Banks versus Markets:
The Character of the Amsterdam Financial System during the Seventeenth-Century

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Abstract

This paper analyses private credit operations in Amsterdam in the seventeenth century to demonstrate that the rise of banks should not be taken as a guide to understand the dynamics of financial modernization. Our analysis of the loan portfolios of two prominent businessmen and investors in Amsterdam, Louis Trip (1605-1684) and Joseph Deutz (1624-1684) reveals that the city's financial system was not bank-based, but market-based, centred as it was on a thriving market for short-term loans which could be easily rolled over, or replaced at will. Amsterdam's businessmen could do without banks because the city possessed highly developed payment services, an array of institutions offering loans or absorbing savings, and at the same time an open access market for short-term loans.

1. Introduction

Of recent years the old debate about the relative merits of bank-based and market-based financial systems has lost some of its edge, the available evidence remaining inconclusive.[1] Originally, bank-based systems were considered to be better at mobilizing and coordinating the finance needed for economic development, and, crucially, the step towards industrialization.[2] Conversely, the advantage of market-based systems was seen to lie in their flexibility and their capacity for generating the financial innovation that stimulates economic growth.[3] In this paper we want to revive the bank-based versus market-based debate by adding a historical dimension to it, since we think a given financial system's roots may explain its configuration better than assessments of its economic performance, as often as not hard to quantify exactly and thus more or less subjective. Moreover, exploring such roots enables us to identify with some precision the factors shaping a financial system, thereby deepening our understanding of why banks do, or do not, emerge, that is to say, of the conditions under which one particular configuration of financial functions wins out over another. Analysing a financial system by way of its functions, as Merton and Bodie propose in their surprisingly underused approach, should in turn illuminate the economic rationale of early joint-stock banking, at present still heavily dependent on Gerschenkron's ideas of economic development.[4]

For several reasons the financial system of seventeenth-century Amsterdam is a particularly interesting case to explore from the above angle. First, because we do not really understand the character of its early sophistication. Carlos and Neal's recent interpretation of Amsterdam as an inflexible bank-based system unable to

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[1] J. Edwards and K. Fischer, *Banks, finance and investment in Germany* (Cambridge 1994); R. Levine, 'Bank-based or market-based financial systems: which is better?', in: *Journal of financial intermediation* 11 (2002), 398-428; A. Demirgue-Kunt and R. Levine, 'Bank-based and market-based financial systems: cross-country comparisons', paper *2003.

[2] R.W. Goldsmith, *Financial structure and development* (New Haven 1969); R.E. Cameron, ed., *Banking in the early stages of industrialization, a study in comparative economic history* (Oxford 1967); idem, ed., *Banking and economic development, some lessons of history* (Oxford 1972).

[3] **refs based on Levine, Merton & Bodie (fin innov spiral).

[4] Robert C. Merton and Zvi Bodie, 'A conceptual framework for analyzing the financial environment', in: D.B. Crane et al., ed., *The global financial system, a functional perspective* (Harvard Business School: Boston, 1995) 3-32; idem, 'The design of financial systems, towards a synthesis of structure and function', NBER Working Paper 10620, 2004 and *Journal of investment management* 3 (2005) 1–23; A. Gerschenkron, *Economic backwardness in historical perspective* (Cambridge 1962); R. Sylla, 'The role of banks', in: idem and G. Toniolo, ed., *Patterns of European industrialization, the nineteenth century* (London 1991) 45-63.

facilitate the next round of economic development in the way London's more agile market-based system could, chimes with Van Der Wee's conception of Amsterdam as an evolutionary dead-end in the pedigree of modern finance.[5] Surely, with the Exchange Bank (*Wisselbank*), the city had a large and remarkably modern-looking bank at its heart.[6] But the characterization of a bank-based system sits odd with what we know of the pivotal position occupied by the securities trade in Amsterdam finance during the seventeenth century and, indeed, up to 1914.[7] Analysing the system's early evolution should enable us to decide whether Amsterdam was bank-based or market-based. Second, old notions about conservative financiers and investors slowing down the Netherlands' industrialization have long been dismissed, but that still leaves a curious contrast between the early sophistication of Amsterdam finance and the late appearance of joint-stock commercial banking there, which happened only during the 1870s.[8] Once we know the proper characterization of the Amsterdam market, we can then identify the factors which determined its configuration and, by extension, the configuration of similar financial systems.

Our analysis focuses on the second half of the seventeenth century through the lens of the ledgers left by two prominent businessmen and investors, Louis Trip (1605-1684) and Joseph Deutz (1624-1684). Both men managed highly diverse investments which included various types of loans partly financed with deposits. We

[5] A.M. Carlos and L. Neal, 'Amsterdam and London as financial centers in the eighteenth century', *Financial History Review* 18 (2011) 2146; H. van der Wee, 'Antwerp and the new financial methods of the 16th and 17th centuries', in: idem, *The Low Countries in the Early Modern World* (Ashgate: Aldershot 1993) 145-166; idem, 'Monetary, credit, and banking systems', in: E.E. Rich, Ch. Wilson, ed., *The Cambridge economic history of Europe* V (Cambridge 1977) 240-392.
[6] Quinn and Roberds (incl Fiat Money); Nieuwkerk 2009; Dehing 2012.
[7] L.O. Petram, 'The world's first stock exchange, how the Amsterdam market for Dutch East India Company shares became a modern securities market, 1602-1700', PhD Thesis University of Amsterdam 2011; idem, *De bakermat van de beurs, hoe in zeventiende-eeuws Amsterdam de moderne aandelenhandel ontstond* (Atlas: Amsterdam 2011); O. Gelderblom and J. Jonker, 'Completing a financial revolution: the finance of the Dutch East India trade and the rise of the Amsterdam capital market, 1595-1612', in: *Journal of Economic History* 64 (2004) 641-672; O. Gelderblom and J. Jonker, 'Amsterdam as the Cradle of Futures Trading', in: W.N. Goetzmann, K.G. Rouwenhorst, ed., *The Origins of Value, the Financial Innovations that Created Modern Capital Markets* (Oxford UP: Oxford 2005) 189-205; O. Gelderblom and J. Jonker, 'With a view to hold, the emergence of institutional investors on the Amsterdam securities market during the 17th and 18th centuries', in: J. Atack, L. Neal, ed., *The Evolution of Financial Markets and Institutions* (Cambridge UP: Cambridge 2009) 71-98; O. Gelderblom and J. Jonker, 'Early Capitalism in the Low Countries', CGEH Working Paper No. 41, Utrecht 2013; J. Jonker, *Merchants, bankers, middlemen, the Amsterdam money market during the first half of the 19th century* (Amsterdam, 1996); idem, 'The alternative road to modernity: banking and currency, 1814-1914', in: M. 't Hart, J.P.B. Jonker, J.L. van Zanden, ed., *A financial history of the Netherlands* (Cambridge 1997) 94-123; idem, 'The cradle of modern banking, finance in the Netherlands between the Napoleonic era and the first commercial banks, 1813-1870', in: Joh. de Vries, W. Vroom, T. de Graaf, ed., *World wide banking, ABN AMRO Bank 1824-1999* (Amsterdam 1999) 49-94.
[8] A review of the debate and the evidence in J. Jonker, 'Lachspiegel van de vooruitgang, het historiografische beeld van de Nederlandse industriefinanciering in de negentiende eeuw', in: *NEHA-Bulletin* 5 (1991) 5-23, and idem, *Merchants*.

reconstruct their lending between 1640 and 1685 in detail so as to bring out patterns of borrowing, lending, customers, and pricing. We then compare the return on their operations with the yield on safe assets, Holland obligations, to see how their margins between borrowing and lending compared to standard market investments. We find that Amsterdam's financial system was definitely not bank-based, but market-based, centering as it did on a thriving market for short-term loans which could be easily rolled over, or replaced at will. This system of prolongation predated the foundation of the Wisselbank in 1609, and it was a source of easy credit not just for merchants but also for the Estates of Holland and the state-sponsored colonial companies. A growing surplus of wealth pushed down interest rates from 8 per cent in 1600 to just over 2.5 per cent in 1680, but the very narrow spread between borrowing and lending prevented financiers like Trip and Deutz from scaling up their operations into banking proper.

1. The scope of commercial credit in Amsterdam

A key feature and strength of the money market that emerged in Amsterdam at the turn of the seventeenth century was the ease with which merchants could raise debt by circulating bills obligatory or personal bonds.[9] Commercial credit in Amsterdam relied on the same type of paper, handwritten bills obligatory, that had been in use in Antwerp since the first half of the sixteenth century, but a key innovation occurred shortly after 1600: the substitution of personal credit by a standard, liquid collateral, shares in the Dutch East India Company or VOC, set up in 1602 (Gelderblom and Jonker 2004). This enabled businessmen to widen their range of borrowing beyond the usual circle of family members and close associates. The loans contracted by one such merchant, Hans Thijs, show him doing just that. Between 1598 and 1611 Thijs gradually substituted the family deposits in his business with short-term loans of 600 to 3,200 guilders. Contracted for 6 or 12 months, these loans were often rolled over upon expiry. Some of them were raised with regular trading partners and secured by a personal bond, but Thijs also borrowed against his VOC shares and profited from the increased security of that collateral translating in the form of lower interest rates. When Thijs died suddenly in 1611, the executors of his estate rolled over scores of his

[9] Van der Wee, *Growth*, idem 'Antwerp', idem, 'Monetary'; Jeroen Puttevils recently detailed the way in which merchants used bonds in his *The ascent of merchants from the Southern Low Countries, from Antwerp to Europe 1480-1585* (PhD Antwerp 2012) 239-286.

bonds for several years, until 1617, so they could realize the assets at leisure and not under pressure of time.[10]

Thijs was not alone in floating debt. The estate of another Amsterdam merchant, Paulus Bosschaert, who died in 1620, included 62 debts obtained from 58 creditors for a total of over 113,000 guilders. The debts averaged 1,800 gulden at an interest rate of 5.4 per cent, and Bosschaert had contracted most of them during the last year of his life and all but one with fellow merchants.[11] We can observe the creditor's side of the market in the estate of the merchant Cornelis Francq. At his death in 1617 Francq had a loan book of 47 bills totalling more than 60,000 guilders, averaging 1,275 guilders at 6.7 per cent interest, not counting the almost 19,000 guilders of what he called bad and dubious debts. About a dozen of Francq's debts receivable dated from between 1607 and 1615, and this included loans to a carpenter, a minister, and a notary public, but the remainder consisted of loans to merchants contracted no later than a year before his death.[12]

The VOC itself raised money on short-term bills as well. From 1604 onwards the directors of the Amsterdam Chamber and the Enkhuizen Chamber borrowed amounts of up to 20,000 guilders, though by far most loans ranged between 600 and 6,000 guilders (Gelderblom, De Jong and Jonker *2013). In 1612, the VOC, backed by the Estates General, refused to liquidate its first ten years' account to achieve permanence, but this effectively barred the company from raising equity and made it entirely dependent on debt finance. Between 1616 and 1622 the Amsterdam chamber raised more than 8 million guilders on behalf of itself and of other chambers.[13] The Estates of Holland also floated bills to supplement its principal debt instruments, life and term annuities. Initially, between 1603 and 1607, officials used the bills as an expedient and they converted them into term annuities following the 1609 truce with Spain. However, when the war resumed in 1621 Holland gradually found itself entirely dependent on floating bills. By 1648 the amount outstanding had risen to 63 million guilders.[14]

[10] Gelderblom 2000; Gelderblom and Jonker 2004.
[11] ACA Inv. 5073, No. Portfolio Paulus Bosschaert (1620).
[12] ACA Inv. 5073 No. 968a, estate of Cornelis Francq (1617).
[13] Gelderblom, De Jong and Jonker *2013; Dari Matiacci et al *2013.
[14] Gelderblom and Jonker 2011; Dormans, *Tekort* 51.

Table 1. Debt contracts registered by Notaries and Aldermen in Amsterdam, 1620 and 1660 (guilders)

	1620		1660	
	#loans	**value**	**#loans**	**value**
Notaries - obligations	52	42,063	354	424,538
Aldermen - *schepenkennissen*	830	764,060	1050	2,124,225
Aldermen – annuities	319	*333,546*	110	309,410
Total	**1,201**	**1,139,670**	**1,514**	**2,858,173**

Source: EURYI/VIDI Database Notaries and Town Secretaries: Amsterdam (1620, 1660)

Access to this particular segment of the debt market remained restricted to large merchants and institutions, but retailers, artisans, and other small businessmen had three other options open to them (Table 1).[15] They usually possessed some property, i.e. their shop or workshop with some rooms to live in, which could be mortgaged if they needed more credit than the usual supply chains provided, or they could contract a private loan or *schepenkennis* on the security of their person and possessions. The city provided a firm basis for these transactions in the form of a registry. A sample for 1620 shows clerks registering 319 new mortgages totalling an estimated 333,000 guilders, plus 830 private loans for more than double that amount, 764,060 guilders.[16] Notaries administered a third, much smaller loan segment. A similar sample for 1620 yielded a total of only 52 loans averaging a slightly smaller amount than the 1,000 guilders contracted in the average mortgage or *schepenkennis*.[17]

We may thus conclude that, by 1620, i.e. a decade after the Wisselbank had been set up, the available credit techniques were market-based, that is to say, they relied on direct and personal contact between individual creditors and debtors, who were perhaps brought together by a broker but neither side had need for a bank to effect the transaction. Now the nub of the matter is whether this continued to be the case, and surviving ledgers from two prominent merchants and investors active during the second half of the seventeenth century, Louis Trip (1605-1684) and Joseph

[15] The professions of lenders and borrowers (recorded for 30 to 40 per cent of the registered debts) of Amsterdam's schepenkennissen in 1620 reveal artisans, retailers, and other petty entrepreneurs as the principal debtors *and* creditors, although merchants and public officeholders do appear as lenders in 20 per cent of the contracts where the creditors' profession is registered.
[16] EURYI/VIDI Database Notaries and Town Secretaries (1500-1780): Amsterdam Aldermen (1620).
[17] EURYI/VIDI Database Notaries and Town Secretaries (1500-1780): Amsterdam Notaries (1620).

Deutz (1624-1684), show that it did. Indeed, by that time the spread between borrowing and lending had narrowed so much that it left no margin for banking to exist.

2. The credit operations of Louis Trip

Let's first look at Trip, who together with his brothers Jacob and Hendrick earned a fortune dealing in arms, iron, pitch and tar.[18] From 1634 the three brothers formed a partnership concentrating on the import of hand arms and cannon from Sweden. With equity worth 200,000 guilders their firm must already have belonged to the top in 1640, but when, by the end of that decade, the brothers diversified into iron, pitch and tar, they possessed enough money to quadruple the firm's capital to 800,000 guilders. Indeed, they had become wealthy enough to retire in comfort, and Jacob did so in 1651, leaving his two brothers to continue alone until Louis' son was given a small one-eight's part in the business.

According to Peter Klein (1965) the Trip firm's success rested on three pillars. First, the Trips maintained close family relations with the owners of the main Swedish arms foundries; second, during the 1650s the firm obtained monopolies on the export of pitch, tar, and cannon from the Swedish crown; third, the brothers were able to control the supply chain with credit both backward, to the Swedish crown, and forward, to Amsterdam buyers.[19] Controlling supply chains through sophisticated services and notably cheap credit was typical for the second, climacteric phase of the Amsterdam entrepot trade.[20] Jan Deutz, Joseph's elder brother, did exactly the same with the mercury monopoly which he obtained from the Habsburg emperor in 1659.[21] This policy clearly absorbed the Trip partners' entire means available. Louis Trip's private ledgers show a constant shifting in and out of current account surplus with the firm, but no other lending except for two Holland bills bought in 1643, plus a single 5% loan of 2,600 guilders granted in 1645 to a shipwright who had bought a piece of land from him and presumably needed money for setting up a yard there. That loan was repaid in 1660.[22] From the late 1650s, however, Trip had money to

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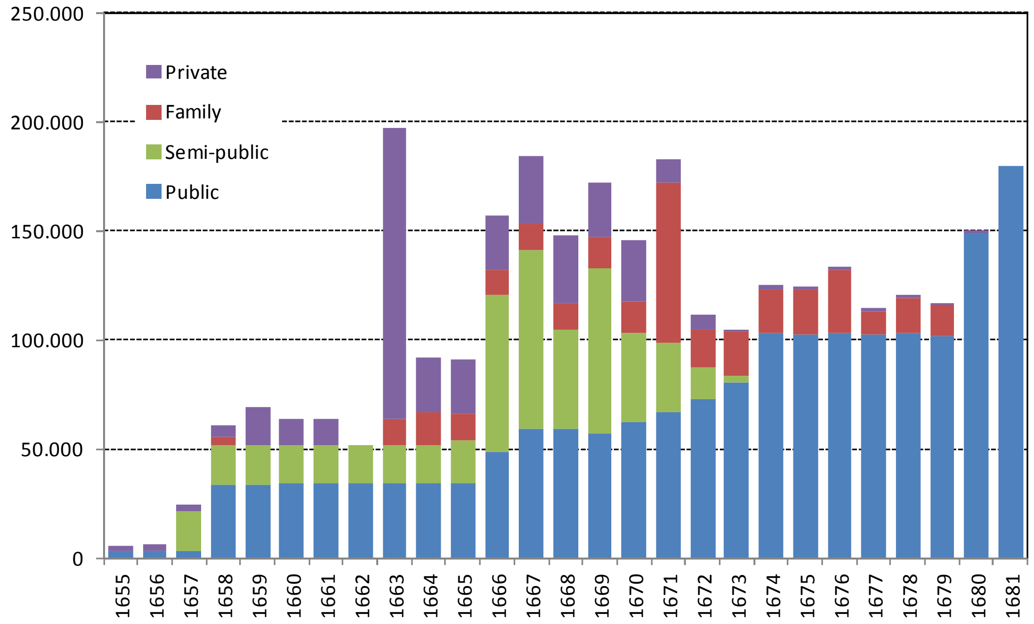
[18] P.W. Klein. 1965. *De Trippen in de 17e eeuw. Een studie over het ondernemersgedrag op de Hollandse stapelmarkt.* Assen: Van Gorcum.
[19] Klein 1978: 464-465.
[20] Jonker and Sluyterman, *At home* ***.
[21] Elias 1903, 2: 633, 1047.
[22] Ref to folio pages.

spare (Figure 1). He started giving loans to private individuals in 1655, probably in the form of repo transactions, and invested substantial sums in securities, more than 26,000 guilders of Holland bills in 1658 and 18,000 worth of VOC Zeeland bonds.

Figure 1, Loans extended by Louis Trip 1655-1681

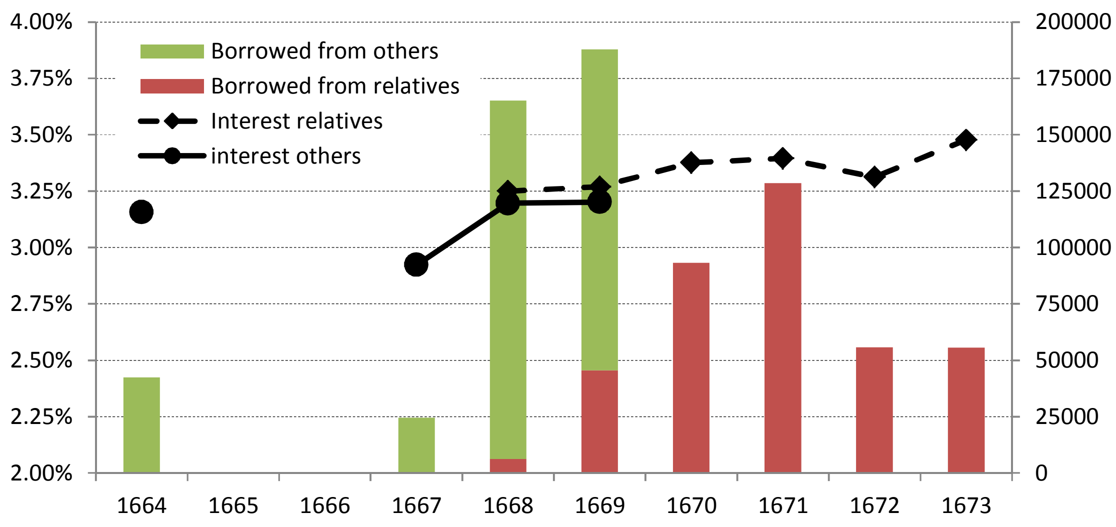


Source: ACA 5060 Inv. No's. 40, 50, 51

Four years later his financial situation and behaviour changed, presumably because the brothers lost the Swedish pitch and tar monopoly to Christoffel van Gangelt and Joseph Deutz. During 1663 Louis Trip withdrew capital from the firm and put it in eight money market loans totalling almost 150,000 guilders, of which two on collateral of VOC shares.[23] These loans continued until the early 1670s, though on a smaller scale, and appear to be connected to Trip's securities account. Between 1659 and 1661 this account shows a turnover of 300,000 guilders a year, rising to 700,000 guilders in 1663, then falling to 400,000 guilders in 1665. Presumably Trip provided liquidity to share traders through repo transactions, i.e. advances on collateral of securities.

[23] According to Klein all loans *except* two had VOC shares as collateral, but we found only two loans *with* this collateral for 1663.

Figure 2, Money borrowed by Louis Trip, 1664-1673

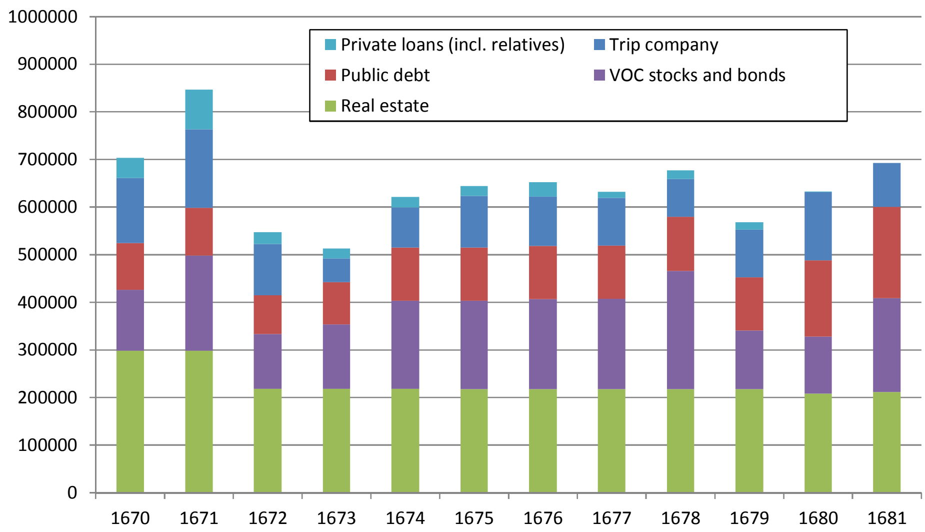


Source: ACA Inv. 5060, No. **

During the second half of the 1660s Trip's investment behaviour changed again. His brother Hendrick died in 1666 and Louis himself, now in his early sixties, probably wanted to withdraw from active business. He reduced his money market exposure to two or three loans per year because he needed the money to ease his nephews' entry into the firm. In 1668 and 1669 Trip took over loans totalling 150,000 guilders from the firm, which he gradually replaced with deposits from family members (Figure 3). At the same time he expanded his holding of public and semi-public debt, including up to 40,000 guilders of bonds issued by the Wieldrecht polder board, where he owned land. We must therefore assume that these investments yielded more than the interest rates of 3.25-3.5 % which Trip paid on his debts, but not enough to render leverage a viable way to expand his operations. With an investment return below the interest rate cost he would have paid off his debts rather than buying securities, while with a large positive margin between return and interest cost he would have kept the debt, or even expanded it.

From 1670 to his death eleven years later the composition of Trip's investment portfolio remained more or less the same (Figure 3). Unusually for a merchant, he maintained a substantial portion of his wealth in real estate. This included the palatial town house on the Kloveniersburgwal commissioned by him from the leading architect of the day to mirror Amsterdam's immense Baroque town hall. The rest of his investments was more or less evenly split between VOC securities, public and semi-public debt, and investments in the family firm. Only his private loan portfolio

Figure 3, The value of Louis Trip's major public and private assets, 1671-1681



Source: ACA Inv. 5060, No. 40

was almost completely liquidated in 1672. According to Klein, Trip's change of investment behaviour reflected his entry into the city magistrate following the political turmoil of 1672, but the change really predated that by several years so a more likely explanation is his retirement from active business.

In brief, Trip was an active investor from the late 1650s to about 1670. During that time he supplied money market loans of the same kind used by Thijs, Bosschaert, and Francq, and he did so on a substantial scale. Clearly the Wisselbank had done little to change the structure of Amsterdam's financial system, which remained market-based. One key aspect of Trip's behaviour underlines this. He was what we would now call a private equity investor and refrained from attracting deposits to increase the scale of his operations. Indeed, his behaviour during the one period in which he did have some debt suggests that interest rate spreads were too narrow for moving into banking. Let's now look whether Deutz's investments show similar patterns.

3. The credit operations of Joseph Deutz

Joseph Deutz, a second-generation German immigrant, was almost twenty years younger than Trip. He began his career as a merchant in paper together with Christoffel van Gangelt, the second husband of his late wife's mother.[24] Together they replaced the Trip brothers as the holders of the Swedish tar and pitch monopoly in 1662. This required them to pay 250,000 guilders to the King of Sweden, 60 per cent of which was transferred immediately to the Trip firm for their stocks of pitch and tar.[25] In addition to this the new licensees took over 76,000 guilders worth of bills of exchange.[26]

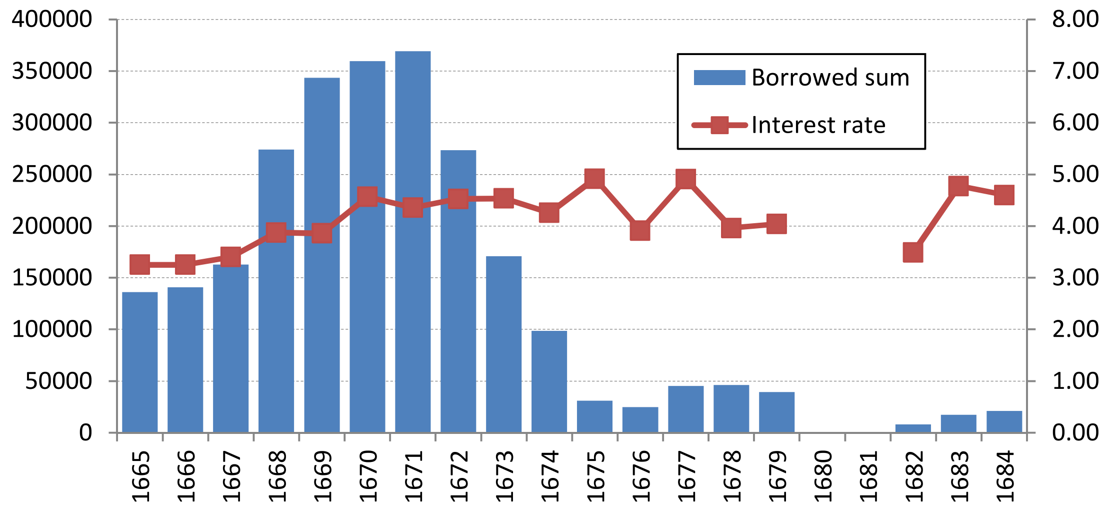
Deutz and Van Gangelt essentially wanted to do the same what the Trip brothers and Jan Deutz did, seizing control over a supply chain through credit. Now Joseph Deutz was already a wealthy man, worth 200,000 guilders in 1659, but a large part of this was tied up in real estate and other business operations.[27] Without ready money to fund the new tar and pitch business, he raised debt from his wealthy relatives. His two brothers in law Abraham and Jean Ortt had inherited just over 840,000 guilders from their father, Jean Ortt the Elder (1595-1654).[28] We do not know exactly how much Deutz originally borrowed from Abraham Ortt because he added the annual interest charges to the debt outstanding. Thus on the first of November 1665, he added 4,428 guilders to his brother in law's account for 12 months' interest on a capital of 136,237 guilders.

Abraham's loan sufficed to finance Deutz until 1668, when his partner Christoffel van Gangelt withdrew from their firm. Deutz succeeded in buying him out by raising debt from five relatives, notably Jean Ortt, who deposited 40,000 guilders with him in 1668 and quadrupled that sum to 160,000 over the next two years (Figure 4). Family deposits such as these were of course quite common, it had also been Hans Thijs's preferred option earlier in the 17th century.[29] But Deutz paid a curiously high interest rate on them. Abraham Ortt received 3.25% per year at first

[24] Elias 1903: Zandvliet 2006: 184-5, 197-8
[25] Klein 1965: 475; Klein 1978: 466.
[26] Klein 1978: 470, footnote 30.
[27] Klein 1978: 466.
[28] Elias, *Vroedschap* II, 997.
[29] Gelderblom 2003; Gelderblom and Jonker 2004.

which Deutz raised to 4.625% in 1668 at a time when the market trend pointed down. From 1670 the other family deposits also carried 4.625%.

Figure 4. The amount of debt raised by Joseph Deutz from relatives, 1665-1684



Source: ACA Inv. 234, nrs. 291-295

There are two ways of looking at this rate. Perhaps the family simply exacted a higher price to get their due from pickings they knew rich. If so, they had a point, for the monopoly profits enabled Deutz to repay their deposits within a few years. On the other hand, the fact that Deutz did not pay out the interests, adding them to the respective accounts instead, suggests the higher rate reflected a compensation to his relatives for leaving the money at his disposal indefinitely, that is to say, for giving up the liquidity option which the standard 6-12 months market alternative would have given them. In this form the family loans resembled the finance supplied by sleeping partners in a private limited company, supplying long-term funding in return for an above-market remuneration. Mimicking the *société en commandite* formalized in law only during the Napoleonic era, such arrangements were not uncommon in the Netherlands.[30] In either case we are looking at an environment used to pricing differences in investor liquidity preferences, another indication of just how keen the market had become by 1670.

[30] Thijs, *Werkwinkel*; Lis and Soly, *De Heyder*; cf. De Ruysscher for the definition without formal legal introduction of the CV.

Table 2. Annual income from the Tar and Pitch Company of Joseph Deutz and Christoffel van Gangelt, and the end-of-year credit balance with their suppliers, 1662-1666.

Year	Interest received	Commission fees	Insurance & transport	Current account balance per 31/12
1662	8,400	2,900	7,500	384,700
1663	26,100	7,200	21,900	599,900
1664	32,900	8,300	13,700	830,000
1665	28,100	8,000	800	434,800
1666	17,600	4,000	800	256,100
Total	**113,100**	**30,400**	**44,700**	

Source: Klein 1978: 468

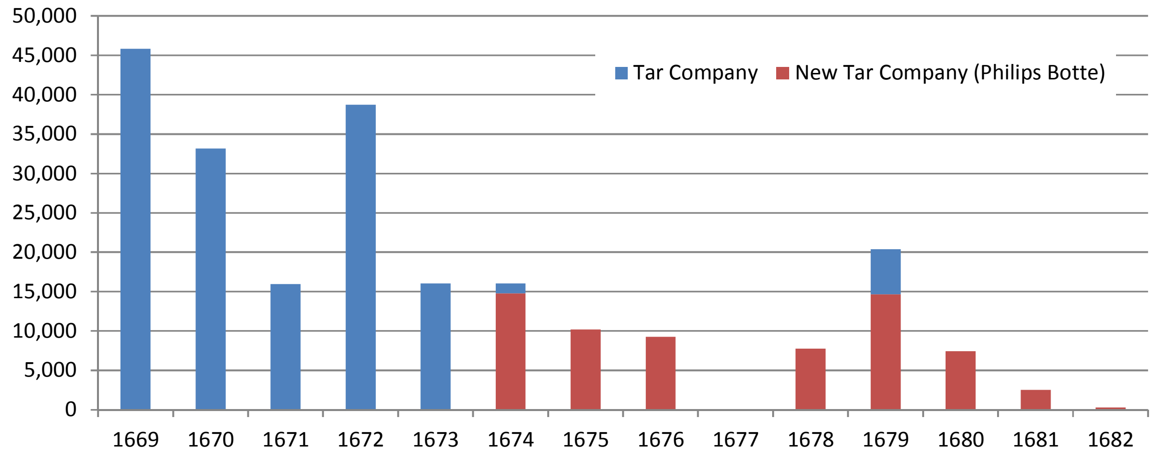
From the beginning Deutz's interest in the pitch and tar business seems to have been financial, rather than commercial.[31] In its first five years the company earned 30,400 guilders from its 2 per cent commission fees on sales, against 44,700 in fees for insurance and freightage contracted in Amsterdam, and 113,100 in interest payments on overdrafts on the current account of the Swedish producers (Table 2). Deutz and Van Gangelt charged 5 or 6 per cent on this revolving credit on the collateral of the pitch and tar supplied to them, in addition to which they supplied their buyers in Amsterdam with sales credit.[32]

When Van Gangelt retired in 1668, Joseph Deutz initially continued their business along similar lines, once again extending large credits to his Swedish suppliers. Their annual interest payments, averaging 30,000 guilders between 1669 and 1673, remained a very important income source. If we put the interest rate at the 5% mentioned in Klein's paper about the pitch and tar business, turnover on Deutz's credit facility fluctuated between 300,000 and 900,000 guilders per year.[33] After the contract had been renewed in 1672, a dispute arose between Deutz and his principals about the amount of money which the former claimed from the latter. This led to Deutz relinquishing the contract to the Tar Company, which then sent one of its directors, Philip Botte, to Amsterdam for taking over the sales side of the business.

[31] Klein 1978: 466-468.
[32] Klein 1978: 466-68.
[33] Klein 1978, ***.

Deutz continued to finance tar shipments, but for smaller amounts, 200,000 guilders annually, and for a lower interest rate of 3.5 to 4.5 procent.[34]

Figure 5, The annual interest charged by Joseph Deutz to his suppliers of tar and pitch, 1669-1682.

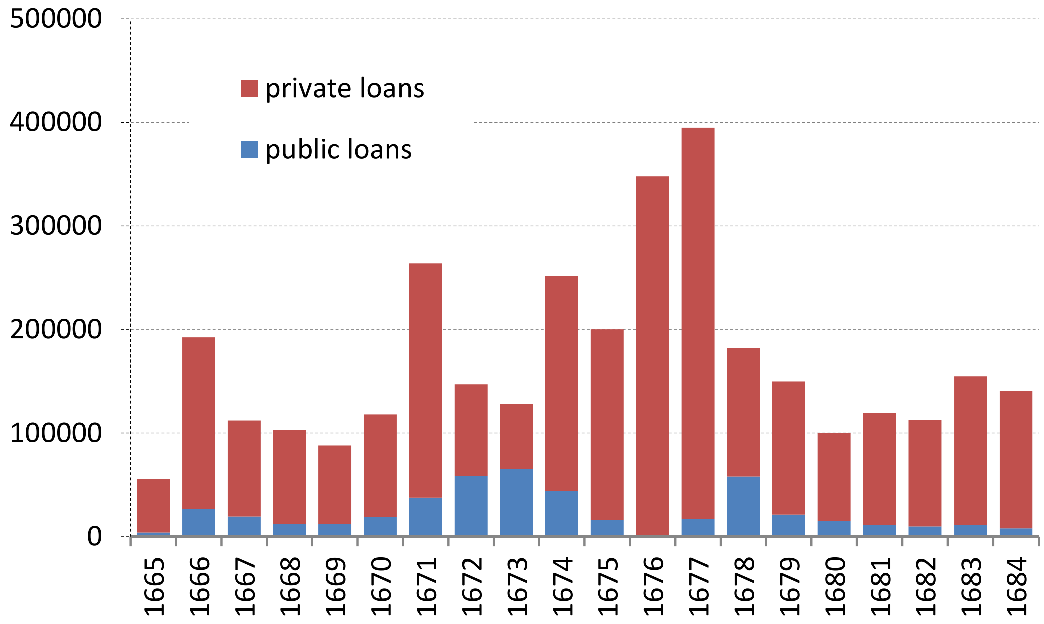


Source: ACA

Having given up his active involvement in the pitch and tar trade, Deutz considerably expanded his loan portfolio (Figure 6). From the late 1660s until the mid-1670s he generally had some 100,000 guilders of loans outstanding, mostly to fellow merchants but also to relatives. This first doubled and then quadrupled to a peak of more than 400,000 guilders during the late 1670s, after which it dropped back again to around 100-120,000 guilders. The sharp rise was caused by what, on the basis of a sudden increase in the use of shares as collateral, looks like Deutz moving big into financing the repo trade in securities. We do not know what motivated either his move into this segment, or his retreat from it, but that matters little in relation to the three aspects which stand out from this episode.

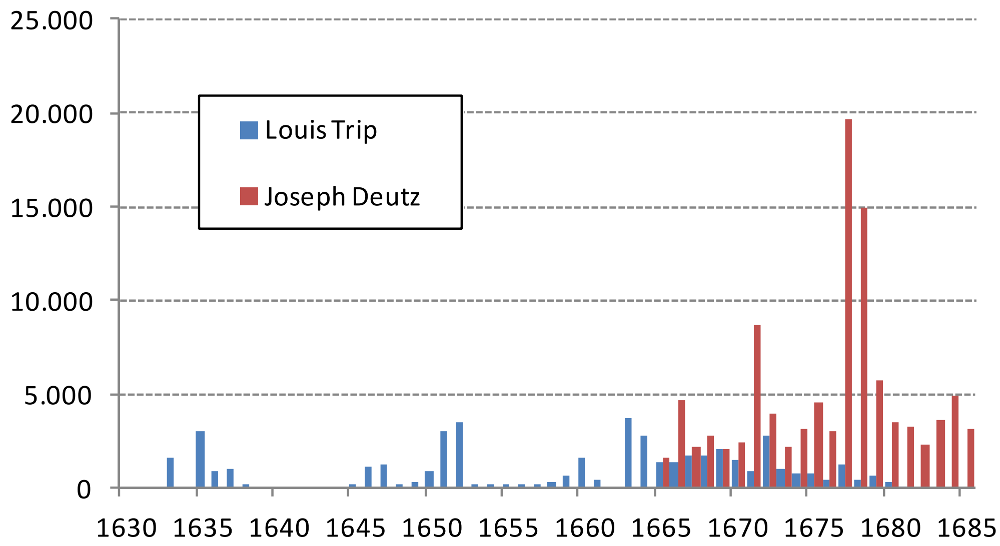
[34] The very high interest payments in 1679 had three causes. First, Deutz registering the remainder of a debt owed to the old Tar Company; second, he received payment of interest on loans dating from 1678; third, the Tar company lombarded a large quantity of iron in this year (Inv. 234, No. 294, fol. 164).

Figure 6. The average amount of Deutz's loans outstanding in Amsterdam, 1664-1684



Source: ACA Inv 234, Nrs. 291-295

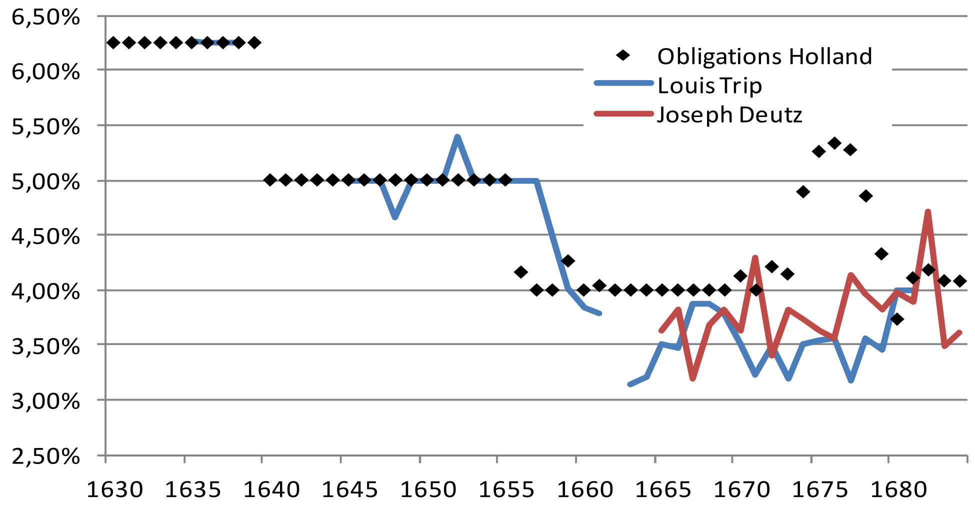
Figure 7, The annual interest received on private loans by Louis Trip and Joseph Deutz, 1655-1684



Source: ACA Inv. 5060, nrs. 50, 51; Inv. 234, nrs. 291-295;

First, Deutz financed this quadrupling of his loan portfolio entirely from his own means, which must therefore have been both ample and liquid. Second, although Deutz's income from loans was higher than Trip's and usually ranged from 2,500-5,000 guilders a year, for an average of 3,450 (Figure 7), it amounted to only a fraction of his household expenses, which ran to 10,117 guilders in 1674.[35] Lending must therefore have been a sideline for Deutz, important to maintain and, at times, expand when opportunities arose, but not his main source of income. Third, for most of the time private lending was second best when compared to other investment opportunities. Until the mid 1650s public and private interest rates appear to have moved together, dropping from 6.25% to 5% (Gelderblom & Jonker 2011; Figure 8). The two then diverged. Public rates fell to 4%, but private rates sank a further 0.5-1%, those charged by Trip tending towards the lower bound, those of Deutz towards the upper one. Whereas the yield on Holland's obligations rose sharply following the 1672 war, private rates edged up initially only to fall back again. For most of the time, therefore, both Trip and Deutz would have been better off buying Holland debt than supplying private loans. This highlights the fact that a large share of their lending, and possibly most of it, served wider commercial purposes. Let's now analyze those.

Figure 8, The yield on Holland debt and the average annual interest rate charged to private borrowers by Louis Trip and Joseph Deutz, 1630-1684*



Source: ACA Inv. 5060, nrs. 50, 51; Inv. 234, nrs. 291-295; * weighed by loan amount and maturity

35 ACA Inv. 293, carta 158.

4. The Price of Credit

The variety of investments which both Trip and Deutz managed gives a distinct impression that, in their search for yield, they considered every available opportunity. Of course they had a part of their wealth invested in real estate and in public debt. Next to that their main activities were, on the one hand, the supply of trade credit so as to keep a grip on particular commodity supply chains and, on the other, the securities trade with its supporting services such as repo trade credit and the options trade.

Table 3. Characteristics of the Private Loan Portfolios of Louys Trip (1644-1681) and Joseph Deutz (1662-1684)

Panel A Loans Trip

Collateral		Loan		Debtor	
Type	**#**	**Type**	**#**	**Type**	**#**
None	173	Bill Obligatory	181	Semi-public	52
Shares	13	Current Account	9	Heirs	4
Bonds	0	*Schepenkennis*	27	Family	52
Trade (goods)	19	Other	17	Partners	28
Unknown	0	Unknown	8	VOC/WIC	17
				Other	52
Total	**205**		**205**		**205**

Panel B Loans Deutz

Collateral		Loan		Debtor	
Type	**#**	**Type**	**#**	**Type**	**#**
None	265	Bill Obligatory	389	Semi-public	33
Shares	112	Current Account	2	Heirs	27
Bonds	5	*Schepenkennis*	*2*	Family	27
Trade (goods)	22	Other	*0*	Partners	37
Unknown	8	Unknown	*19*	VOC/WIC	8
				Other	280
Total	**412**		**412**		**412**

Source: ACA, Inv. 5060, Nrs 50, 51;'Inv. 234, Nrs 291-295.

Exactly how well they were able to do this becomes clear from a more detailed analysis of the private credit portfolios of Trip and Deutz. From their ledgers we have obtained detailed information on 205 private loans extended to 37 different counterparties by Trip over the period 1644-1681 and 412 private loans extended by Deutz to 129 different counterparties over the period 1662-1685. For all loans, we know the maturity, principal and interest rate. In addition, we can distinguish different loan types, the presence and type of collateral and the nature of the counterparty – the debtor for most loans. Table 3 provides an overview of the loan portfolios bearing out both similarities and differences between the lending operations of Trip and Deutz. For both merchants, bills obligatory were the dominant form of loan type. However, while Joseph Deutz used a wide network of counterparties and extended credit for a substantial part in the form of collateralized loans, most of Trip's loans are non-collateralized and are extended to close-by contacts.

To obtain more information on the sophistication of their lending practices and the degree to which they were able to differentiate in terms of loan pricing, we turn to a more formal statistical regression analysis. Table 4 presents the results of an investigation to identify the determinants of the interest rate charged and the amount lent. Obviously, a caveat applies in the sense that what we observe is the outcome of a negotiation between debtor and lender on which theoretically both had equal influence. Moreover, interest rate, principal and maturity typically are determined jointly. As such, the regressions do not strictly provide evidence on causality. They do allow to establish specific patterns and relation between loan characteristics. With respect to the interest rate equations it is important to note that the dependent variable is the actual interest rate charged minus 4 per cent, the statutory rate on Estate of Holland bonds since 1655. Finally, we note that in each regression, the number of observations is somewhat smaller than the total amount of loans reported in Table 3. Partly this is due to the fact that for some loans at least one of the variables used in the regressions is missing. In addition, loans issued by Trip prior to 1660 are excluded, to focus only on the period in which both Trip and Deutz were active in the market.

The regression results show that both merchants clearly incorporated information on their debtors and the loans in their pricing decision. Joseph Deutz, however, seemed somewhat more business-like than Louys Trip. Deutz charged the benchmark rate on government debt to his private debtors, unless they offered shares as collateral, in which case he gave about half a per cent discount. We do not find evidence that other types of collateral led to rate discounts. Trip offered the same discount on collateralized loans but in addition he lent at preferential rates to family and partners, giving them a discount of 20 to 30 basis points. Moreover, the average interest rate excluding these specific discounts charged by Trip was 30 basis points below the benchmark rate. In Trip's portfolio, larger loans are characterized by somewhat lower rates, while longer term loans carry relatively high rates. No such patterns can be significantly found in Deutz's portfolio.

Table 4. Regression Results

	Loans Trip			**Loans Deutz**	
	Interest rate-4		**Principal**	***Interest rate-4***	**Principal**
Intercept	*-0.31*** (0.07)*	*-0.32** (0.12)*	17,824*** (3475)	*-0.04*** (0.06)*	7,011*** (884)
Collateral (shares)	*-0.36** (0.15)*	*-0.48*** (0.15)*	6,101*** (1,901)	*-0.48*** (0.08)*	6,272*** (1,144)
Semi_public	*0.39*** (0.06)*		-4,790*** (1,297)		-3,696*** (951)
Partners	*-0.22** (0.10)*	*-0.27** (0.11)*			
Principal	*$-8.34*10^{-6}$** ($3.79*10^{-6}$)*	*$-1.24*10^{-5}$*** ($3.20*10^{-6}$)*			
Maturity		0.23** (0.10)	-6,681** (2,790)		
Family		-0.19** (0.07)			
Heirs					-4,160*** (932)
Type NN					11,176** (4,340)
Adj R2	*0.48*	0.34	0.14	*0.12*	0.23
N	161	161	161	396	400

The regressions for the principal loan volume show that, on average, Trip made larger loans than Deutz. However, both accepted collateralized loans that were about 6,000 guilders larger than other loans. Loans to semi-public institutions typically had a below-average size as did Deutz's loans to heirs. For Trip, maturity paid a role in both regressions: longer-term loans are smaller in size as well as carry a higher interest rate. Deutz's portfolio of "unknown" loan types (19 loans in total) stands out for its relatively large loan size.

Overall, the evidence strongly suggests that both merchants were quite sophisticated in their lending practices, knowing how to discriminate between different types of loans and customers in setting the terms of the loans. Yet, for all their financial acumen, neither Trip nor Deutz managed to gain a high return on their financial operations. The interest rate spread between loans of various kind was very small indeed. Compared to the statutory rate on Holland's obligations of 4 per cent, the interest rate reduction of the most liquid short-term loans – repo transactions of VOC shares – was only 0.5 per cent. These narrow margins explain why both men remained private equity investors. With one exception—the family deposits with which Deutz bought the Swedish monopoly—they did not use leverage to raise their game. This stands in marked contrast to what Hans Thijs did around 1600, carrying large amounts of debt to finance his expanding business in jewels, leather, and VOC shares.

Clearly the scope for expanding through leverage had disappeared by the mid-1650s. While profit margins in the commodity trade declined as the Holland economy entered its climacteric, the spread between interest rates narrowed as a growing wealth surplus chased available opportunities. International traders sought to gain control over supply lines by extending cheap credit backward and forward, tying in entrepreneurs along the line and effectively keeping outsiders out. Meanwhile local businessmen needing money had a wealth of alternatives to turn to. If there were no family savings available, borrowing money through an aldermen's contract or a notarized loan remained a viable alternative. Sometime after 1650 another, much simpler form of borrowing appeared in the form of printed and stamped standard IOU contracts sold by booksellers all over the city and thus catering to a varied clientele.[36] As with the aldermen's and notary's transactions, in this private market debtors and creditors appear to have dealt with each other directly, without formal intermediation to bring about its conclusion or enforcement. There was thus no margin, no scope and no information advantage which anyone wishing to start out in banking proper could have used as basis for a business.

5. Conclusion

Our analysis of the loan portfolios of Louys Trip and Joseph Deutz shows that we need to understand the Amsterdam financial system during the 17th century as having been market-based. Both Trip and Deutz were keen market operators that tailored

[36] Van Bochove and Kole 2013.

their lending terms quite closely to perceived risk and desired liquidity. They took into account the individual background of debtors, the size and maturity of loans, and the collateral provided. Even so, the difference with the most secure loan, Holland's obligations, was very small for all types, so much so, that throughout the period under investigation the average interest they earned from their private loans actually fell below the yield on government bonds..

The narrow interest rate differentials cut the scope for both growing through leverage, as Thijs had done, and for private equity investors like Trip or Deutz to scale up into banking proper by attracting deposits. Such banks must earn their revenue from a combination of interest rate spreads, commission fees on transactions, or information advantages leading to the transformation of scale, maturity, or risk. Spreads were narrow because both potential debtors and creditors had many alternative options. Competition for commission fees was keen between the numerous merchants and brokers active in Amsterdam, and for the same reason nobody could build a lasting information advantage in the matching of supply and demand.

These findings underline that the evolution of Britain's financial system should not be taken as a guide to understand the dynamics of financial modernization. We need to analyse each system for its particular merits, preferably by looking at them using Merton and Bodie's functional approach. As Hoffman, Postel-Vinay and Rosenthal have demonstrated for Paris, Early Modern societies could do without banks for a long time, in the French case because notaries were able to transform their involvement with particular money market functions into an informational advantage. Similarly the Amsterdam system could do without deposit banks until the late 19th century because the city possessed highly developed payment services, an array of institutions offering loans or absorbing savings, and at the same time an open access market for short-term loans.

The rise of deposit banking must therefore not be seen as the norm for financial modernity in the way Gerschenkron or Cameron did, but as one way of bundling functions which markets may just easily perform.

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Balance sheets of Louys Trip, January 1st, 1671 and 1682

ASSETS				LIABILITIES		
		1671	**1682**		**1671**	**1682**
Debts outstanding		81,223	32,211	Creditors (relatives)	81,589	14,855
Business investments	*Trip company*	108,000	101,000	Creditors (other)	26,348	1,807
	Saltpans	48,928	1,669			
	Stocks of merchandise	3,039	54,366	Capital	700,000	850,000
Private securities	*Shipping shares*	1,548	652			
	VOC/WIC shares	145,137	130,440			
	bottomry loans	17,050	0			
	VOC/WIC bonds	2,000	15,039			
Public securities	*Public debt (provincial)*	57,326	186,216			
	Public debt (urban)	0	40,974			
	Wieldrecht polder	36,600	11,530			
	Foreign loans	1,601	0			
Real estate		298,120	211,310			
Bank/cash	*Bank*	6,617	76,050			
	Cash box	720	5,208			
Total		**807,908**	**866,663**		**807,937**	**866,663**

Source: ACA Inv. 5060, Nr. 40