Were the banks licensed to fund the public debt? Their charters might suggest so.

There is some ambiguity in the literature on whether the banks were restricted to invest in public debt, either issued by the *Corte* (the Viceroy's court) or the city. Di Somma (1960, 13) argues that Spirito Santo, like San Giacomo, Popolo, and Annunziata, was restricted to purchasing publicly issued annuities (see also De Rosa 1955b, 96 fn1), which seems confirmed by the text of the 1589 charter of Popolo cited in Tortora (1890, 69), whereby the governors of the bank "cannot dispose of the money received except to purchase annuities either with the Royal Fisc or the city of Naples." But the following year the Viceroy required Popolo to use the income from these annuities to "make other purchases of annuities from those individuals that you know to be most secure" (Tortora 1890, 73; see an identical clause in the 1590 charter of Spirito Santo, Demarco 2000, 72 fn2). In any event Pietà did not seem to be under such restrictions, since Tortora (1890, 137) cites rules made by the governors and endorsed by the Viceroy in 1612 for the "accommodations (*accomodi*) made for the convenience of merchants" (Costabile and Nappi 2018 for a detailed analysis

[23] A third threat fought off by the city came in the 1720s, under Austrian administration, when a *banco di San Carlo* was opened somewhat on the model of the Viennese bank (see the contribution by Jobst 2018 in this volume), though its main purpose seems to have been as a vehicle for a leveraged buy-out of the State's mortgaged assets (Di Vittorio 2009a).

of the accommodations made by the Pietà as a result of this little-publicized authorization).

Di Somma (1960, 13) says that "without the presence and the organization of the banks, government bonds would have had difficulty finding buyers rapidly" but the assertion is difficult to reconcile with the facts. In the 1640s Poveri's holdings of government debt was 120,000D, and it represented 8% of the banks' aggregate balances (De Rosa 1955b, 97). If Poveri's holdings were representative, then the banks together held 1.5mD of government debt, which stood at 40mD in 1636 (Foscari 2006, 56). Simply put, the volume of public debt vastly exceeds that of the banks' balance sheet.

This does not mean that the banks were not subject to demands. In the 1630s and 1640s, when government borrowing was frequent, the banks were apparently taking fixed shares of each new issue (Di Somma 1960). Even in the late seventeenth century they were repeatedly asked for loans (1676–83, 1695; Filangieri 1940, 92–93, 109).

4.3 Financial innovation

I will touch here briefly on the aspects of the Neapolitan banks that stand out most in comparison with other early public banks (see the contribution by Costabile and Nappi 2018 and Balletta, Balletta, and Nappi 2018 in this volume for a more in-depth discussion).

Assets

Figure 5 shows that, after 1622 at least, cash was usually the majority asset. Still, compared with most European public banks of the time, the assets and liabilities of the Neapolitan banks were quite diverse (Demarco 2000, chapter 2; see Balletta, Balletta, and Nappi 2018 for a quantitative assessment of the relative importance of these components). On the liability side they issued deposits but also sold debt instruments bearing interest. On the asset side they held a variety of government debt, mostly debt assigned on direct taxes (the *fiscali*) or indirect taxes (the *arrendamenti*), both fairly liquid instruments (Calabria 1991, chapter 5), or shares in tax farming partnerships (*partite di arrendamenti*). They also lent to the city of Naples or to other municipalities of the kingdom, transacted with the mint and with foreign exchange dealers.

Finally they lent to individuals, either by buying life annuities, long-term loans collateralized or not, or small short-term loans collateralized by personal estate (pawns), lines of credit, and overdrafts. Loans to merchants and other individuals were called *accomodi*, and seemed to have been commonplace. Uncollateralized loans took the form of the so-called *vuoti introiti*, i.e., deposit creation with no cash counterpart. They were formally prohibited in 1603 (Pr. 6 De Numm., Giustiniani 1803–1804, 8:132, cited by De Stefano 1940, 91, although the provision is somewhat unclear),[24] and according to the older historiography disappeared after 1622 (Tortora 1890, 134–37, 152). (Costabile and Nappi 2018)

[24] The text reads "che da qua in avanti , in modo alcuno non debbano, nè ciascuno di essi debba ricevere, nè notare, nè far notare nel suo Banco polizza alcuna a complimento di maggior somma , se non fosse stata soscritta dal creditore, a beneficio di chi va la polizza." The prohibition was renewed in 1623 and 1635, a sign that it was not obeyed.

document precisely the mechanisms by which banks did in fact engage to a significant extent in "money creation," at least prior to 1622, and much more archival work is needed to determine the extent of such loans throughout the banks' existence.

The fede

The singular innovation of Neapolitan banks was undoubtedly the *fede di credito*. It arose from the *fede di deposito*, originally a certificate issued by the deposit-taker that a certain deposit had been made, for example for legal purposes: in effect, an escrow certificate. The certificate served a legal function: it could be exhibited in court to prove that certain requirements of a contract had been met, for example a marriage contract stipulating that a dowry be set aside. Deposits that could only be released when certain conditions were met were called *vincolati*; free deposits were *sciolti*. As mentioned above certificates of free deposits appeared early on among public banks, probably in imitation of practices among private bankers.

As Ajello (1882) argues and Costabile and Nappi (2018) emphasize, the true innovation in the *fede di credito* is that it is a liability of the bank itself, as indicated by the standard formula: "facciamo fede tener creditore in deposito/banco": we (the bank) certify that we hold so-and-so as a creditor. This liability was demandable: the bank was obliged to pay it in cash on demand to the presenter. The creditor was usually named, although they could be made blank, and could also be endorsed. These circulated and functioned as bank notes.[25] The sums could be relatively small, down to 4D, although in the eighteenth century they tended to be larger. Printed *fede* appear in 1749, but they apparently never took the form of notes with round numbers, as later with the *Banco di Napoli*, the successor institution to the public banks in the nineteenth century.

The *poliza* was a different instrument, simply a payment order or check, endorsable but still a liability of the individual issuer, although it could become the equivalent of a banker's acceptance or certified check when endorsed by the bank's cashier (*polize notate*). There was no time limit to their validity and they could remain outstanding for months or years and still be honored (Tortora 1890, 147).

Riscontrati

Long before the London Clearinghouse of 1775, the Neapolitan banks had established procedures for accepting and clearing each other's circulating liabilities, a system called *riscontrati* or *risconstrazione*.

Crediting a depositor for funds held in another bank was forbidden in 1635, and again in 1728 (Pr. 11 and 13, De Bancis, Giustiniani 1803–1804, 3:62–67), but the prohibition was largely ignored (Tortora 1890, 197, 241). Every week banks cleared with each other, and the remaining balance was carried forward in a *fede di resto* (Rocco 1785, 1:27–28).

[25]Demarco (1996, 47) argues that only a licensed bank could issue a fede di credito, although the early examples seem to run counter to that claim.

Pawns and repos

Although Pietà and Poveri began as a pawn operations, this was not initially a common characteristic of the banks. San Giacomo began a pawn operation in 1606, Spirito Santo in 1629, and Popolo in 1648 (Tortora 1890, 80, 84, 94). As noted above, the ability to lend at interest on pawns in 1628 induced all banks to enter the business. The pawn business was run on a distinct set of books, and with its own rules.

Pawnbroking (Lombard lending) might seem like an anecdotal activity, but one finds it in certain German municipal banks, in particular the Bank of Hamburg, and it is notable that the Banco di San Giorgio requested (but was denied) the authority to engage in it in 1675. As Costabile and Nappi (2018) note, from the beginning ambiguities in Poveri's license allowed it to lend against large pawns. For the Neapolitan banks it was a sizeable activity, and pawns represented liquid assets that could be sold off during runs (Tortora 1890, 246–49). Conversely, lending against collateral (like bullion or foreign coins) that was safe in having high intrinsic value, but illiquid in not being legal tender, was an important crisis management tool (Quinn and William Roberds 2015).

One particularly striking use of pawns is described in detail by Rocco (1785, 19–22) describes in detail how foreign coins were pawned at the banks. Foreign coins were accepted as regular deposits (i.e., the exact same coins had to be returned), like pawns, subject to a haircut to protect the bank from exchange rate variations. But, unlike pawns, no receipt was issued and their deposit was considered a favor. Hence the custom was that the bank was free to dispose of the deposit after a year, but could sell it off earlier, after notice, whereas the term for pawns was scrupulously respected. Conversely, money-changers were sometimes able to take advantage of the bank when the haircut had not been judiciously chosen: "Money-changers deposit foreign coins and wait for the time when the agio moves to their advantage; and it often happened that the deposits fell in value below the sum lent, to the loss of the Banks."[26]

The missing agio

In the light of the experiences in Amsterdam, Genoa, and Venice, one wonders why no agio (or *alaggio* in Neapolitan) ever developed on the banks' balances. The reform of 1622, had it been carried out like the similar monetary reforms in Genoa and Amsterdam, might have led to the same result. But returning to the old standard precluded the emergence of a distinction between bank balances and current money.[27] It may also be that the existence of multiple banks by itself would have precluded such a development, unless they closely

[26] "I cambiamonete impegnano ne' Banchi le monete forestierie, ed aspettano il tempe, onde si avanzi l'alaggio a loro profitto; e sovente è accaduto, che tali pegni per esser bassato l'alaggio, o altro, si sono trovati di minor valore della somma prestatavi, a danno de' Banchi." He further cites the case of one Leonardo Perillo who left Popolo with a large quantity of thalers.

[27] There is the possibility that the balances frozen on the *libri dei due terzi* were discounted, but they were eventually redeemed.

coordinated their discounting policies.

5 Conclusion

The Neapolitan banks were, as a group, a sizeable banking system, on a par with the largest public banks of the time, and served many of the purposes that were sought by the creators of other public banks. Collectively I see them as a special case of early public banks, all the more interesting because they arose organically rather than by design, and because compared to their peers they were successful and innovative, in spite of a difficult environment. Contrary to many others they were never intended to adhere to a "narrow banking" view of banking, and invested in a variety of private and public securities. They nevertheless proved robust to a variety of adverse events, in part due to a conservative approach to their balance sheet, learned the hard way during the crisis of 1622.

Reading the history of early public banks, one might be tempted to find a certain necessity in their creation by government authorities. In Naples the public banks emerged out of civil society and displaced private bankers, in spite of the State's occasional misgivings. Nor was narrow banking an indispensable component. The crisis of 1622 altered their portfolio strategy, but I (provisionally) see them drawing precautionary lessons from an external shock rather than from their own alleged excesses. Several factors were likely behind this success: the religious or charitable purpose of their owners, their governance structure, their informal risk-sharing arrangements or policies of judicious forbearance toward each other, and their independence with respect to the representatives of a distant monarch. They also proved themselves useful, if not indispensable, to the economic life of Naples and as such came to be (after some initial misgivings) respected and protected by the viceroys, who nevertheless used them as source of funds, albeit not a large one compared to the overall size of the debt. The bail-out of 1622 also shows how the State had come to accept the banks as an important pillar of the financial system, even if it had not created it or designed it as such, and relied on them to provide the same services as in Genoa, Venice, or Amsterdam. As such they found the "gentlemanly distance" between State and Bank that often proves elusive. Perhaps because of their relative autonomy, the banks were also more financially creative than their peers, even if it often meant skirting or even crossing regulatory limits.

One can still ask: does it matter? A resilient banking system, an efficient retail-oriented payments system with circulating notes and inter-bank clearing, a relatively stable price level, did not put Naples at the vanguard of economic development. The successful early banks were Amsterdam in the seventeenth century and England in the eighteenth century, but those were also the most successful economies, and which way causality runs is unclear. At a minimum, the Neapolitan experience sheds light on the preconditions for successful banking, and suggests that financial development is not a sufficient condition for economic success.

Appendix 1: The Crisis of 1622

The crisis of 1622 is characterized by a sharp depreciation of the Neapolitan currency, measured both by foreign exchange rates and domestic prices.[28] The crisis was compounded by the monetary reform, essentially a recoinage, which resulted in a sharp deflation and large losses for holders of cash or claims to cash (bank depositors). The causes of the crisis, and in particular the possible role of the banks, are still debated. Part of the difficulty is that the depreciation of 1621–22 was the result of a long-standing state of affairs.

In early modern European states such as Naples there was a variety of monetary objects: gold coins, large and small silver coins, billon (low-grade silver) and copper coins. The relative prices of these objects could and did vary, as did their prices relative to domestic goods or to foreign coins. In addition domestic prices and foreign exchange quotations usually involved units of account, and one needs to know to which coins the units were tied. Price movements could be due to a variety of causes. Some were exogenous, such as changes in the relative price of gold to silver or scarcity of one denomination. Some were the results of monetary policy, such as changes in the content of coins or the issue of new coins. Monetary policy was itself frequently a response to price movements. Various causes could come into play at different points in time (Sargent and Velde 2002).

I propose here a narrative for the build-up to the crisis; to structure the narrative I use the lens of a monetary model and foreign exchange as a measure of the price level. In essence I see the monetary events from the mid-sixteenth century to the climax of 1622 as classic difficulties with shortages of small change, experienced elsewhere in Europe. In Naples however the government misapplied a classic palliative (debasement) and left the monetary system unbalanced between large and small coins. This, combined with clipping, contributed to unanchoring the price level. External factors, such as movements in money demand or trade deficits, periodically pushed the price level out of its boundaries.[29] The culmination in 1621–22 was extreme because clipping had largely rendered the money stock a fiduciary one, and also because expectations of an impending reform drove down the value of cash (drove up the price level).

The 1622 crisis is highly reminiscent of another episode of unanchored prices, namely the Great Recoinage of 1695 in England (Sargent and Velde 2002, chapter 16). While the 1622 reform proved painful because of the Spanish overlords' stern refusal of debasement (mirroring, from the absolute monarchy's vantage, John Locke's equally stern refusal in 1695), the 1689 reform in Naples was a model that England should have consulted.

The monetary system of Naples

To keep track of monetary policy in a world of commodity money, I use the concept of mint equivalent (ME): for a given coin, it expresses the number of units of account per

[28]See the contribution by Costabile and Nappi in this volume; Parrino (1770, 365–75), Caputo (1878), and Palermo (1846, 237–41, 287–95) for seventeenth century sources; De Stefano (1940).

[29]Di Somma (1960) sees the same mixture of "technical" and "economic" factors at play.

fixed weight of pure silver.[30] Different coins may have different mint equivalents. When all coins are "full-bodied" the mint equivalents coincide.

As elsewhere in Europe one must distinguish the unit of account from the actual coins (gold, silver, copper) used as medium of exchange.[31] The unit of account in Naples was the ducat (*ducato corrente* or *del regno*), divided into 5 tarì or 10 carlini, and the carlino further divided into 10 grani. Accounts were usually kept in ducats/tarì/grani.[32]

The unit of account was tied to silver coinage, specifically to the silver carlino and its fractions: the half or *mezzo carlino* (later derisively called the *zannetta*) and the quarter carlino or *cinquina* (worth 5 tornesi, hence its name). The carlino had been the mainstay of Neapolitan coinage since its introduction by its namesake Carlo I in 1278, and its weight, after being raised in the early 14th century in response to a depreciation of silver, had remained roughly constant while its fractions were frequently temporarily debased in order to finance wars (Dell'Erba 1932, 1933, 1934). In the first half of the sixteenth century, under Spanish domination, the carlino's weight was reduced several times in response to increases in the market price of silver (in 1510, 1533, 1542, 1552, and 1554). These adjustments were small: cumulatively, the ME was increased by 21% to 11.54 D/lb pure silver.[33]

Circulating media consisted of gold, silver, and copper. Gold and silver play little role here. The gold coin was the *scudo d'oro*, whose content was virtually[34] unchanged from its first appearance in 1538 to the mid-seventeenth century, during which period it was infrequently minted and mostly treated as a trade coin domestically.[35] Gold coins were minted from 1622 to 1629 and circulated, but then minting stopped until the mid-eighteenth century. Likewise copper, which was at the same time the key to inflations in Spain and in Germany, can be ruled out of the list of suspects.[36]

Among silver coins, the large denomination (the Neapolitan equivalent of the German thaler or Spanish piece of eight in Spain) was the ducato, worth 10 carlini, and its fractions were the half ducato or *cianfrone* (5 carlini), the tarì (2 carlini). All contained an amount of silver exactly proportional to their value in terms of the carlino, as did the fractions of the carlino as of 1554. In brief, then, we start from a full-bodied silver standard in 1554.[37]

[30] If a coin has face value n, weight w and fineness (*lega*) f, the ME is $n/(wf)$.

[31] I rely on Turbolo (1629), Vergara (1716), and Cagiati (1911) for coin specifications. Dell'Erba (1932, 1933, 1934, 1935) provides an excellent overview of Neapolitan coinage from the 13th to the nineteenth century, although it needs to be complemented on some details with Bovi (1989).

[32] These units derived from actual medieval gold coins (the tarì, the Venetian ducat) and silver coins (the Angevine carlino and denaro regale) and exchange rates set between them in the early 14th century. The exchange rates eventually ceased to correspond to actual rates in the market, but they remained as imaginary units of account or "ghost monies" as elsewhere in Italy.

[33] This corresponds to 10.72D/lb of standard silver. The *libbra reale*, in use for coins, was 320.76g. The standard fineness for silver coinage since Carlo I was 11.15/12 or 92.9%. As of 1554 the carlino contained 2.8g of fine silver, the equivalent of 5.5d in English money or 5s in French money, therefore a rather small coin, roughly a day's wage (Faraglia 1878, 165, 186).

[34] The fineness was slightly increased, from 22c to 22.125c, between 1623 and 1629 (Dell'Erba 1933, 9).

[35] It was officially rated in terms of the unit of account, but adjustments were rare: 11 carlini in 1538, 11.5 in 1543, 12.5 in 1573, 13 in 1582. Moreover, gold coins were usually not included in the penal laws against buying and selling of coins. The value of the scudo was raised to 15 carlini in 1622 (Bovi 1965–1966, 23), resulting in some minting from 1622 to 1629, and leading the public banks to open deposits denominated in gold coins (Di Somma 1960, 63–64).

[36] Copper coinage, introduced very early in Naples relative to the rest of Europe, was minted at intrinsic value plus costs throughout the period. The rise in the ME of copper coinage by a third in the early 1620s, reversed in 1626, was due to the Europe-wide rise in copper prices rather than any attempt at earning seigniorage which remained minimal (Bovi 1967, 6–7, 10–12, Bovi 1965–1966, 19–22).

[37] In 1572–73 there was a brief issue of grani (1/10 carlino), of reduced weight and fineness (ME = 12.26), but

A lens

In the model of Sargent and Velde (2002) the mechanics of the supply of coinage are straightforward when there is only one coin (or all coins are full-bodied). The mint equivalent, defined above, and the mint price (MP) at which the government mint buys silver to convert it into metal put upper and lower bounds on the (inverse of the) domestic value of money. If money becomes too abundant, this inverse rises and when it reaches the mint equivalent there is an incentive to melt the domestic currency and either hoard or export the metal. If it is too scarce, the inverse falls to the mint price and it becomes profitable to dishoard or import silver and have it minted into domestic currency. Nonmonetary factors can make the value of money oscillate between these two bounds. If there are several coins with different mint equivalents, then there will be different melting points, with the "heavier" coins (lower mint equivalents) melted first.

If there is alteration of the coin, through wear or clipping, such that the coinage consists of a mixture of heavy and light coins, the same applies: as the value of money falls, prices rise, the heavier coins are melted first, and the population of circulating coins gradually appears to become worse: this, in effect, raises the melting point above the official ME. In addition, clipping may be endogenous and become more intense, as a form of "partial melting" of coins. The key assumption for these mechanics is that coins circulate by tale, that is, worn or clipped coins are accepted at the same value as full-weight coins. In fact, circulation by tale was prevalent in Naples despite repeated prohibitions, even as clipping became worse.[38]

Multiple coins adds complications: the mint price and mint equivalent continue to impose bounds on the value of money, but coin by coin. Misalignment of these bounds can result from movements in the relative price of metals, if coins are of different metals (silver and gold). They can also result, for coins of the same metal, from relative scarcity (Sargent and Velde 2002) which will change the exchange rate between coins. They can be cured by adjusting the mint equivalent of the coin in scarce supply so as to induce (or make more affordable) renewed minting of that coin. But mis-aligned bounds can result in one coin disappearing completely. I read the decades preceding the crisis of 1622 as displaying these different mechanisms. Shortages of small change prompted an abandonment of the full-bodied system of 1582. Misalignment led to an increasing prevalence of underweight small coins. The government struggled to realign the monetary system with the resulting inflation, evidently under a constraint (political or ideological) not to alter the mint equivalent of large coins. External factors (current account deficits or changes in domestic money demand) occasionally led to exports of metal. Coin clipping offered a mechanism for exporting metal while keeping a nominal money supply unchanged (although increasingly "fiat").

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this seems to have been limited.

[38] Pr. 3 and 5 De Monetis (1552, 1562) ordered that gold coins and silver coins of 1 carlino and higher circulate by weight and made possession of underweight coins grounds for suspicion of clipping. Similar requirements were enacted in 1618, 1620, 1622, 1633 (Pr. 12, 16, 20, 30 De Monetis).

A measure: foreign exchange

There is a long tradition (De Rosa 1987, 71) of using foreign exchange rates as an indicator of economic activity, the "true barometer of trade" in the words of Dutot (1738, 1:10). Modern economic analysis offers no grounds, either theoretical or empirical, to do so. But foreign exchange rates can be a good way to detect certain monetary phenomena, and was certainly followed closely by contemporary observers such as De Santis, Turbolo, and Biblia (Fornari 1882; De Rosa 1994).

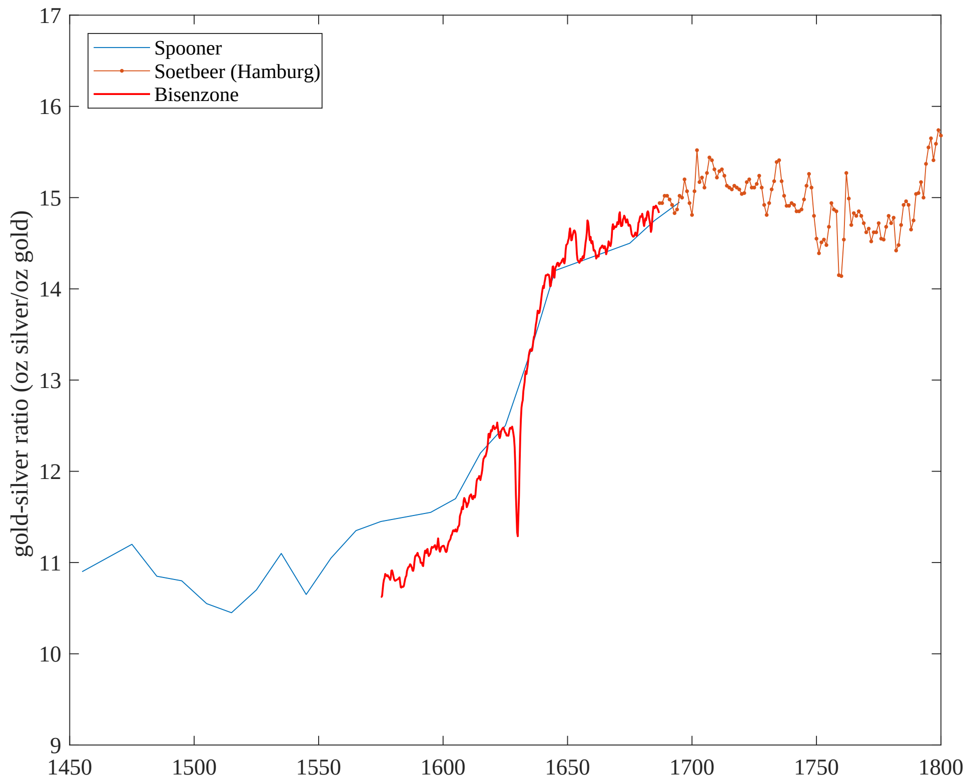

Figure 6: The gold silver ratio in Europe. Sources: Soetbeer (1879) and Spooner (1972) and data in Da Silva (1969) (see text).

This is what I do here, but keeping in mind that foreign exchange quotations often priced either gold coins or units of account essentially tied to gold. This was particularly true of the "Bisenzone fairs," quarterly financial markets held in northern Italy throughout this period. The gold-silver ratio, which had been stable since the 14th century, started changing in the second half of the sixteenth century and changed dramatically in the first half of the seventeenth. Figure 6 plots several measures of the gold-silver ratio.[39] The figure suggests that much of the movement in raw exchange rates could be due to the Europe-wide depreciation of silver relative to gold. Even astute contemporary observers failed to appreciate the importance of the phenomenon.[40] To avoid this problem I will use

[39]The widely used annual series of Soetbeer (1879) is based on the Hamburg price of a standard gold coin, but starts in 1687. Spooner (1972, 21) plots a decennial series, presumably some kind of European average of legal ratios, without sources. Based on the observation that the quotations at the Bisenzone fairs in Da Silva (1969) are mostly silver-based currencies against the gold *scudo di 5 stampe* I extracted a common index for 1575–1687, which fits well, except for the sharp spike in 1630 due to a financial crisis at the fairs and to be ignored.

[40]Thus Turbolo (1629, 13) could posit that "le monete di argento con le monete di oro hanno stabilita proportione e giusta convenienza fra esse, da antichissimo tempo ordinata & osservata" just when it ceased to be

a foreign exchange rate that quoted a foreign silver coin in terms of Neapolitan ducati.

The build-up of a crisis

De Rosa (1987, 95) says that the documents are silent on monetary matters until 1565, but in fact the 1552 devaluation is explicitly linked to a rise in the price of silver abroad (in Germany, Italy, and Sicily) and the need to raise the MP from 10D to 10.5 D/lb of standard silver (Pr. 2 De Monetis, Vario 1772, 7:250).[41] A few months later another law prohibited payments by tale and possession of underweight coins, the first in a long series of such laws.[42]

Difficulties arose again a few years later due to "mancamento della moneta piccola," and in response in 1572–73 small denominations were coined in billon (Dell'Erba 1934, 62) and in copper (Dell'Erba 1935, 109–11).[43] Additionally, in 1580 Spanish silver was minted on government account into 100,000D of cinquine (Dell'Erba 1934, 63) and from 1581 silver imports were minted into cinquine, carlini and tarì De Rosa (1987, 95). Ultimately, however, the response was different. The value of the gold coin was raised in February 1582 but, for silver, instead of adjusting the complete set of denominations, in 1583 the viceroy only changed the intrinsic content of the smallest silver denominations (the $\frac{1}{2}$ and $\frac{1}{4}$ carlino), which were overvalued by a modest 8.2% (ME = 12.50 D/lb). A sizeable quantity of 400,000D of Spanish reals were minted into the new fractions (Bovi 1951). They continued to be minted alongside the full-weight coins until 1609 (Dell'Erba 1934, 68).

period	denominations (carlini)	lb alloyed silver	value (D)	ME D/lb fine
1599–1602	0.5	131,091	1,520,655	12.50
1609–1611	0.5	27,352	317,281	12.50
1609–1610	5, 2, 1	144,606	1,547,736	11.54
Dec 1611– Sep 1614	0.75	225,510	2,616,370	12.50
1617	12, 6, 4	9,315	110,162	13.43
1618–May 1620	1.5	124,405	1,599,489	14.06
1620-Jan 1622	1	61,773	794,255	15.70
1622–1628	10, 5, 2, 1	356,118	3,853,209	11.64

Table 4: Silver coinage at the Naples mint, 1599 – 1628. Source: Turbolo (1629, 41–43).

Figure 7 represents the mint equivalent in Naples, based on the narrative of the previous section. Before 1583 the monetary system is summarized by the mint equivalent of 11.54, since all silver coins are full-bodied. After 1583 the mint equivalent of the large coins is shown with a dotted line, while that of the carlino fractions is the solid line. To this I add the exchange rate on Florence, expressed in the same units as the mint equivalent.[44]

true.

[41] The ME was raised by almost the same amount, 0.48 D/lb standard silver, leaving seigniorage unchanged.

[42] Pr. 1 De Monetis, a law of 1521, prescribed the death penalty for coin clippers.

[43] The grano (1/10 carlino) was itself divided into 2 *tornesi*, 6 *denari* or 12 *cavalli*. The copper denominations at the time ranged from 1 to 3 *cavalli*. The attempted billon coinage consisted of 1 and 1/2 *grano* (12 and 6 *cavalli*). In 1573 a new *tornese* coin was introduced.

[44] The rate on Florence was quoted as ducats per *scudo d'oro*, a unit of account tied (despite its name) to the silver currency: the scudo was worth 7 lire, the lira itself a unit of account tied to silver coins, specifically the

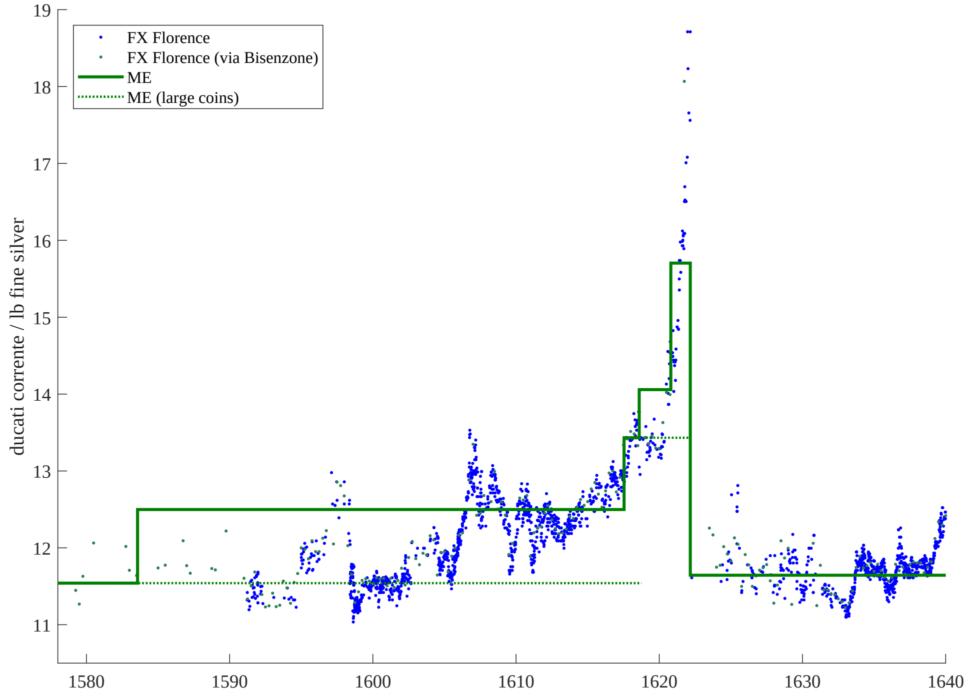

Figure 7: Mint equivalent of Neapolitan coinage and exchange rate on Florence (1575–1645). Sources: De Rosa (1955a) and Da Silva (1969) for foreign exchange, Turbolo (1629), Vergara (1716), and Dell'Erba (1934) for mint equivalent.

The figure shows that the debasement of the carlino fractions did not have a visible impact until the mid-1590s. During this period the government regularly imports Spanish silver for minting (De Rosa 1987, 95–97). The first rise in exchange rates occurred from February 1597 to April 1598, prompting a first government intervention (De Rosa 1955a, 37). Traders refuse to trade (Feb 1597) (Palermo 1846, 221) (Di Somma 1960, 22) on banking crisis. Exchange rates then fell back to the mint equivalent of large denominations, suggesting that those that were minted during that time (Dell'Erba 1934, 66–68) circulated. Problems arose again: in June 1604 a law prohibited banks and money changers from sorting heavy and light coins and from buying and selling domestic or Spanish silver coins at a price different from the legal price.[45] Soon after exchange rates rose steadily from July 1605 to July 1606, possibly aggravated by ongoing grain shortages (Palermo 1846, 260, 264, 66) and stayed above the mint equivalent of the carlino fractions until May 1609, with a peak in September 1606, exactly when a contemporary source notes that large coins were being melted and coined into carlino fractions (Palermo 1846, 265).

This second crisis prompted two government reactions. The first, spurred by the proposals of Marcantonio De Santis, was based on the notions that rising exchange rates were a cause rather than a consequence and that they could be legislated. From these notions simple policy recommendations followed, and they were implemented by Viceroy Benavente: the exchange rates for Florence, Rome, Milan, Venice, and Sicily were capped by

piastra rated at 7.5L since 1554 and whose content (Carli Rubbi 1754–1760, 1:323) was unchanged. To supplement the series in De Rosa (1955a, 163–227) I use the rates at the Bisenzone fairs (Da Silva 1969), combining the rate from Naples to the fair with the rate from the fair to Florence.

[45] Pr. 7 De Monetis (Giustiniani 1803–1804, 7:257).

law and exchange with Lyon was prohibited. The caps were based on the mint equivalent of large coins (the dotted line in Figure 7), hence were well below market rates. The law entered in force on September 10, was soon found to be unworkable, and was suspended on November 8 to be replaced with a system of weekly fix of exchange rates by government-appointed merchants. The suspension, initially for a year, was extended and then made permanent in June 1609 (Pr. 2–4 De Cambis, Giustiniani 1803–1804, 89–96).

Having learned something from the experience, the government tried to tackle the cause (the monetary system) rather than the consequence (exchange rates). In June 1609 Benavente stated that "most of the coinage is underweight and clipped . . . which has resulted in an alteration in the price of all things, disorders in exchange rates, and difficulties in trade" and ordered a recoinage of all underweight coins of 1 carlino and above at a mint price of 11.27 D/lb fine silver.[46] The zannette and cinquine remained legal tender for payment up to 50 ducats and were allowed to circulate in whatever condition (Pr. 8–9 De Monetis Giustiniani 1803–1804, 258–65). In spite of placing the loss of underweight coinage and of recoinage on the owner (and on the banks in the case of their reserves), the reform was not without effect: we see the exchange rate falling from June 1609 to almost 11.5 by August 1609, and Turbolo's figures (Table 4) show that 1.5m D were recoined.

For the next few years we see the exchange rate oscillating between the melting point of large coins and the melting point of small coins; in February 1611 the former is reached for the last time. During this period a very large amount of small coins were minted.[47] From about mid-1614, however, something changes. The exchange rate climbs above the melting point for small coins and stays about 3% above. I read this, along with contemporary reports of clipping, as evidence that clipping had raised the effective ME was above the green line in Figure 7.

The next policy response, in July 1617, was to abandon the ducato coin as standard. The new system innovated in two ways: the large denominations were based on a duodecimal system (the new coins were valued at 4, 6, and 12 carlini) at a lower fineness than the medieval standard of fineness ($11.15/12$) in use until then (Dell'Erba 1934, 71–74). The resulting mint equivalent (ME = 13.43) was 7.5% higher than the official mint equivalent of the zannette, hence comfortably above the current exchange rate. At the same time the old ducati and half ducati were revalued by 5%.[48] According to Turbolo's numbers very few of these new large coins were in fact issued. Within a year, in July 1618, the mint price was raised to the mint equivalent of the large coins, and a new denomination was issued at a face value of 1.5 carlino (15 *grani*) at a higher mint equivalent (ME=14.06), 4.7% higher than the new large coins. Large quantities of this new denomination were minted (Table 4) as the exchange rate fluctuated around the mint price, and clipping apparently abated.[49]

[46]The original edict ordered the recoinage of all coins, but a few days later full-weight coins were allowed to circulate.

[47]These were $3/4$ carlini pieces or *tre cinquine* (Turbolo 1629, 36, 42, Bovi 1967, 9–10.

[48]On September 30 the "dalleroni" (presumably the ducati) were revalued at 10.5 carlini and on October 6 the cianfroni (half-ducati) were revalued at 5.25 carlini (Palermo 1846, 524), although this was reversed a year later (Pr. 12 De Monetis, Giustiniani 1803–1804, 7:267.

[49]In Francesco Zazzera's diary (1616–20), there are sixteen mentions of counterfeiters or clippers being apprehended or executed between October 1616 and July 1618, but only two mentions between July 1618 and March 1620 (Palermo 1846, 490–570).

But from June 1620 the exchange rate rose above the mint equivalent of the 15-grani pieces and minting stopped.

In response the government issued a new series of small denominations (1 and 2-carlini coins) in August 1620 at an even higher mint equivalent (ME=15.70).[50] The use of mechanical presses imported from Germany gave the government some hope that the coins, more consistently struck, would be less prone to clipping[51] and a new cap was placed on foreign exchange rates (Pr. 15 De Monetis), but very little of the new coinage was issued. In April 1621 the minting of below-standard coins (effectively all types issued since 1617) was halted (Bovi 1965–1966, 19), but the horse had bolted. From May 1621 the exchange rate rose inexorably again, followed by the predictable raft of new laws increasing penalties for clippers, supervising jewelers and money-changers, and offering rewards for informers (Pr. 17–19 De Monetis).

By now some wholesale reform of the coinage was necessary, and it fell to the new Viceroy, cardinal Zapata since December 1620, to carry it out.[52] The fundamental principle of the reform was a return to the old standard of 1554 (ME = 11.54D), hence a nominal deflation of 26.5%. Since the existing coinage was on a different standard, and more importantly in terrible condition, a recoinage was necessary. This could be done two ways: recall the existing coinage and transform it into new coins, with the disadvantage that the slow process would deprive the city of circulating medium; or else borrow enough silver to produce a new coinage in advance and proceed with the exchange. The Viceroy had chosen the second method and arranged the import of three million ducats' worth of silver through three Genoese merchants in September 1621, but the work of coining was far from completed.[53] The Viceroy's plans were further disrupted because the reform became widely anticipated. As early as September 1620 his predecessor had begun consultations with merchants (Palermo 1846, 283) and by July 1621 the disruptive effect of expectations prompted him to make this remarkable statement:

> We understand that in this realm there are many difficulties in trade because the rumor has arisen that in the reform of coinage which the public good requires, only those holding money in cash or in the banks will suffer a loss. And for this reason, those who have goods to sell are reluctant to sell them and buyers, wanting to spend their bad coins, alter prices. And since our intention is not and never was that the cost of said reform should be born only by those who have cash or bank balances, but rather, since the benefits will be for all, so the cost should be born by all . . . we declare our intention and make it known to all, so that any one can negotiate freed from such reasonable doubt, buying and selling with the current coins without fear of loss, as we assure

[50] A 4-carlini coin was also planned but not issued.

[51] In Pr. 16 De Monetis (24 Aug 1620), the Viceroy said that "we have had them struck such that clipping would become obvious" (Giustiniani 1803–1804, 7:171); see Prota (1914, 18) for the German machines, presumably screw presses, installed in 1619.

[52] See Brancaccio (2014, 38–43) for some of the consultations carried out by Zapata, also reflected in the opinion of Biblia (1621).

[53] Di Somma (1960, 51) says that only a third of the silver was delivered, and suggests that it was not minted at the correct standard.

> them (with our word and faith and that of the king) that they will not suffer a greater loss holding said coins than not holding them.[54]

This promise earned him the displeasure of the court in Madrid, but Zapata defended it by appealing to the precedent of Benavente's 1609 edict giving full legal tender to the underweight coins (Caputo 1878, 94–96). But the extraordinary rise in foreign exchange in late 1621 and early 1622 seen on Figure 7, coupled with bad weather hindering food deliveries to the city, forced Zapata to rush the reform.

Zapata's July declaration makes clear how he intended to deal with the costs of reform implied by the Spanish court's demand that the old standard be restored (Palermo 1846, 289). When the reform was announced on 2 Mar 1622, however, the government had neither the resources to compensate the coin holders, nor even the new coins to exchange for the old. The effective money supply was essentially destroyed overnight. The $1/2$ and $3/4$ carlini coins were immediately demonetized in Naples (they were eventually bought by the mint as bullion), and elsewhere allowed to circulate by weight at 10D/lb. The only relief given to money holder was an exchange at face value of old coins for new coins limited to 1.5D per household (Tortora 1890, 180). The coins minted between 1617 and 1620 remained legal tender but at a lower face value in accordance with the restored standard, as were Spanish and Italian large silver coins (the equivalents of the ducato) and their fractions. The law also placed a forty-day moratorium on all debts (sixty days outside Naples and its province).[55] From January 1622 to March 1623 a total of 3.5m D in new coins was minted from withdrawn coinage and imported silver.

Foreign exchange reacted within days of the reform, as did prices.[56] The impact of the deflation and the disruption to the payments system was apparently severe (De Rosa 1955a, 55, De Rosa 1987, 138) in contrast to the relative prosperity of the inflationary years before 1622, a contrast summarized by Turbolo (1629) as "seven lean years" after "seven fat years."

[54]"Havemo inteso che per questo Regno corre molta difficoltà nel negoziare, per la fama ch'è insorta di che nell'accomodazione e riforma (a che per pubblico benefizio si attende) delle monete, habbiano da sentire danno solo quelli che tengono monete contanti o nelli banchi. E che, particolarmente per tal causa, quelli che tengono robe di mercanzie e comestibili da vendere, sono renitenti al vendere e quelli che vanno comprando ritrovano difficoltà, e per la volontà che tengono di spendere le monete di mezzi carlini e tre cinquine, di mala condizione, alterano li prezzi. E perchè non è stata nè è nostra intenzione, che il danno che ri sultasse dalla detta accomodazione e e riforma di monete, debba sentirsi solo da quelli che tengono il denaro contante o nelli banchi; ma che così come il beneficio sarà generale debba sentirsi ancora generalmente il danno; . . . dichiarando detta nostra intenzione, la faccino nota a tutti, acciò ogni persona possa negoziare con la sicurezza da tal dubbio, che è di ragione, comprando e vendendo con le monete correnti, senza timore di perdenze in particulare, assicurandoli sub verbo et fide regis atque nostris che non sentiranno maggior danno tenendo dette monete che non tenendone" (Tortora 1890, 179).

[55]Bills of exchange were made payable only in new domestic or Spanish coins, but a few months later payments with foreign coins or in bank were allowed (Pr. 20 De Monetis, Pr. 7 De Literis, Giustiniani 1803–1804, 101, 277–80).

[56]On foreign exchange, March 5: "li cambi sinora particolarmente fanno una gran calata: che dove per Venezia si faceva a cento cinquanta, si riduceno del pari"; on prices, March 4: "Della rinnovazione di queste monete si veggono veramente effetti stupendi; perché tutte le cose sono abbassate di prezzo per metà , massime le comestibili : delle quali si pativano gli ultimi bisogni ; et adesso se ne abbonda. Perché in sustanza ci erano, ma stavano nascoste" (Palermo 1846, 238, 293).

The missing crisis: the 1689–91 monetary reform

As counterpoint to the crisis of 1622 I see the monetary reform of 1689–91 as nearly exemplary (Filangieri 1940, 98–108, Balletta 2008, 90–94).

By the 1660s difficulties with small change were once again apparent: in 1669 the government was prohibiting a "false" carlino of unknown origin circulating in Naples[57] and in 1675 raising the legal tender values of gold and large silver coins (Pr. 37 De Monetis, Giustiniani 1803–1804, 7:299). The Viceroy decided to reform the coinage exactly as had been done in 1622, but was dissuaded by the more mindful of history among the city's representatives. When the marquess de Carpio arrived as Viceroy in 1683 he devised a better plan. First he availed himself of the latest minting technology: mechanical screw-presses replaced hammering, and engravings on the coins' edges would at last defeat clipping.[58] Instead of returning to the old standard he decided to issue new, full-bodied coinage at the then-current price level. He also levied in advance new taxes to absorb the costs of recoinage and enrolled the banks into his plans years in advance. This careful planning based on sound principles contrasts favorably with the chaos that reigned during England's own recoinage a few years later.[59]

He died in 1687 before the reform was finalized, and his immediate successor may have rushed the reform in January 1689 before enough coins had been made, issuing the coinage at a higher than planned face value. This necessitated a brief bank suspension and, for three months, the banks' circulating liabilities were made legal tender. Another rise in the price of silver forced a second increase in face values and a new coinage in 1691.[60] Neapolitan coinage remained abundant and stable for decades thereafter (Figure 8, which extends Figure 7 to 1722).

Perhaps the viceroy was also mindful of history, and of the 1622 bail-out, when he decided that the capital gain made by the banks when their cash balances were increased 20% in nominal value in January 1691 would be turned over to the State (Tortora 1890,

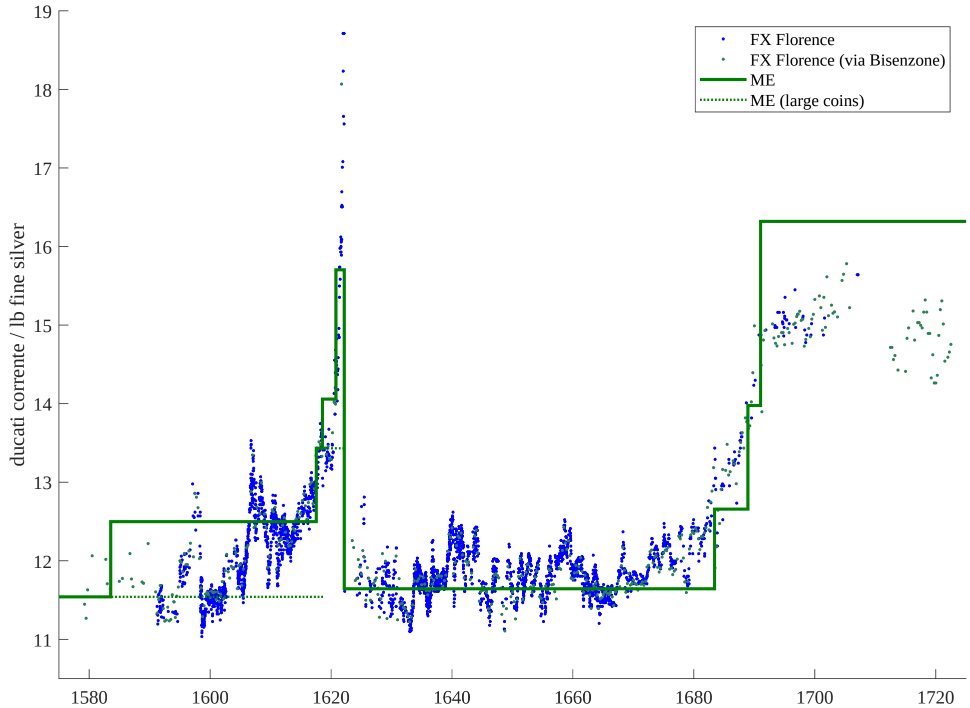

Figure 8: Mint equivalent of Neapolitan coinage and exchange rate on Florence (1575–1722). Sources: De Rosa (1955a) and Da Silva (1969).

227, Balletta 2008).[61]

Appendix 2: Prices

I have not found an index of prices for Naples to cover the whole period. Instead, I have assembled various price series (Coniglio 1952; Monziani et al. 1966; Sartorelli et al. 1967; Romano 1965) and computed an index using an unobserved common factor model, as in Velde (2009). The idea is to capture movements that are common to all the price series. It is therefore not based on a basket of goods with weights derived from budget data, and is not intended as a cost-of-living index, but as a measure of inflationary trends. Not having to find weights is a practical advantage. Another potential advantage is that price controls are less of a problem, to the extent that they produce level effects as suggested

[57] The mysterious coin with "three fleurs-de-lys on one side and a woman's head on the other, worth only 40%" (Pr. 36 De Monetis, Giustiniani 1803–1804, 7:299) turns out to have been minted by entrepreneurial Genoese families which happened to possess feudal rights to run mints in their baronies (Olivieri 1865). See Sargent and Velde (2002, 30-31, 66–67) on invasions of foreign coins as symptoms of small change shortages and on similar instances of entrepreneurship.

[58] 'Milled edges" were a very recent invention (Cooper 1988, 102). Interestingly, Biblia (1621, 6) had proposed to include concentric circles on the face of coins, marked with decreasing face values as the circle became smaller. This rare instance of money bearing a negative nominal rate of return was actually struck in 1624 (Cagiati 1911, 3:239).

[59] The marquess de Carpio was not only a good policymaker: he may have commissioned the Rokeby Venus from Velásquez and thereby earned our eternal gratitude.

[60] Ironically, the 1683 coinage was the first to systematically bear indications of face value, expressed in grani: the ducato issued in 1683, marked 100 gr, was raised to 110 in 1689 and to 132 in 1691; the 1689 ducato was raised from 100 to 120 in 1691. The willingness to raise the face value of the whole coinage, which Di Vittorio (2009b) sees as the symptom of a failed reform, is precisely what differentiates it from the 1622 reform.

[61] Likewise the capital gain made by the Federal Reserve Banks during the 1934 devaluation of the US dollar was turned over to the government.

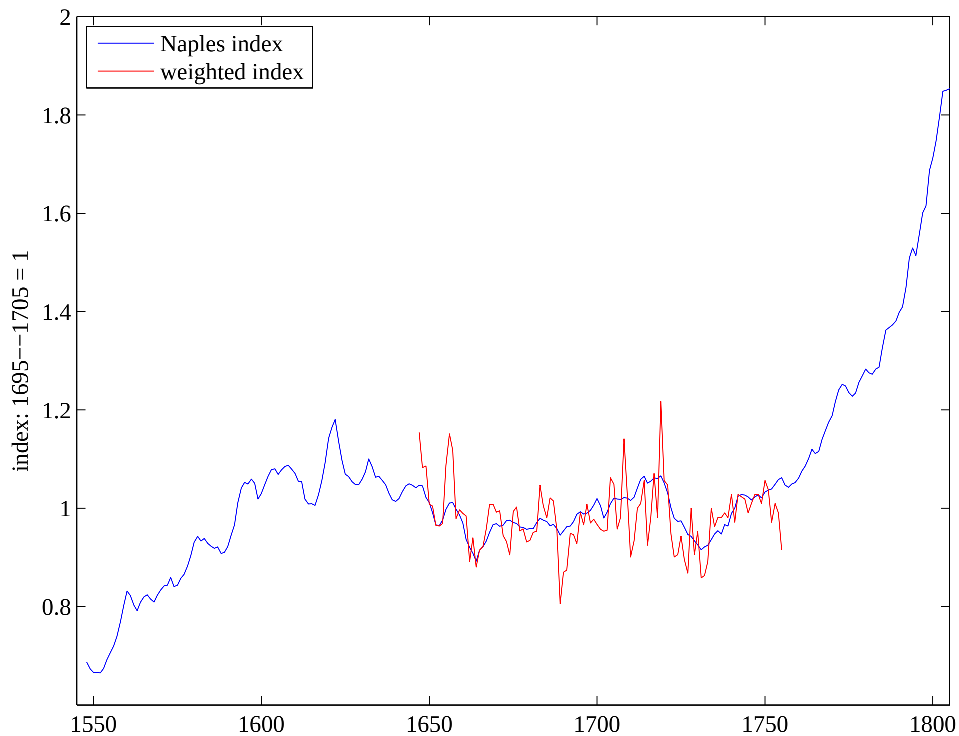

Figure 9: Sources: Coniglio (1952), Monziani et al. (1966), Sartorelli et al. (1967), and Romano (1965).

by the figure in Calabria (1991, 34). That is, the price of grain in Naples was permanently lower than in Bari due to subsidies, but it followed the same movements.

Figure 9 compares the index I have extracted with the weighted indices of Monziani et al. (1966) and Sartorelli et al. (1967). The figure shows that my index captures the underlying movements in inflation as the weighted indices do, without the legibility problems created by highly volatile (but heavily weighted) grain prices of a cost-of-living index.

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