

Exploring the market for government bonds in the Dutch Republic (1600-1800)¹

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Introduction

One common characteristic of Europe's most developed economies before the Industrial Revolution – i.e. the Italian city states, the Dutch Republic, and England – was their modernization of public finance. Instead of relying on loans from a small group of merchant bankers, tax farmers, or other magnats, the governments of these states began to sell bonds to a much larger crowd of savers. The earmarking of future tax revenues for interest payments on these loans, combined with the transferability of bonds issued, created a funded public debt. In 1967 Peter Dickson coined the term *financial revolution* to describe the fundamental transformation of public debt management in England after the Glorious Revolution (1688).² Once the new king, William of Orange, had credibly committed to servicing the crown's debts, claims on

¹ We are indebted to Irene Mangnus, Kirsten Hulsker, Jaco Zuijderduijn, and Heleen Kole for excellent research assistance. Our analysis of the asset management of Amsterdams *Burgerweeshuis* builds on the MA Thesis of Irene Mangnus on this very subject. Maarten Prak let us use his research notes on Leiden's political elite in the eighteenth century. Jan Lucassen and Piet Lourens shared their data on the property of Dutch guilds in 1799 with us. We thank Marjolein 't Hart, Larry Neal, and Jeremy Atack for comments on an earlier draft of this paper.

² Dickson 1967

the government became more secure and investments in public debt soared.³ Since Dickson published his work, similar changes in public finance have been documented for the Dutch Republic between 1540 and 1620, and for Venice, Genoa, Florence, and several other Italian cities as early as the late thirteenth and fourteenth centuries.⁴

Economic historians have argued that the emergence of large-scale public borrowing in pre-industrial economies stimulated economic growth in at least two ways.⁵ One explanation has focused on the underlying regime change that led the central government to commit to secure property rights for private entrepreneurs.⁶ However, a comparison of interest rates between countries under different political regimes does not reveal a systematic difference in the price of credit.⁷ What is more, long-term trends in English interest rates do not reveal a direct impact of any of the country's political regime changes on private credit markets.⁸ In the first few years after the Glorious Revolution private interest rates in England actually rose, simply because the government's demand for funds crowded out private borrowers.⁹

However, as Steve Quinn has stressed, more secure property rights or better economic

³ Evidence for the claim of North & Weingast (1989) that the Glorious Revolution contributed to more secure property rights in general is harder to get by. Clark (1996) and Epstein (2000) used interest rates from various countries over longer time periods to show that changes in early modern politics did not affect private lending.

⁴ On the Dutch Republic: Tracy 1985; Müller 1997; 't Hart 1989; 't Hart et al. 1997; Fritschy 2003); For the Italian city states: F. Lane and R. Müller, *Money and Banking in medieval and Renaissance Venice. Vol. II. The Venetian money market. Banks, panics, and the public debt, 1200-1500* (John Hopkins: Baltimore 1997); Luciano Pezzolo, "The Venetian Government Debt 1350-1650", in: Boone, M., K. Davids, and P. Janssens, eds. *Urban Public Debts. Urban Government and the Market for Annuities in Western Europe (14th-18th centuries)*, Turnhout: Brepols 2003, 61-74; Ibidem, "Government debts, markets and institutions in early-renaissance Italy: between choice and coercion", paper presented at the XIVth World Economic History Congress, Helsinki, August 2006; URL: <http://www.helsinki.fi/iehc2006/papers3/Pezzolo.pdf>, viewed 6 December 2006.

⁵ A broader interpretation of financial revolutions holds that they implied the creation of modern financial systems, which included not just a funded public debt, but also a stable currency, a banking system, the establishment of limited liability companies, and active markets for company shares and government bonds. (Sylla 2002).

⁶ (North & Weingast 1989).

⁷ Epstein 2000)

⁸ Clark 1996; Sussman & Yafeh (2006)

⁹ (Quinn 2001). Evidence for a later period provided by Temin and Voth (2005)

prospects created by a new political regime, will only lead to lower interest rates on the private market if the supply of funds can keep up with demand.¹⁰

This paper is concerned with a second connection between the development of public and private capital markets. The active secondary market for public debt that emerged in the first half of the eighteenth century in England turned government bonds into an attractive collateral for loans. Borrowers benefited because they could now transform a very secure store of wealth into cash at any point in time. The use of shares of the Bank of England, the colonial joint-stock companies and Consols (after 1740) as collateral also increased the supply of capital. For granting lenders the right to foreclose the collateral in case of default considerably reduced their financial risks.¹¹ Recent research on public debt management in the Italian city states reveals a similar use of governments bonds by merchants in the sixteenth century.¹² Later developments in other countries confirm the potential benefits. The rise of active security markets in the 1790s marked the beginning of sustained economic growth in the United States.¹³ In France and Germany fundamental changes in public debt management preceded the growth of private capital markets in the nineteenth century.¹⁴

However, it remains to be seen whether a financial revolution was necessary to introduce paper claims as loan collateral. The creation of a funded public debt in the Dutch Republic in the sixteenth century did not lead to the rise of an active secondary market for government bonds. Surely, Dutch entrepreneurs began to use

¹⁰ Quinn 2001

¹¹ Neal 1990; Quinn 2001

¹² Giuseppe de Luca, "Government Debt and Financial Markets: Pro-Cycle Effects in the Economic Reorganization of Northern Italy in the Sixteenth and Seventeenth Centuries", paper presented at the XIVth World Economic History Congress, Helsinki, August 2006; URL: <http://www.helsinki.fi/iehc2006/papers3/Deluca.pdf>, viewed 12 December 2006

¹³ Sylla***

¹⁴ Jonker, Competing in tandem and the literature cited there.

paper claims as collateral for loans, but it was colonial expansion that created the new collateral: the shares of the Dutch East India Company (VOC), founded in 1602.¹⁵ Historians of public finance in the Dutch Republic have argued that an active trade in government bonds began only in the 1780s when excessive public borrowing to finance wars with England and France led to a general loss of confidence in the state's creditworthiness.¹⁶ This apparent lack of a secondary market for government bonds in the Dutch Republic is the more remarkable since the restructuring of England's public finance in the 1680s is often said to have been explicitly modelled on the Dutch example.

According to Larry Neal and others an active trade in government bonds did not emerge in the United Provinces, because of the heterogeneity of Dutch bonds. There were too many issuers, too many types of debt, and no uniformity of conditions. Besides, bonds were rarely secured on specific revenue flows as in France or England, adding to the uncertainty.¹⁷ One might add that many bonds existed only as an entry in the state's ledgers, so it could have been difficult for buyers to know exactly what they bought. If true, the proposition that the Dutch Republic did not have a secondary market for government bonds has profound implications. It would mean that the push which created the secondary market in VOC shares and other, foreign, securities in Amsterdam in the early seventeenth century somehow failed to transfer to the much larger stock of government bonds.¹⁸ The Republic would then have had a dual capital market, one open, dynamic, very sophisticated and forward looking, the

¹⁵ Gelderblom and Jonker 2004

¹⁶ 't Hart et al.; Fritschy.

¹⁷ Homer/Sylla, *History*, 175; Larry Neal, "How It All Began: The Monetary and Financial Architecture of Europe During the First Global Capital Markets, 1648-1815," *Financial History Review* 7 (2000).

¹⁸ On the market for VOC shares: Oscar Gelderblom and Joost Jonker, "Completing the Financial Revolution: The Finance of the Dutch East India Trade and the Rise of the Amsterdam Capital Market, 1595-1612," *Journal of Economic History* 64, no. 3 (2004).

other closeted, slow to adapt, and old-fashioned. In other words, the revolution in public finance hailed by Tracy and others for the Habsburg Netherlands would have remained incomplete. To us, the emergence of a dynamic secondary market is a vital component of such a revolution, for this provides first of all a crucial check on the behavior of borrowers, second the opportunity for lenders to liquidate securities at will, and third a springboard for financial innovation.

The arguments to sustain the proposition that there was no secondary market for Dutch government bonds do not look very convincing, however. First, given the sheer volume of debt circulating, there simply must have been a secondary market. Bonds will be traded, because estates are liquidated, investors go bankrupt and need to sell, and parents transfer assets to their children.¹⁹ Indeed, the legal framework for the transfer of paper claims had been established in the fifteenth century.²⁰ The question therefore is not whether there was a secondary market, but when and how the trade in government bonds became an active and liquid one, sending out signals which officials entrusted with debt management ignored at their peril.²¹ Second, since single issues of Holland province could run into several million guilders it is difficult to see why such uniform issues would not have traded as freely as VOC shares, which after all totaled no more than 6.4 million guilders in all.²² Third, the absence of regular quotes does not necessarily mean that there was no trade. The *Amsterdamsche Courant* only published regular quotes for VOC shares beginning 1723, yet price

¹⁹ Cf. for example announcements in the *Hollantsche Historische Courant* in 1756 and 1764 of public auctions of obligations, term annuities, and lottery tickets. The advertisements gave a short description of the bonds. The full list of items could be picked up in the broker's counting house, as well as in the office of a local notary. *Hollantsche Historische Courant*, 34, 18 maart 1756; 43, 10 April 1764

²⁰ Cf. Zijderdijn, *Medieval Capital Markets*, with references to the relevant literature.

²¹ Tracy and 't Hart have indicated that these securities were transferred in the late 16th and 17th century but they do not provide any clue as to the volume and value of this trade (Tracy, 't Hart)

²² Note that the VOC and WIC shares regularly traded in the Dutch Republic also existed only as subscriptions in the stockholders' registers of these chartered companies (Gelderblom/Jonker, "Completing").

information gathered from notarial transfer deeds and affidavits shows that there was a keen market throughout the 17th century.²³

The aim of this paper is to find out when an active market for government bonds first emerged in the Dutch Republic. Was it part and parcel of the financial revolution of the sixteenth century, and simply overlooked in previous studies of Dutch public finance? Was it a seventeenth-century development, instigated by the growing demand for funds that resulted from Dutch attempts to compete with England, France, and Spain in international politics? Or was it indeed a late eighteenth-century addition to the financial system, simply because the government was able to keep a tight rein on the primary market for debt – either because it borrowed from a small circle of trusted lenders only, or because it was able to repay the loans to whichever creditors wanted to liquidate their holdings?

In the following we present the results of preliminary investigations into the market for Dutch government bonds. Section I describes the development of the primary market for government bonds in Holland, and shows that the issuing policy of the States shows the authorities responding to the requirements of the secondary market. The emergence of that market is discussed in two consecutive sections. Section II uses the registration of sales of public annuities by the town magistrates of Gouda and Leyden to construct a series of annual prices for government bonds between 1600 and 1800. To further explore the dynamics of the market, Section III analyzes the portfolio of government bonds by Amsterdam's *Burgerweeshuis* in the seventeenth and eighteenth centuries. Conclusions follow.

²³ Oscar Gelderblom and Joost Jonker, "Amsterdam as the Cradle of Modern Futures Trading and Options Trading, 1550-1650," in *The Origins of Value. The Financial Innovations That Created Modern Capital Markets*, ed. W.G. Goetzmann and K.G. Rouwenhorst (Oxford: Oxford University Press, 2005).

I. The primary market for Holland's debt.

In response to claims about England's Financial Revolution in the eighteenth century, Jim Tracy, Marjolein 't Hart, and other historians of the Dutch Republic have argued that a similar revolution already occurred in Holland in the 16th century, when the Habsburg rulers of the Low Countries started earmarking excise tax revenues for interest payments on annuities and bonds sold to local elites.²⁴ After the Dutch gained their independence from the Habsburg Empire in the 1580s, they rapidly raised the level of indirect tax revenues to fund new issues of public debt.²⁵

The ability of the Dutch Republic to raise money on the capital market was remarkable indeed. The province of Holland alone had amassed a total debt of 140 million guilders by 1700, and no less than 380 million guilders a century later. Estimates by Dormans (reported, with minor adjustments, in Figure 1) show five phases of marked acceleration: the years leading up to the Twelve Years Truce (1609-1621), the resumption of the war with Spain (1621-1647), the Nine Years War (1688-1697) and the War of the Spanish Succession (1702-1713), the Restoration of the Oranges as Stadtholders in 1747, and the Revolutionary Era of the 1780s and 1790s.²⁶

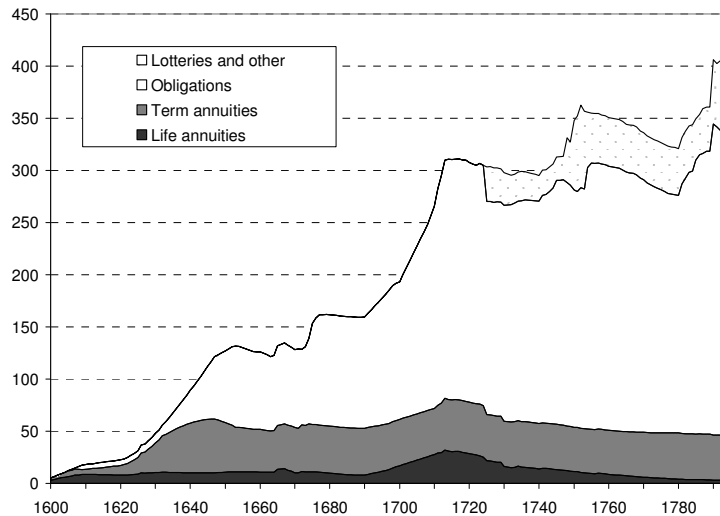
The relative shares of different components of Holland's debt reveal much about the financial strategy pursued by the rulers of the Dutch Republic. In 1600 the government still preferred to sell life annuities to fund its expenditure, despite the higher interest rates: life annuities paid between 11% and 14% in the first two decades of the seventeenth century; against only 6% to 8% for term annuities. Holland's preference resulted from the fact that life annuities were self-liquidating; interest payments ceased on the death of the person named in the annuity. In contrast, payments on term annuities and obligations would continue until the principal was repaid, thus creating an open liability.

²⁴ J.C. Tracy, *The Financial Revolution in the Habsburg Netherlands. "Renten" And "Renteniers" In the County of Holland, 1515-1565* (Berkeley: 1985).; 't Hart 1989***

²⁵ Fritschy 2003***

²⁶ As will become apparent, the basis of our reconstruction is Dormans' very elaborate reconstruction of the debt of the province of Holland (Dormans***). As will become apparent in the text and footnotes we have tried to improve Dormans' estimates by adding new data. Besides, we corrected two typo's in the time series provided by Dormans. First, Table 3.9 quotes the wrong values of life annuities outstanding between 1632 and 1667. Instead of basing his interpolations for these years (p. 65-66) on his own point estimates of the value of life annuities in 1632, 1647, 1652, and 1667 (Tekort, p. 47), Dormans instead based them on the interest paid on these loans (multiplied by a factor 10). This procedure is not warranted by the prevailing interest rate for this was 11.11% until at least 1651, and also unnecessary for Dormans had the precise figures at his proposal. (cf. Liesker & Fritschy, *Gewestelijke financiën*). Second, Table 3.18 reports "Losrenten" for the Noorderkwartier, whereas the contents of the particular column actually refers to "Lijfrenten" (term annuities) of the Zuiderkwartier.

Figure 1. Estimated value of life-annuities, term-annuities, and obligations sold by the Province of Holland between 1600 and 1800 (in million guilders).



Source²⁷

However, the financial needs of Holland were such that it had to sell term annuities and obligations in addition to life annuities. Indeed, in 1632 the province's outstanding debt of 56 million guilders consisted of only 10.7 million in life annuities, 10.2 million in obligations, and no less than 35 million in term annuities. Officials preferred to sell term annuities rather than obligations, again not because of interest

²⁷ Dormans, *Tekort*, pp. 24, 58, 65-66, 80-81, 110-111; Resoluties Staten van Holland 1600-1620. Note that Dormans' estimates for the years 1600-1670 do not include a breakdown of total debt in its constituent parts (i.e. life- and term annuities, and obligations). These shares can be estimated, however. To do so, for the years 1600-1632, we used the sales of obligations recorded in the Resolutions of the States of Holland, combined with the reported share of these obligations (and life annuities) in 1632. We assume that the share of life annuities in this period declined at the same speed as it did between 1632 and 1652 – which brings their estimated share at 62% in 1600. We calculated the share of obligations on the basis of the value of obligations sold between 1604 and 1619 (assuming there were no outstanding obligations before 1604). Given that the share of obligations in 1619 (estimated at 25% on the basis of the resolutions is higher than that estimated by Dormans for 1632 (19%), we report an (unlikely!) temporary decline of their share in the second half of the 1620s. The relative shares of the three debt components between 1632 and 1653 are interpolated from two point estimates for 1632 and 1653 (Dormans, *Tekort*, 58), while both shares are presumed constant at the 1653 level until 1670. Data for 1668 and 1669 are lacking; the value of the different debt components is interpolated from the 1667 and 1670 data. The estimated share of obligations and term annuities between 1670 and 1725 is based on the relative shares of these two components in the southern part of the province (Zuiderkwartier). After 1725 the relative share of all three components (life-annuities, term-annuities, and obligations) is based on estimates for the Zuiderkwartier.

rate differentials, for the rates were the same for both instruments after 1616, but because repayment of term annuities was at their discretion, whereas obligations had to be renegotiated with holders at the end of their term, usually 6 or 12 months.²⁸ This could create a liquidity squeeze if too many bondholders reclaimed their money at any particular moment. It was also more difficult to keep track of who the obligations owned. For even if both instruments could be readily sold, the transfer of term annuities had to be formally registered with town officials, while obligations could be transferred by private contract and thus disappear from the sight of the States.

On the other hand, obligations had the advantage that they could be negotiated in a much larger private market for this kind of debt.²⁹ Building on earlier experience in Antwerp, in the 1590s merchants in Amsterdam began using obligations to fund their rapidly expanding long-distance trade. They contracted short-term loans of 3, 6, or 12 months for any amount between 300 and 5000 guilders from fellow merchants, widows, and other private individuals with money to spare, many of which were rolled over on expiry, thus effectively creating a long-term instrument. In 1604, at the very moment the newly established VOC discovered the potential of this market to ease liquidity constraints, the States of Holland ordered their receiver general in Amsterdam to ‘negotiate’ loans on the money market.³⁰ By 1609 he had already sold obligations worth 4.4 million guilders.³¹

However convenient the possibility to raise money on the private market, the government preferred term annuities for the reasons mentioned before. When in 1609 Holland offered a conversion of obligations into term annuities, bondholders were not

²⁸ In our view Dormans misinterprets the characteristics of term annuities and obligations in three ways (Tekort, 59-60). First, Dormans argues that with obligations only the debtor could decide to repay the loan, whereas (from 1609 onwards, at least) the holder of a term annuity could negotiate an extra clause stipulating his right to repay the debt within six months. In our view it is exactly the opposite, for under the regime suggested by Dormans, it would be in the government interests (for reasons of liquidity) to sell obligations instead of term annuities. A further difference according to Dormans was that the transfer of term annuities had to be registered at the office of the receiver, whereas obligations could be sold privately. We have two objections to this. One is that our data on the transfer of term annuities suggests that registration before the town magistrate sufficed to change the ownership (cf. infra). The other is that only obligations made out to bearer could be transferred without formalities. The sales of obligations made out to individuals (the common procedure before the mid-seventeenth century) forced the seller to produce all previous transfer deeds in order to secure the continuation of interest payments to the new owner (cf. infra). Finally, Dormans contends that the government preferred term annuities because it did not like the trade in obligations on the secondary market. However, our data shows that term annuities were also regularly traded against market prices similar to those of obligations.

²⁹ Gelderblom & Jonker, “Completing”

³⁰ Resolutions Staten van Holland; Early borrowing by the VOC reconstructed from: Nationaal Archief, Inv. nr 1.04.02, nr. 7142; Cf. also De Korte, *Financiële verantwoording*, p. 10 and Bijlage 1a

³¹ Fritschy, “Financial Revolution”

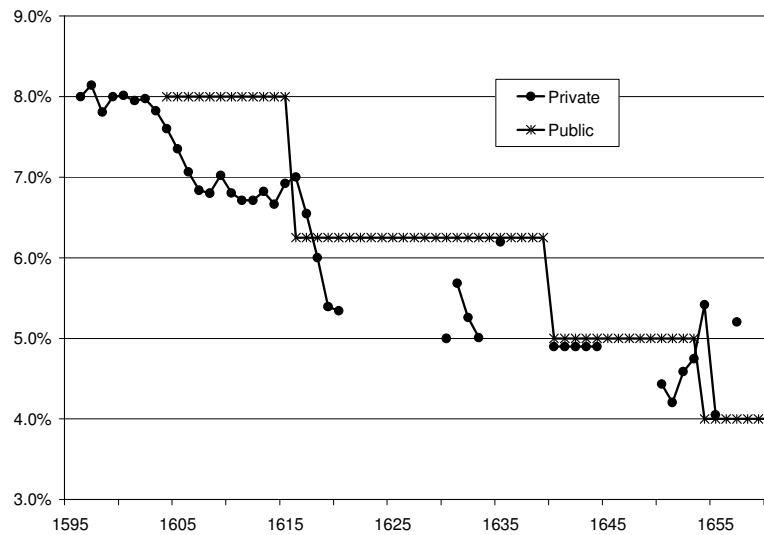
interested, because at the time term annuities still paid less interest than bonds and were more complicated to transfer. Though the receiver general could have repaid the obligations outstanding at the time of expiration, the States lacked the revenues to do so, and the bonds remained in circulation. Moreover, the market's growing preference for obligations over term annuities induced Holland to issue more and more of them. The value of obligations outstanding doubled in the 1610s and 1620s; between 1632 and 1653 it shot up from 10 to 75 million guilders, with their share in total debt outstanding tripling from 20% to 60%. Meanwhile the obligation's original features of periodical renegotiation and the lender's right to claim repayment gradually faded away, as both lenders and borrowers came to rely on keeping the paper in circulation. This may have been already the case as early as 1616, when Holland took to issuing obligations at the same (at the time slightly lower) interest rates paid on term annuities.

The method for issuing obligations probably helped to boost official confidence in the stability of the debt. Marjolein 't Hart has given a detailed description of how the Amsterdam receiver-general operated a fairly close network of relatives, friends, and other trusted financiers with whom he placed bonds.³² This group included members of Amsterdam's governing elite who also ran the institutions for civil welfare which relied on government securities to secure a regular income for orphan care, poor relief, and care for the sick and elderly, very similar to today's social security funds. More about how one particular institution handled its investments below. Since the receivers-general offices often remained in a family for long periods of time, the links between the States of Holland and the primary market also had a considerable degree of stability and shared interests. A tentative comparison of public and private interest rates on Amsterdam's money market suggests a second means by which the States of Holland may have ensured a stable body of lenders. As Figure 2 shows, between 1595 and 1660 interest rates on private obligations declined from 8% to less than 5%. In combination with Holland's steadily growing tax revenues, firmly controlled by the receivers-general, this decline allowed the latter to take out loans at gradually decreasing rates.³³ The interest paid on

³² *Marjolein 't Hart*, "Mutual advantages. The Receiver Johannes Uijttendogaert as a broker between the political economies of Amsterdam and the Republic", memo, University of Amsterdam (2003)

³³ On tax revenues: Fritschy 2003

Figure 2. Interest rates for public and private obligations on Amsterdam's money market (1595-1660)



Sources³⁴

obligations and term annuities was reduced from 8% in 1600 to 6.25% in 1616, 5% in 1640, and eventually 4% in 1655.³⁵ Interestingly, the private rate always seem to have hovered slightly below the public rate – a situation that would have created a disincentive for lenders to move their money out of public debt.³⁶ The data collected so far on private interest rates does not warrant firm conclusions, yet the rationale does seem to be clear. In a report on a planned interest rate reduction of 1654, government officials noted that the States' obligations were trading between 5 and 7% above par, suggesting bondholders were willing to accept a yield below 5%.³⁷

A third means to prevent a run on the receivers' offices in case the public lost its confidence in the States, was to sell bearer obligations (*aan toonder*). In theory it was easy to sell such bonds for their transfer did not require any formal registration, as was the case with term annuities and bonds made out to individual names.³⁸ With bearer bonds Holland might lose sight of its creditors but lenders who wanted

³⁴ Private interest rates: Gelderblom & Jonker; Spufford; ACA notarial deeds; Public interest rates: Liesker & Fritschy

³⁵ Dormans, *Tekort*, 48, 49, 53

³⁶ One alternative explanation would be that incidental wealth taxes (0,5% or 1%) reduced the actual yield on public bonds to the level of private bonds (cf. Fritschy and Liesker, 369-370)

³⁷ J.M.F. Fritschy, *De patriotten en de financiën van de Bataafse Republiek. Hollands krediet en de smalle marges voor een nieuw beleid (1796-1801)*, (1988), 39; Cf. also Dormans, *Tekort*, 53.

³⁸ In 1635 it was formally decided in Amsterdam that obligations to bearer could be transferred without a formal deed of conveyance. (*Handvesten Noordkerk*, II, page 565, citing *Amsterdams Compostboeck fol 43 verso, anno 1635, 18 mei*). **On the requirements for transfer of term annuities: *****

liquidity could simply sell their bonds to a third party. However, samples of debt issues from 1628 and 1650 show a great reluctance to issue bearer bonds. In most towns in Holland obligations continued to be made out to named individuals.³⁹ In three main cities, only a small proportion of new debts issued in 1650 consisted of bearer bonds: 8% for Leyden, 11% for Haarlem (11%), and 15% for Amsterdam. The one exception was Delft, where for unknown reasons bearer bonds made up 50% already in 1628, and even 59% in 1650.

In the 1650s, after the war with Spain had ended, and without a *stadtholder* in charge of the military and foreign politics, Johan de Witt moulded Holland's financial policy with a clear intention to reduce and eventually extinguish the province's debt. International politics caught up with the pensionary, however. The Second Anglo-Dutch war, and especially the tripartite invasion of 1672 forced Holland to raise large sums of money for the Republic's defense.⁴⁰ Given the precarious military situation it proved impossible in 1672 to raise money on the private market. Instead the government reverted to a series of forced loans at the then current interest rate of 5%. Between 1672 and 1675 these loans brought in at least 24 million guilders, equal to 5.5% of the estimated value of land, houses, annuities, obligations, and other immovable goods of individual households in Holland.⁴¹ Obviously, things could have been worse for households if the government had merely taken their money

³⁹ Marjolein 't Hart, 'Public loans and lenders in the seventeenth century Netherlands', *Economic and Social History in the Netherlands* 1 (1989) 119-140, at 128

⁴⁰ Cf. on failed attempts to extinguish Holland's debt: Dormans, Tekort, 53, 55, 85, 88, 91, 105-106; Also: Liesker & Fritschy, *Gewestelijke financiën*, 365-366; The revenue from the 5% to 4% interest rate reduction of 1654 was reserved for

the extinction of the entire debt over a forty years period. It was not very successful. Until the outbreak of the Second Anglo-Dutch War in 1665-1667 the debt was indeed reduced, but then new loans amounting to the same sum (some 11 million guilders) were taken out. Resumption of the scheme in 1669 created a cash reserve of 1.2 million guilders, which was quickly exhausted after the French invasion of 1672. To be sure, the obligations were not the States' only concern. Another persistent problem was the extinction of life annuities which took much longer than expected and thus created an exorbitant burden of interest payments.

⁴¹ Dormans set the total value of forced loans at 24.7 million in the years 1672-1675, 95% of which was raised through wealth taxes totaling 5.5% of estimated wealth. According to Liesker and Fritschy the wealth taxes used to this purpose between 1672 and 1675 amounted to 7% of total wealth: 1672: 2%; 1673: 1%; 1674: 3%; 1675, 1%; Liesker & Fritschy, *Gewestelijke financiën*, 366, 368; Al in 1653 overwogen om 0.25% or 0.5% op bezit government bonds te heffen, maar niet uitgevoerd. Wel toen een annual heffing of 0,1% on wealth per household, to be collected by towns. The revenues were earmarked for the payment of interest on 4 million worth of life annuities newly issued. Dormans, Tekort, 51-53.

without obligations in return. Indeed, the administration of Holland's receiver in Rotterdam reveals that 25% of these forced loans was issued in bearer bonds.⁴²

Once the French threat had receded, Holland tried to restore its credit by attempts to extinguish at least part of the outstanding debts. Again political developments frustrated redress. William's accession to the English throne in 1688 marked the beginning of a quarter century of war that would exhaust Holland's credit. Without having to revert to forced loans, the States managed to double the value of outstanding obligations between 1688 and 1714. One explanation lies in the coincidence of political and economic interests. Holland's merchant elite wanted to settle matters with England, and enable the stadholder to stave off the French threat to the profitability of its trade.⁴³ Equally important was the change in Holland's debt issuing policy towards using more and more bearer bonds. The obligations sold in Rotterdam show that, at least between 1687 and 1692, almost half (47%) of all new bonds were made out to bearer.⁴⁴

Such bonds satisfied a need for fungible securities in commercial traffic, so investors continued to buy them because the low yield was compensated by the other uses given to them. Whatever the reason, Holland's ability to dictate the market was rapidly declining because investors could, and did, switch to other options: first to the English securities, from the 1750s to plantation loans, then to French state bonds, and finally to the huge range of foreign securities floated in Amsterdam from the mid-1770s. Consequently, after 1713 the province could no longer sell 'straight' obligations, but it had to switch to lottery loans, obligations with the added incentive of premiums on bonds drawn, an innovation imported from the UK.⁴⁵ It was only during the 1780s that Holland, facing an emergency situation in the Fourth Anglo-Dutch War, again issued obligations.

The issuing policy of Holland thus shows a fairly clear pattern of response to the demands from a secondary market: from term annuities officials switched first to obligations, then to bearer bonds, and finally to lottery loans. The crucial episode would seem to have been 1672-1720, when a ballooning debt and the appearance of

⁴² Rotterdam Municipal Archives, ORA, 1a, inv nr 3687 (ledger of the *Gemeene Landskantoor* in Rotterdam, first entry January 8, 1672)

⁴³ De Vries en Van der Woude.

⁴⁴ Rotterdam Municipal Archives, ORA, 1a, inv nr 3687

⁴⁵ **lit lottery loans and import from UK.

alternative, foreign securities decisively altered the balance between supply and demand in favour of investors. It is now time to take a closer look at that period.

II. Exploring the secondary market for government bonds

For all the attention given to the huge size and low interest rates of the Dutch Republic's debt, we remain completely in the dark about the actual trade in public debt before 1780.⁴⁶ The price currents published in Amsterdam since 1585 listed prices for a huge range of commodities, insurance premiums, and exchange rates, but not for public or private securities. In 1723, the *Amsterdamsche Courant* started publishing regular futures prices for VOC and WIC shares, English public bonds, and shares in the Bank of England, the South Sea Company, and the East India Company, but public bonds from the Republic are conspicuous by their absence from this list. In 1747 an Amsterdam bookseller published two very detailed lists which give several dozens of inland and foreign securities, but this initiative did not lead to a regular price current.⁴⁷ It is only from 1780 onwards the *Nederlandsche Mercurius*, a monthly newspaper, started to publish the prices paid at public auctions for 2.5% obligations issued by the States of Holland.⁴⁸

To reconstruct the development of Holland's secondary market for public debt before 1780 we need information on prices and preferably also on the volume of trade, so as to get an impression of the liquidity of trade. The latter remains problematic. The securities most likely to be traded – bearer bonds – were sold by private contract and we have no way of knowing the volume of transactions. This was different for life- and term annuities. For fiscal purposes the buyers and sellers of real

⁴⁶ Homer & Sylla 1977; Fritschy, *Patriotten*, 42; 't Hart 1997

⁴⁷ These price currents were issued to give investors a yardstick for assessing their wealth, which they needed to do as a consequence of the extraordinary capital levy introduced to solve an acute public finance crisis. J.G. van Dillen, "Effectenkoersen aan de amsterdamsche beurs, 1723-1794", *Economisch-Historisch Jaarboek XVII* (1931), 1-46, at 2-4. The price current of 6 november 1748 is printed on pages 13-14.

⁴⁸ The auctions were held in the office of the local receiver general or in a guesthouse, the *Oudezijds Heerenlogement*, two, three, and sometimes even four or five times a month. From 1792 onwards the *Nederlandsche Mercurius* also gave a separate overview of the lowest and highest prices paid every month for the same 2.5% obligations of the States of Holland.

estate, public, and private annuities had to register their sales with town magistrates.⁴⁹ Surviving urban transfer registers give detailed information on public annuities transferred, including the debt and price for which it was sold. This information yields the annual volume of government term annuities sold, as well as the annual average price. As a first step we have constructed price and volume series for term annuities of the States of Holland transferred in Gouda (3,400 bonds traded between 1600 and 1807) and in Leyden (1,100 bonds traded between 1670 and 1800). We do not know the relation between the volume transferred and the total circulating in the respective cities, so we cannot say anything about how liquid the trade was.

One might of course object that term annuities were the least representative of the securities issued and thus a poor gauge for the market as a whole. After 1650 Holland hardly ever sold new term annuities. The growth of the total debt from 140 million in 1650 to 400 million in 1795 was realized through the sales of obligations, largely made out to bearer. Because of the slightly more complicated transfer requirements – obligations changed hands through private contracting – term annuities may have sold less frequently and at a slight discount to bearer bonds. This may lead to an underestimation of the *volume* of the secondary market on the basis of the transfer registers, but not of the *prices* for government bonds. For we may safely assume that any great disparity between securities would have led investors to arbitrage between them.⁵⁰ Given that interest rates on term annuities and obligations were similar from 1616 onwards, one would not expect a price gap between the two, either. Leaving aside the possible compensation for administrative costs⁵¹, the average

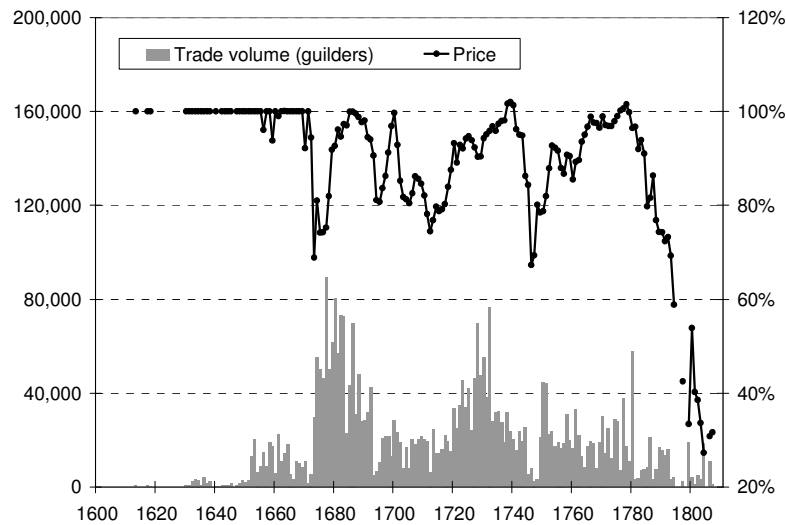
⁴⁹ This practice was not unique to the Dutch Republic; cf. for example on Paris: Katia Béguin, 'La circulation des rentes constituées dans la France du XVII^e siècle. Une approche de l'incertitude économique', *Annales. Histoire, Sciences Sociales* 60 (2005) 1229-1244.

⁵⁰ Investors in obligations did not in fact need a secondary market because under the terms they could always claim their money back by formally terminating the loan agreement three months before expiry. This happened regularly. The reconstruction of Holland's revenues and expenses by Fritschy and Liesker (*Gewestelijke Financien*, pp. 154-156, 204-205, 212-217) show redemptions in 1655-1658, and from 1712 through the eighteenth century, with the exception of 1746-1747 and 1780-1783. However, these redemptions were not only very small compared to the size of the total debt (annual repayments amounted to more than 2 million in 5 years, more than 1 million in 30 years, and less than one million in 48 years), they were also concentrated in years of peace (1655-1660, 1713-1740, 1760-1780) when the government was able to reserve money for this purpose. Between 1713 and 1740 almost all redemptions concerned the lottery loans issued to attract borrowers speculating on the risk of early redemption (*Ibidem*, p. 424, 465)

⁵¹ It is doubtful whether a discount for administrative costs was ever included in the price, for the stated price of term annuities before 1670 was always equal to the nominal value of the debt, suggesting that any money that changed hands in compensation of administrative chores, was not implied in the actual sales contract.

price of term annuities traded in a particular year will have equalled the average price of public obligations in that year.⁵²

Figure 4. Annual turnover and average annual prices of term annuities of the States of Holland sold in Gouda (1600-1807)



Source: Gouda transfer registers

Figure 4 summarizes the data collected in Gouda. The earliest recorded transfer of a government bond in the seventeenth century was the sale of a 450 guilders term annuity of the States of Holland in 1613. No price was mentioned at the time, as was the case for the fifty-odd other bonds traded before 1650.⁵³ Between 1650 and 1658, when another 100 bonds changed hands, prices were mentioned only eight times.⁵⁴ Since 1659 Gouda's town clerks systematically recorded the prices of bonds that were transferred. In the 1660s, when another 150 bonds were sold, these prices typically stood at 100%. Then things suddenly changed. In 1672 three foreign powers,

⁵² Indeed, for the few years (1720, 1747, 1750, 1780, 1790) for which yields for both securities can be calculated yields are almost identical. For example the prices of annuities in Amsterdam in November 1747 (between 65 and 67) were almost similar to the price paid for annuities in Gouda in October of the same year (68). The administrators of the *Bossche Geefhuis*, an institution for poor relief, valued their obligations at 80% in April 1749, 95% in March 1750, and 103-104% in 1763, i.e. prices very similar to those recorded in Amsterdam, Gouda, and Leiden. Kappelhof, "Hoeven", 109:

⁵³ There were two exceptions: a 100 guilders bond sold at face value in 1636, and a 400 guilders bond that sold for 250 guilders in 1641 (Gouda Archives, Inv. Nr. 485, fols. 86v and 178v)

⁵⁴ Seven times the bonds were traded at par. The eighth transfer (a 600 guilders bond in 1656) was recorded at 33%. This must have been a clerical mistake: a failure to specify that only part of the annuity was sold. Other entries in the register suggest it was not uncommon to sell only one half or a third of a bond.

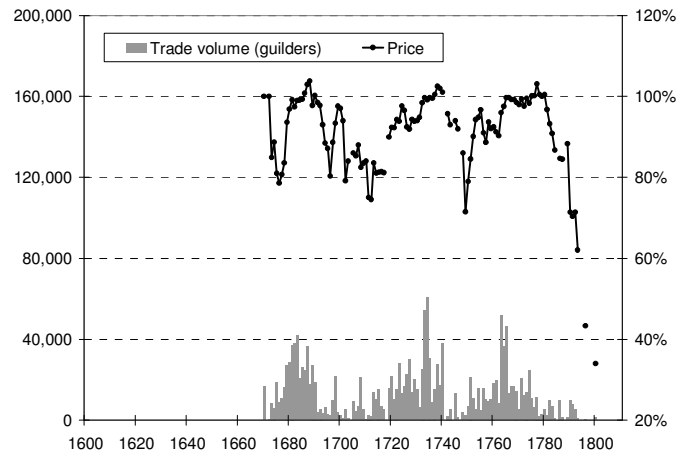
including France, attacked the Republic and quickly occupied most of its territory. The emergency forced Holland to raise large sums of money very quickly, and this instantly created a secondary market for its bonds, presumably because the receivers' syndicates could not handle the volume of bonds required and simply had to sell at any price.

After 1670 the number of annual transfers of bonds rose sharply in Gouda, with prices dropping under par for the first time in 1672 (70%). The slump inaugurated a long trend. Between 1688 and 1692 prices dropped to 80%, briefly recovered up to 1697, but then fell again to 80% in 1704 and 75% in 1715. This trough provides a stark background to the Peace of Utrecht in 1713, when foreign ambassadors negotiated a peace 'in your country, concerning your country, and yet without you': the Republic had to give up its European political ambitions because Holland, its richest province, had clearly exhausted its credit. The diplomats presumably knew this.

After 1715 prices recovered only slowly; any efforts by the Estates to restore their credit will have been handicapped by the fact that investors now had a wide range of foreign securities as alternatives. Bonds passed the 90% mark in 1720 and reached par value eighteen years later. Within a short time prices fell again to less than 70% in 1746 and 1747. This time recovery to par took two decades. Relatively stable prices prevailed between 1765 and 1780 but then the well-known sharp decline to less than 30% in 1800 set in.

The data for Leyden in Figure 5 show a nearly identical pattern of peaks and troughs, in a market that was only a third of the size of that of Gouda. Meanwhile there is more to the price fluctuations in the two towns than their repeated collapse alone. Equally striking is the slow recovery to par. Especially in the first decades of the eighteenth century it took more than a generation for prices to recover. Indeed, the number of years between 1670 and 1800 when annuities in Gouda were traded at or above par value is remarkably small: seven years. An average annual price between 95 and 100 was recorded in 35 years; between 90 and 95 in 30 years; between 80 and 90 also in 30 years; and below 80 in no fewer than 25 years.

Figure 5. Annual turnover and average annual prices of term annuities of the States of Holland sold in Leiden (1670-1800)

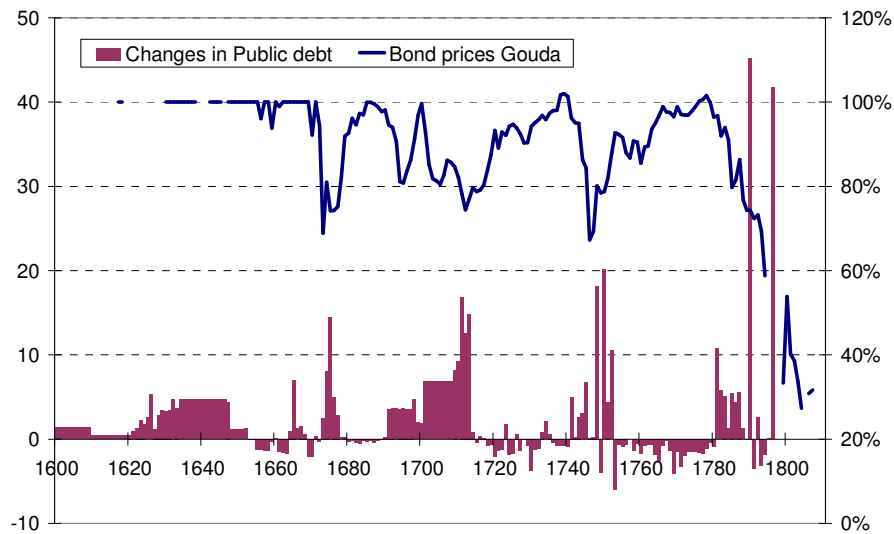


Source: GAL Transferbooks

At first sight the price fluctuations would appear to be a simple market reaction to increased volumes of debt. Figure 6 compares prices in Gouda with the net changes in the size of Holland's debt, as calculated from Dorman's data. The troughs in the 1670s, from 1690 to 1710, and again at the end of the 1740s followed large new issues of debt; given the low prevailing prices, we must assume that new bonds were issued well below par during those years. Conversely, recoveries followed during periods of net repayments. However, Figure 7 demonstrates that, by the 1670s, the secondary market had already developed sufficiently to react to other aspects of policy as well.

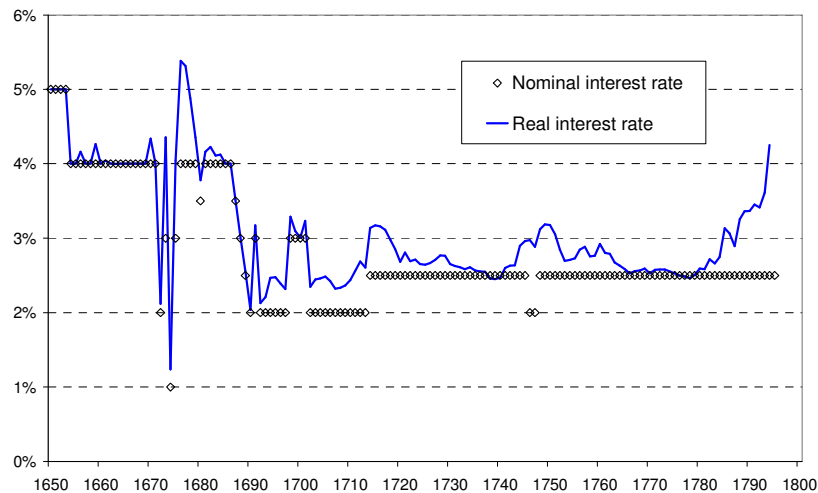
In 1687, the States of Holland decreed a an annual property tax on bond interest payments, in the form of a deduction made by the receivers. A recent reconstruction by Liesker and Fritschy shows that after one incidental levy in 1680 (0.5%), the property tax became a permanent feature in 1687. Within four years the tax was raised to 2% of total wealth in public securities, reducing the effective interest rate on term annuities and obligations to 2% in 1690. This rate was maintained for most years until 1714, when it was reduced to 1.5%. From then on Holland's bonds effectively paid 2.5%.

Figure 6. The volume of Holland's debt and bond prices in Gouda, 1600-1807



Sources: Gouda Archives; Dormans

Figure 7. The changes in the nominal interest rate on annuities and the real interest rate as calculated with the Gouda prices, 1650-1795



Sources: Gouda Archives; Fritschy and Liesker

Figure 7 compares the nominal interest rate on annuities and obligations, that is the issuing rate minus the wealth tax, with real interest rate of these bonds, i.e. the calculated nominal rate divided by the Gouda average price for the year. The difference between the two shows the authorities wrestling with an emerging market during the period 1670-1720. In 1655 investors accepted the 1% reduction of interest

rates, and between 1672 and 1674 they also appear to have swallowed the cuts imposed by taxation. However, in 1675 and 1676 lenders clearly had enough. Prices dropped far enough to force the States to lower the tax. Between 1686 and 1692 bond holders accepted the stepwise rise in wealth taxation, but with the Nine Years' War over, the market once again pushed the government to reverse the cuts. A similar correction through market forces can be seen after the War of the Spanish Succession ended, though this time it did not suffice to fully restore confidence of the bond holders.

III. The investment policy of an institutional investor: Amsterdam's *Burgerweeshuis*

Amsterdam's *Burgerweeshuis* had a variety of income sources to fund its expenditure on the care for children of deceased citizens. First, collections were held four times a year in Amsterdam. Second, the regents had a right of usufruct on the estates of orphans in its care. Third, the institution derived income from investments in real estate, loans to private individuals, and public bonds.⁵⁵

Scattered references in the orphanage's cash registers during the first half of the seventeenth century suggest its regents began to buy bonds from the city of Amsterdam in the 1610s.⁵⁶ Recorded interest payments suggest that by 1630 the institution had lent some 170,000 guilders to the town. In the 1630s it also started buying bonds from the States General and the province of Holland, directly from the receivers-general.⁵⁷ A more detailed account of the securities in the possession of the orphanage between 1668 and 1671 sets the nominal value of annuities and obligations issued by the States General, the city of Amsterdam, and other public bodies at 350,000 guilders. Loans to private individuals and the VOC amounted to another 100,000 guilders.⁵⁸ The average annual income from government bonds between 1668 and 1671 amounted to 16,000 guilders, or 30% of the institutions total net revenue.

⁵⁵ Anne E. McCants, *Civic Charity in a Golden Age. Orphan Care in Early Modern Amsterdam*, (Urbana/Chicago: University of Illinois Press, 1997)

⁵⁶ McCants, *Civic Charity*; Her estimates are appended by Irene Mangnus, "'Tot behoef der arme wezen'. Het effectenbezit van het Amsterdamse Burgerweeshuis in de 17^e en 18^e eeuw", *unpublished MA Thesis*, Utrecht University (2004), 23-25.

⁵⁷ Mangnus, "'Tot behoef'", 26.

⁵⁸ Amsterdam City Archives, 367-A, Inv. Nr. 356, *Staat van Effecten*, 1668-1671, 1678

In the 1670s the *Burgerweeshuis* was confronted with an increasing disparity between rising expenditure on child care and a stagnant income. To counter the financial bottleneck, the regents borrowed money while at the same time they sold off part of their financial assets.⁵⁹ Loans to private individuals and the city of Amsterdam were reduced with 135,000 guilders, while a loan of 18,000 guilders to the VOC was terminated altogether. This reduction left the securities portfolio at a value of 275,000 guilders in 1678.⁶⁰ In the last quarter of the seventeenth century the orphanage further reduced loans to city of Amsterdam and to private individuals, and used the income to repay its own debts.

Unfortunately the *rentenboek* kept by the regents of the orphanage to administer their securities portfolio in the first half of the seventeenth century has not survived. However, we do have the *nieuwe rentenboek*, presumably begun in 1676, that contains all purchases of term annuities and obligations from the 1670s onwards (including a few earlier purchases in the 1650s and 1660s). The register details the date of purchase, the nominal value of the bond, the date of their first issue, the name of the person or institution they were initially sold to, and the name of the person or institution that sold the bond to the orphanage. The administrator also added indicated whether bonds had been purchased individually or in batches ('pakketten').

The *rentenboek* lists purchases of 550 bonds between 1650 and 1800 with a total value of 1.1 million guilders. The vast majority of these bonds were obligations worth 1,025,900 guilders (90%). The 45 term annuities bought by the *Burgerweeshuis* were worth 120,800 guilders. If one breaks down purchases per year (Figure 8), the most striking feature is the rapid growth of holdings between 1704 and 1740.⁶¹ In all but three of these years the regents of the orphanage bought government bonds, boosting the portfolio's value with no less than 700,000 guilders. The administrators wrote down from whom they bought the bonds, and to which person or institution it had originally been made out to. This registration can be used to reconstruct the activities of the *Burgerweeshuis* on both the primary and the secondary market for government bonds. Figure 9 shows that two thirds of the bonds purchased up until

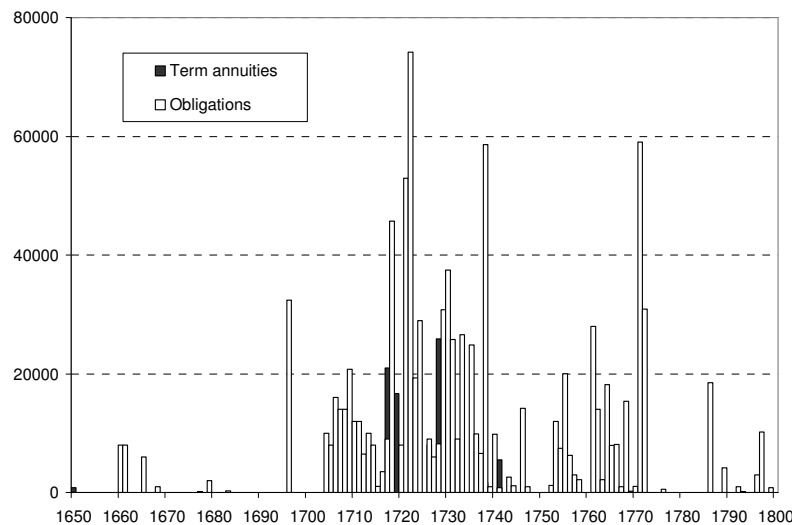
⁵⁹ The financial difficulties may have started earlier. In the account of the securities in possession of the orphanage between 1668 and 1671 there is already mention 60,000 guilders having been borrowed by the *Burgerweeshuis* in 1668 or before. City Archives, 367-A, Inv. Nr. 356, *Staat van Effecten*, 1668-1671, 1678

⁶⁰ City Archives, 367-A, Inv. Nr. 356, *Staat van Effecten*, 1668-1671, 1678

⁶¹ The annual breakdown of purchases excludes 17 obligations and 3 annuities (worth 50,000 guilders in all) for the *rentenboek* does not specify the exact year of purchase.

1714 had been obtained directly from the receivers general of Holland. Then the regents changed policy and began to buy bonds solely from previous holders. In the space of 25 years they obtained half a million worth of bonds on the secondary market. Though the management of public bonds may have been a chore, the orphanage clearly did not mind. To be able to claim the interest on annuities their transfer to the orphanage had to be registered at the office of the receiver general who had first issued the annuity. Such registration was not necessary for obligations but it was common practice, when an obligation was sold, to prove title by handing over all previous deeds of transfer to the buyer. Consequently, the weeshuis records still have

Figure 8. Annual Purchases of Obligations and Term Annuities registered in the rentenboek of Amsterdams Burgerweeshuis, 1650-1800.



Source⁶²

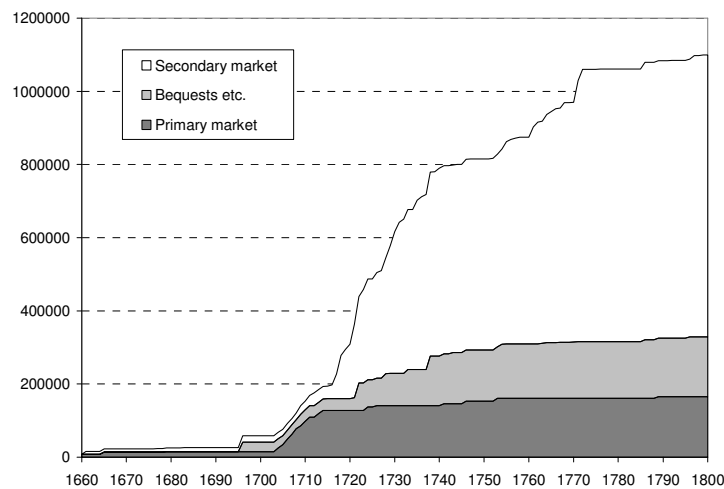
thick bundles of notarial protocols and other deeds detailing the pedigree of bonds in the possession of the orphanage.⁶³ We may see this cumbersome and antiquated transfer mechanism as a factor supporting the claim advanced by Neal and others, that debt fragmentation hampered the emergence of a secondary market. Buyers needed to know whether the securities they wanted to buy offered a perfect title. Some securities in circulation clearly did not. The auction bills discussed above sometimes have

⁶² GAA Archief 367.A, Inv. Nr 152 (Nieuw Rentenboek)market. In this same period another 100,000 guilders worth of annuities and obligations were obtained through bequests and the liquidation of the estates of deceased orphans with no other relatives.

⁶³ Amsterdam City Archives, 367.A, Inv nrs.154-159

pencilled remarks on them showing that the prospective buyer inspecting them prior to the sale considered some ‘good’, others ‘perfect’, clearly referring to the quality of the title as represented by the available transfer deeds.⁶⁴ However, such hurdles are unlikely to have handicapped trade to any significant degree, because we may safely assume that brokers would have removed such hurdles by sorting the wheat from the chaff. Notably Amsterdam had a large contingent of very active brokers in securities, who had earlier taken a lead in organising the trade in VOC shares and in options, and they did the same in public securities.⁶⁵

Figure 9. Origin of Purchases of Obligations and Term Annuities bought by Amsterdams Burgerweeshuis, 1650-1800.



Source⁶⁶

In the 1760s Amsterdam brokers received 0.25% on the nominal value of the obligations they purchased for the local *Direction of the Baltic trade*.⁶⁷ From the orphanage records we know also, that during the early eighteenth century brokers started to sell packaged public securities issued outside Amsterdam.⁶⁸ Figure 10 shows that, after 1720, the *Burgerweeshuis* increasingly bought its bonds in packages

⁶⁴ ***ref GAA auction papers.

⁶⁵ Van Dillen, “Effectenkoersen”, 5-9; Indeed, in 1799 of all the guilds in the Dutch Republic, the brokers of Amsterdam had invested by far the greatest amount of money in government bonds: 91,000 guilders in 73 obligations issued by the *Comptoir* of Amsterdam. (*ARA Wet Col 507, Miss. van 11 jan. 1799 N. 71*; Courtesy Jan Lucassen and Piet Lourens)

⁶⁶ GAA Archief 367.A, Inv. Nr 152 (Nieuw Rentenboek).

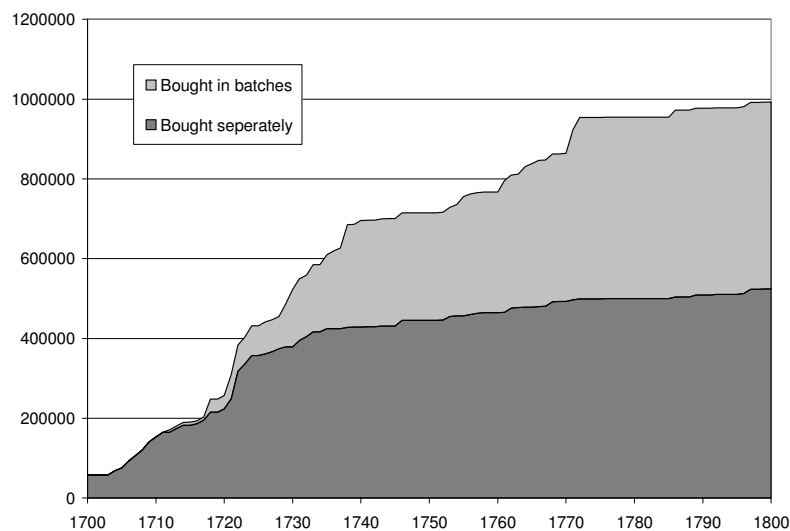
⁶⁷ GAA, Archive nr 78, Inv. Nr 76.

⁶⁸ Half a dozen men that sold obligations to the *Burgerweeshuis* in the eighteenth century can also be identified as brokers (Mangnus, “Tot behoef”, 49-51)

of anywhere between 2 and 25 securities, presumably from brokers because during the same period the *rentenboek* refers separately to bonds bought at public auctions.

The investment policy of this institutional investor gives us another perspective on the emerging secondary market. At first, the orphanage's trustees were content to buy at first issue, but from about 1715 they bought most bonds on the open market, presumably because the specialised intermediaries which had meanwhile appeared offered a better choice.

Figure 10. Obligations and Term Annuities bought by Amsterdams Burgerweeshuis in batches and individually, 1650-1800.



Source⁶⁹

But how representative is the biggest orphanage of the early modern Netherlands? It was a wealthy institution, located next to the heart of the Dutch financial system, the Amsterdam Exchange. Its governing board had easy access to specialized financial intermediaries and the widest possible range of securities. Unfortunately, very few historians have so far delved into the extant financial administrations of other civil welfare institutions in the Dutch Republic. However, the little evidence they have unearthed does suggest that investment in government bonds was a common means to secure a regular income for providers of poor relief, orphan care, and other kinds of

⁶⁹ GAA Archief 367.A, Inv. Nr 152 (Nieuw Rentenboek).

social welfare.⁷⁰ Indeed, many guilds in Holland and other provinces invested their capital in annuities and obligations.⁷¹ Such bonds may, of course, been bought straight from the issuer, but many were bought on the secondary market. The archives of several institutions for civil welfare also have packages with transfer deeds of government bonds similar to those in the *Burgerweeshuis*.⁷²

V. Conclusions.

The classic account of the Dutch financial revolution considers the earmarking of local excise taxes for interest payment on annuity loans issued by the towns of Holland in the 1540s as the key event.⁷³ However, the constituent elements of this innovation – local annuities markets, excise duties, and towns lending to the central government – had all been in place since the late fifteenth century.⁷⁴ On the other hand, there were important changes still to come. A further improvement was the transfer of control over excise tax revenues from individual towns to the province of Holland in the late 1570s. This allowed large scale borrowing by the provincial estates – even if the new loans continued to be negotiated on local markets.⁷⁵ Yet another important change occurred after 1610, when the States of Holland began to substitute obligations for term annuities as their principal loan expedient.⁷⁶ By now the financial revolution was more than a century old – though still not completed.

⁷⁰ Evidence for several public and religious institutions for poor relief in Amsterdam in M.H.D. van Leeuwen, “Amsterdam en de armenzorg tijdens de Republiek”, *NEHA Jaarboek* 1996, 132-161, at 138-145. Evidence for Bois le Duc: A.C.M. Kappelhof, “Het Bossche Geefhuis. Het inkomen uit vermogen van de Tafel van de H. Geest van Den Bosch 1450-1810”, *Varia historic Brabantica* 10 (1981), 1-54; Also: J. de Kruif, “De prijs van de armenzorg. De financiering van de armenzorg in Den Bosch 1750-1900”, *Tijdschrift voor Sociale Geschiedenis* 20 (1994), 24-51.

⁷¹ Evidence on government bonds held by guilds in Utrecht, Dordrecht, Rotterdam, Delft, and Amsterdam in the second half of the eighteenth century in: Sandra Bos, “*Uyt liefde tot malcander*”. *Onderlinge hulpverlening binnen de Noord-Nederlandse gilden in internationaal perspectief, (1570-1820)*, (Amsterdam, 1998), 146-147, 301, 250-251, 275, 282, 285, 289. A comprehensive account of all the possessions (financial and otherwise) of Dutch guilds at the turn of the nineteenth century is provided by Jan Lucassen and Piet Lourens in a yet unpublished database. [*Expand this with calculation per town of government bonds possessed by guilds*]

⁷² This is true for the orphanages of Gouda, Alkmaar, Huizen, Harderwijk, Bois-le-Duc, Amersfoort, Haarlem, Medemblik, Dordrecht, Leyden, and Hoorn, as well as for the Orphan Chamber (not to be confused with an orphanage) of Rotterdam. See for example for Gouda, the deeds of transfer from between 1668 and 1734 of the *Verenigd Wees- en Aalmoezeniershuis* (Gouds Archief, 76, Inv. Nrs. 518-533. On Rotterdam’s Orphan Chamber: Rotterdam Municipal Archive, Inventory Weeskamer, Inv. Nr 790, document nrs 608, 803

⁷³ Tracy, *Financial Revolution*

⁷⁴ Jaco Zijderduijn, “Medieval Capital markets”, unpublished PhD thesis, Utrecht (2007)

⁷⁵ Fritschy, *Financial Revolution*

⁷⁶ ‘t Hart, *Making*.

The investigations presented here show that, until the 1670s, the secondary market for public bonds in the Dutch Republic was not a very active one. The Estates responded to investors' demand for beared bonds by gradually changing the issuing policy, but the scarce data have the bonds trading at par. Consequently, the financial revolution claimed by Tracy and 't Hart remained uncompleted during most of the seventeenth century. Until the crisis year of 1672 Holland had a dual capital market: an open and dynamic one in VOC and WIC shares with allied credit and trading techniques, and a closely controlled, rather sluggish one for public securities. This gives another proof, if one were needed, that the development of public bond markets trailed the market for private securities by a long mile, i.e. about seventy years.

Why did it take more than a century after the creation of regularly funded annuities for this market to develop? To our mind, the States had a more or less captive market, because the fast rising wealth from trade and industry could find few other outlets. They could thus keep the genie in the bottle until the 1672 emergency shattered the glass. Any subsequent efforts to capture the spirit again were doomed, because from the 1690s the widening array of British securities offered investors the alternatives lacking before. As a consequence, the secondary market could come into its own as a disciplining tool for the States' financial policy. By then public credit had already become somewhat fragile. Prices regained par only intermittently after 1670, keeping a solid pressure on officials to curtail spending and borrowing. There is little sign that the fragmentation of securities in numerous different issues hindered trade in them, because brokers and later public auctions ensured that bonds would sell.