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Direct finance in the Dutch Golden Age†

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This article analyses private credit operations in Amsterdam in the seventeenth century to explain the absence of deposit banks. The financial system was highly segmented and a combination of declining business margins and narrow interest rate spreads cut the scope for deposit taking. Moreover, merchants had easy access to credit in the form of short-term loans which could be easily rolled over, or replaced at will. This technique worked well because a market developed providing key functions to control risk and price loans accordingly.

The funding of modern business relies heavily on banks, securities markets, and other financial intermediaries. These forms of finance became dominant from the late nineteenth century, as the rise of big business boosted demand for external funding. They were supposedly rooted in earlier instances of deposit banking and securities trading, as practised notably in Italy, Flanders, Holland, and Britain from the middle ages onwards.

Pedigrees like this are as appealing as they are suggestive, not to say misleading. First, they rely on a continuity that is implied rather than proven, a proposition all the more problematic for being stretched over very long spans of time and across a great variety of countries. Second, they disregard species and mutations that do not fit the evolutionary model culminating in today's hallmark institutions. Most of the intermediaries then active—that is to say, money changers, notaries, cashiers, scriveners, attorneys, and various town magistrates—gave up on funding business, and with them various forms of finance disappeared. Since we do not really know how the system as a whole worked, we do not understand either why it evolved the way it did. Take deposit banking, for example. It appeared early in Bruges and subsequently in Antwerp and London, but not in Amsterdam, the other pioneering financial centre. Hailing the first three as showing the shape of things to come prevents us from understanding the conditions for deposit banking to appear, that is to say, the conditions under which one particular configuration of financial functions wins out over another.[1]

This article investigates one such alternative, the direct financing of business in the form of trade credit or loans contracted by merchants. This is undertaken in order to understand why Amsterdam, for all its early financial sophistication, failed to develop deposit banking during its heyday: this type of intermediation appeared

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[1] This line of reasoning is adopted, for instance, by van der Wee, 'Antwerp'; idem, 'Monetary, credit, and banking systems'; Neal, 'How it all began'; Carlos and Neal, 'Amsterdam and London'.

only after 1870 and evolved very slowly compared to other European countries.[2] Our approach draws on the functional way of analysing a financial system proposed by Merton and Bodie.[3] They distinguish six core functions performed by such systems: payments; pooling and dividing; transfers across time, space, and sectors; managing risk; generating price information; and tackling asymmetric information. These functions are first traced in Amsterdam's seventeenth-century financial system. Then the loan portfolios of two leading businessmen and investors, Louis Trip (1605–84) and Joseph Deutz (1624–84), are analysed. They managed highly diverse investments, including large direct lending portfolios. Yet, even though Trip and Deutz occasionally accepted deposits from relatives, they never took the next step, from a modern point of view logical, to move into deposit banking. To understand why they did not, their lending between 1640 and 1685 is reconstructed in detail so as to bring out patterns of borrowing, lending, customers, and pricing. A regression analysis demonstrates that, by the 1650s, this kind of lending possessed mechanisms for generating price information, tackling asymmetric information, and managing risk. Comparing the return on such lending with the yield on safe assets, the findings show that the narrow spread between borrowing and lending prevented financiers like Trip and Deutz from scaling up their operations into banking proper.

I

During the early seventeenth century, Amsterdam witnessed an impressive series of financial innovations. The city launched a very modern-looking corporation, the Dutch East India Company (VOC), it developed a sophisticated securities market, and it boasted the Wisselbank (Exchange Bank), which started offering local payment services and progressed from there to international payments and the pioneering of key central banking functions.[4]

These innovations deeply affected humdrum operations such as payments, lending, and borrowing. Let us start with payments. The Wisselbank was set up in 1609 to replace the local payments services offered by cashiers, whose business practices were considered unsound and therefore undesirable, and to stabilize the guilder by acting as a dam against poor coin flooding in.[5] If it took some 50 years to achieve the latter aim, the former proved elusive. Merchants continued to let cashiers run their payments for them, so in the end the city council relented and lifted its ban on such services. This resulted in a two-tier system. Large local and international payments were routed through the Wisselbank, with the cashiers effecting most of those transactions on behalf of their clients. In addition the cashiers effected small local payments and probably operated a mutual clearing

[2] Jonker, 'Alternative road to modernity'.

[3] Merton and Bodie, 'Conceptual framework'; eisdem, 'Design of financial systems'.

[4] On the Amsterdam economy in general, see Lesger, *Rise*. On the early money market spawned by the Dutch East India Company, see Gelderblom and Jonker, 'Completing'; eisdem, 'Amsterdam as the cradle'; Petram, 'World's first stock exchange'. On the market for domestic debt, see Gelderblom and Jonker, 'With a view to hold'; eisdem, 'Public finance'.

[5] On the Wisselbank, see Quinn and Roberds, 'Leap'; eisdem, 'Economic explanation'; eisdem, 'Muntslag'; eisdem, 'Fiat money'; Gillard, *Banque d'Amsterdam*; Dehing, *Geld in Amsterdam*; van Nieuwkerk, *Bank of Amsterdam*. On the bank's overall position within the system, see Gelderblom and Jonker, 'Early capitalism'.

system between them. Wisselbank deposits hovered at some six to eight million guilders during the seventeenth century with occasional peaks of 10 or 11 million, which during the eighteenth century rose to between 16 and 18 million guilders with peaks of around 25 million.[6] This money remained in the bank's vault, because its charter forbade it to supply any credit, though this failed to prevent the board from surreptitiously lending money to the VOC and the city treasury.[7]

Put in Merton and Bodie's terms, the Wisselbank and the cashiers operated payments, pooling and division, and transfers across space. They did not really do transfers over time or across sectors. The bank did not do so because of its charter. The cashiers did not do so because the modal payments split confined them to a fairly marginal, commission-driven business segment that did not yield a sufficiently firm base of deposits to allow fractional reserve banking. Presumably the cashiers allowed their clients small overdrafts, but it was only with the gradual demise of the Wisselbank during the last quarter of the eighteenth century that their businesses began to attract substantial deposits, with which they started lending.[8] By contrast, one other city-sponsored institution, the Bank van Lening or pawn bank, set up in 1614, did operate transfers over time, but it did not do payments, pooling and division, or transfers across space and sectors, since it did not accept deposits and relied on the city treasury plus retained earnings for its funding.[9] The loans which the Weesmeesters or orphan trustees offered on the basis of the estates entrusted to them also represented transfers over time only, as did the loans provided by social care institutions such as the Burgerweeshuis. This type of borrowing never achieved a large scale, and appears to have declined during the last quarter of the seventeenth century, as trustees and charity boards switched to real estate and public debt as preferred investments.[10]

Commercial lending and borrowing were affected very differently by the spate of innovations. Following Antwerp's lead, Amsterdam merchants circulated IOUs, which by now no longer only covered deferred payment of specified commodity transactions, but also repeat transactions in current account to be settled at set intervals.[11] The launch of the VOC enabled merchants to take commercial credit one step further, that is to say the substitution of reputation-based credit by loans with a standard, liquid collateral, shares in the Dutch East India Company or VOC, set up in 1602.[12] Businessmen could now 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

[6] Data from van Dillen, 'Oprichting'; and idem, 'Bloeitijd'.

[7] The *recepissen* introduced in 1683 were not loan certificates, but renewable and transferable options on gold or silver.

[8] Jonker, *Merchants*, pp. 173–5, 235–7. A wealth tax register for 1742 (Oldewelt, ed., *Kohier*) counted 59 cashiers' businesses. All except four appear to have been one-man bands, which suggests that operations did not normally require significant amounts of capital. The two top earners were listed with a taxable income of 5,000 guilders, the equivalent of 25 times the annual wages of a master mason. By contrast, 20% of merchants were taxed as having an income of 5,000 guilders or more, so the cashiers were no more than middling in the commercial hierarchy.

[9] Maassen, *Tussen commercieel en sociaal krediet*.

[10] On the orphan trustees, see Kretzschmar, 'Inleiding', pp. 6–12. On the Burgerweeshuis, see McCants, *Civic charity*. On the social care institutions as investors in general, see Gelderblom and Jonker, 'With a view to hold'.

[11] van der Wee, *Growth*; idem, 'Antwerp'; idem, 'Monetary, credit, and banking systems'. Puttevils, 'Ascent', pp. 239–86, has recently detailed the way in which merchants used bonds.

[12] Gelderblom and Jonker, 'Completing'.

Thijs gradually substituted the family deposits in his business with short-term loans of 600 to 3,200 guilders. Contracted for six to 12 months, these loans were often rolled over upon expiry. Some of them were raised with regular trading partners and secured by no more than 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 bonds for several years, until 1617, so they could realize the assets at leisure and not under pressure of time.[13]

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.[14] 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 of the church, and a notary public, but the remainder consisted of loans to merchants contracted up to a year before his death.[15]

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.[16] In 1612 the VOC, backed by the Estates General, refused to liquidate its first 10 years' account to achieve permanence, but this effectively barred the company from raising equity and made it entirely dependent on debt finance. The Amsterdam chamber raised more than eight million guilders on behalf of itself and of other chambers between 1616 and 1622.[17] The Estates of Holland also sold 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.[18]

Access to this bill market initially remained the privilege of large merchants, the colonial trading companies, and public authorities, but by 1642 borrowing on collateral of securities had become a sufficiently regular practice on the exchange to prompt a pamphlet criticizing it as part and parcel of the futures and options trade which had followed in the wake of rising VOC share prices.[19] The burgeoning futures and options trading mainly took the form of sale-repurchase or repo deals, in which the buyer borrowed the money for his or her purchase from the seller

[13] Gelderblom, *Zuid-Nederlandse kooplieden*; Gelderblom and Jonker, 'Completing'.

[14] Amsterdam City Archives, Amsterdam (hereafter ACA), Notarial Archives, 567/61v, 25-09-1620, estate of Paulus Bosschaert (1620).

[15] ACA, inventory (hereafter inv.) 5073 no. 968a, estate of Cornelis Francq (1617).

[16] Gelderblom, de Jong, and Jonker, 'Formative years'.

[17] Ibid.; Dari-Mattiacci, Gelderblom, Jonker, and Perotti, 'Emergence'.

[18] Gelderblom and Jonker, 'Public finance'; Dormans, *Tekort*, p. 51.

[19] Knuttel no. 4890, 'Den loosen handel van de actionisten' (1642), cited in Gelderblom and Jonker, 'Amsterdam as the cradle'; Petram, *World's first stock exchange*.

Table 1. *Debt contracts registered by notaries and aldermen in Amsterdam, 1620 and 1660 (guilders)*

	1620		*1660*	
	No. of loans	*Value*	*No. of loans*	*Value*
Notaries—obligations	52	42,063	354	424,538
Aldermen—schepenkennissen	830	764,060	1050	2,124,225
Aldermen—annuities	319	333,546[a]	110	309,410
Total	1,201	1,139,670	1,514	2,858,173

Note: a Estimate.
Source: EURYI/VIDI Database Notaries and Town Secretaries: Amsterdam (1620, 1660). Further details of this database are available from the authors upon request.

and pledged the share bought back to him or her.[20] This repo lending appears to have fitted into existing patterns, transactions usually having terms of six to 12 months with a roll-over option. Around the middle of the seventeenth century, and possibly earlier, retailers, artisans, and other small businessmen adopted a credit instrument which piggybacked on big merchants' bills. They began using pre-printed debt contracts sold by numerous booksellers in the city. These printed forms were stamped by the municipality, and in exchange for the stamp duty payable, creditors were assured of the formal recognition of their claims in case of a debtor's insolvency. This in turn allowed debtors and creditors to deal with each other directly, without formal intermediation to bring about the conclusion or enforcement of their contracts.[21]

Commercial lending and borrowing thus typically took place without intermediation, that is, it bypassed a formal institution for pooling and dividing or for transfers across time, space, and sectors. The same was true for real estate finance. Merchants, retailers, and artisans usually possessed some property, that is, their residence cum office, shop, or workshop with some rooms to live in, which could be mortgaged if they needed more credit than the usual supply chains provided. Such mortgage markets existed throughout late medieval and early modern Europe. The Amsterdam local government facilitated that market by keeping registers for mortgages (*rentebrieven*) and for debts secured on a debtor's person and present and future possessions (*schepenkennissen*), but without practising intermediation. A sample for 1620 shows clerks registering 319 new mortgages totalling an estimated 333,546 guilders, plus 830 loans secured on person and goods for more than double that amount, 764,060 guilders (table 1).[22]

By 1660 the number of mortgages had dropped sharply to only 110, but the amount had remained about the same, presumably as a result of rising property prices. By contrast, the amount of loans secured on person and goods had

[20] Petram, 'World's first stock exchange', pp. 128–34, documents a series of loans backed by VOC shares from 1649, including loans supplied by the rich widow Elisabeth Coymans.
[21] van Bochove and Kole, 'Private credit market'.
[22] The professions of lenders and borrowers (recorded for 30 to 40% 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% of the contracts where the creditors' profession is registered. Data from the EURYI/VIDI Database Notaries and Town Secretaries (1500–1780): Amsterdam Aldermen (1620) (see tab. 1 notes).

tripled on a slight increase of the number, showing a clear need for this type of unintermediated debt.

Nor did notaries move beyond registration services. Elsewhere in Europe, notably in Paris, similar officials succeeded in building their information advantages into a key function in supplying private and public loans.[23] Amsterdam notaries were in no such position. Though they did register private loans, they succeeded in attracting only a tiny part of the market. The notarial protocols for 1620 contain only 52 loans averaging a slightly lower amount than the 1,000 guilders contracted with the average mortgage or *schepenkennis*.[24] By 1660 the number of notarized loans had risen by a factor of seven, but those 350 contracts represented a total value of no more than 424,000 guilders, still a tiny part of the overall market. Nor was volume of notarial loans constrained by regulation. A notarial debt contract offered only minor advantages in the event of litigation occurring, so notaries could not capitalize on informational or regulatory advantages.

We conclude first that, from a functional perspective, Amsterdam's financial system was highly segmented. The lending and borrowing encapsulated in Merton and Bodie's functions 1, 2, and 3 were split over several institutions. The Wisselbank and cashiers operated payments, pooling and division, and transfers across space, but not transfers over time and across sectors. The Bank van Lening and the charities offered transfers over time, but none of the others. Moreover, two key forms of credit supply, short-term borrowing with bills and real-estate backed loans, lacked formal institutions for pooling and dividing or for transfers across time, space, and sectors. The question is now to what extent can we see a credit market operating, that is to say, an impersonal interaction between lenders and borrowers structured to generate price information, tackle asymmetric information, and manage risk? Section IV investigates whether that was indeed the case, using the surviving ledgers from two prominent merchants and investors active during the second half of the seventeenth century, Louis Trip (1605–84) and Joseph Deutz (1624–84), to whom we now turn.

II

Let us first look at Trip, who together with his brothers Jacob and Hendrick earned a fortune dealing in arms, iron, pitch, and tar.[25] 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 been among the top local firms 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-eighth part in the business.

According to Klein, the Trip firm's success rested on three pillars.[26] First, the Trips maintained close family relations with the owners of the main Swedish

[23] Hoffman, Postel-Vinay, and Rosenthal, *Priceless markets*.
[24] EURYI/VIDI Database Notaries and Town Secretaries (1500–1780): Amsterdam Notaries (1620) (see tab. 1 notes).
[25] Klein, *De Trippen*.
[26] Ibid.

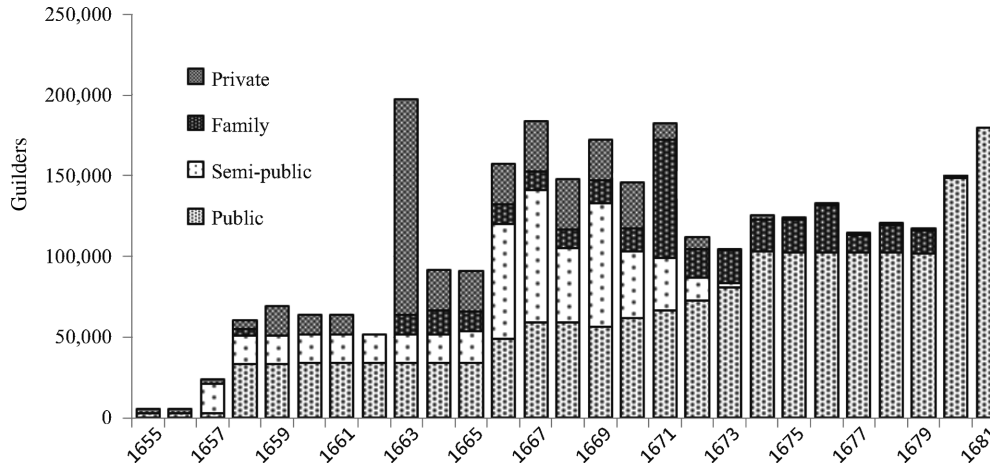

Figure 1. *Loans extended by Louis Trip, 1655–81*
Source: ACA, inv. 5060, nos. 40, 50, 51.

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 controlled the entire supply chain, from the Swedish crown to Amsterdam sales to end customers, with credit.[27] Controlling supply chains through sophisticated services and notably cheap credit was typical for the second, climacteric phase of the Amsterdam entrepôt trade.[28] Jan Deutz, Joseph's elder brother, did exactly the same with the mercury monopoly which he obtained from the Habsburg emperor in 1659.[29] This policy clearly absorbed the Trip partners' available means. 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 per cent 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. The shipwright repaid in 1660.[30] From the late 1650s, however, Trip had money to spare (figure 1). He started giving loans to private individuals in 1655, partly 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.

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.[31] During 1663 Louis Trip transferred money from his firm to lending for his own account in the form of eight loans totalling almost 150,000 guilders, at least two of which were backed by VOC shares.[32] This type of lending continued until the early 1670s, though on a smaller scale, and its

[27] Klein, '17th century Monopoly game', pp. 464–5.
[28] Jonker and Sluyterman, *At home*, pp. 73–115.
[29] Elias, *Vroedschap*, vol. 1, p. 633, vol. 2, p. 1047.
[30] ACA, inv. 5060, no. 50 (Jan Tomassen, Scheepstimmerman, 1 May 1660).
[31] Elias, 'Contract'.
[32] ACA, inv. 5060, no. 50, loans to Lucas van Neck (15-12-1663) and to Arnout de Raet (25-12-1663). Cf. also Klein, *De Trippen*, 180.

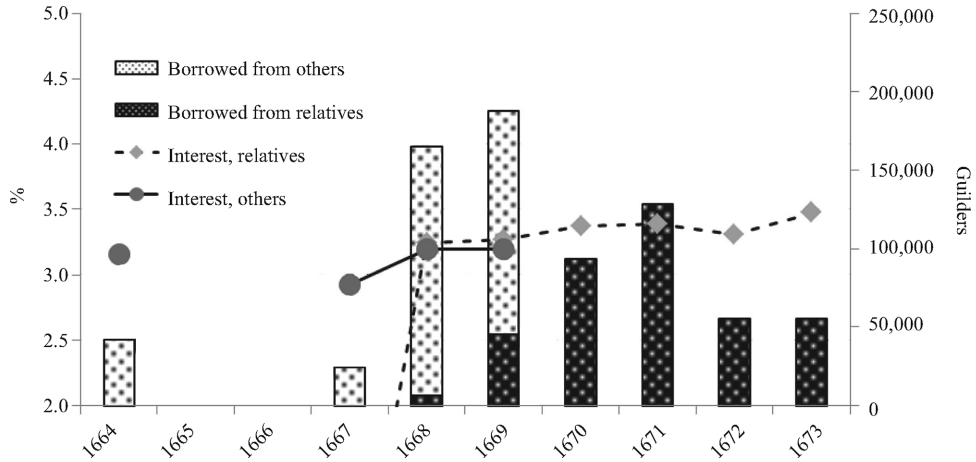

Figure 2. *Money borrowed by Louis Trip, 1664–73*
Source: ACA, inv. 5060, nos. 50, 51.

apparent connection with the ledger's securities account suggests that Trip engaged in supplying repo lending, providing liquidity to share traders on collateral of securities. Trip was an active share trader; between 1659 and 1661 his securities account turned over 300,000 guilders a year, rising to 700,000 guilders in 1663, then falling to 400,000 guilders in 1665.

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 lending to two or three loans per year because he needed money to ease his nephews' entry into the firm. In 1668 and 1669 Trip took over 150,000 guilders of debts from the firm, which he gradually replaced with deposits from family members (figure 2). 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. The precise balance between his liabilities and his assets suggests that Trip's investments yielded more than the interest rates of 3.25–3.5 per cent which he paid on his debts, but not enough to render raising more debt 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 were more or less evenly split between VOC securities, public and semi-public debt, and investments in the family firm. Only his private loan portfolio 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.

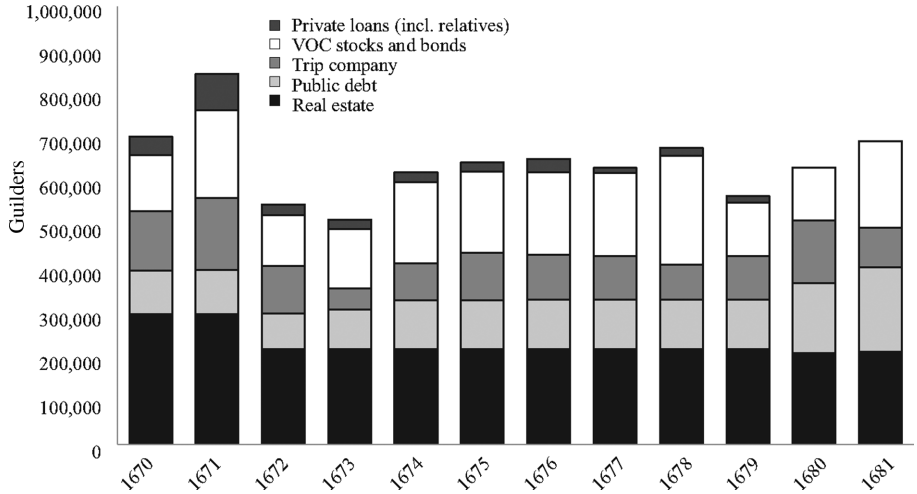

Figure 3. *The value of Louis Trip's major public and private assets, 1671–81*
Source: ACA, inv. 5060, no. 40.

In brief, Trip was an active private investor from the late 1650s to about 1670. During that time he supplied loans on a substantial scale, partly on bills of the kind used by Thijs, Bosschaert, and Francq, partly on collateral of securities. In financial system terms, Trip performed a wider set of functions than any of the other operators discussed so far. He effected payments, and transfers across time, space, and sectors, but, giving his very low debts, did not engage in pooling and subdividing. He refrained from attracting deposits to increase the scale of his operations, probably because narrow interest rate spreads prevented that. His business model was direct finance; he acted as what we now call a private equity investor. Let us now look at the pattern of Deutz's investments.

III

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.[33] 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.[34] In addition to this the new license holders took over 76,000 guilders worth of bills of exchange.[35]

Deutz and Van Gangelt essentially wanted to do what the Trip brothers and Jan Deutz did, controlling a supply chain with credit. Now Joseph Deutz was already a wealthy man, worth 200,000 guilders in 1659, but a large part of this was tied

[33] Zandvliet, *De 250 rijksten*, pp. 184–5, 197–8.
[34] van Eeghen, 'Buitenlandse', pp. 178–9; Klein, *De Trippen*, p. 475; idem, '17th century Monopoly game', p. 466.
[35] Klein, '17th century Monopoly game', p. 470, n. 30.

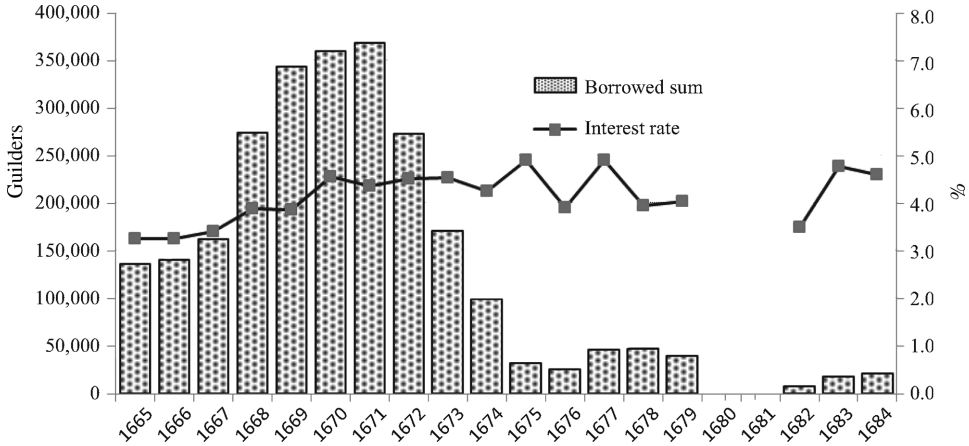

Figure 4. *The amount of debt raised by Joseph Deutz from relatives, 1665–84*
Source: ACA, inv. 234, nos. 291–5.

up in real estate and other business operations.[36] 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).[37] 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 Ortt's loan sufficed to finance Deutz until 1668, when his partner Christoffel van Gangelt withdrew from the business. 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 seventeenth century.[38] But Deutz paid a curiously high interest rate on them. Abraham Ortt received 3.25 per cent per year at first, which Deutz raised to 4.625 per cent in 1668 at a time when the market trend pointed down. From 1670 the other family deposits also carried 4.625 per cent.

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 to be 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, may reflect 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 condition would have given them. In this form the family loans resembled the finance supplied by

[36] Ibid., p. 466.
[37] Elias, *Vroedschap*, vol. 2, p. 997.
[38] Gelderblom, 'Governance'; Gelderblom and Jonker, 'Completing'.

Table 2. *Annual income from the Tar and Pitch Company of Joseph Deutz and Christoffel van Gangelt and end-of-year credit balance with their suppliers, 1662–6 (guilders)*

Year	*Interest received*	*Commission fees*	*Insurance and transport*	*Current account balance on 31 Dec.*
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, '17th century Monopoly game', p. 468.

sleeping partners in a private limited company, i.e. 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 Low Countries.[39] Either way we are looking at lenders and borrowers used to pricing differences in investor liquidity preferences.

From the beginning Deutz's interest in pitch and tar seems to have been financial rather than commercial.[40] During its first five years the business earned 30,400 guilders from its 2 per cent commission fees on sales, against 44,700 in fees for insurance and freight contracted in Amsterdam, and 113,100 guilders in interest payments on overdrafts on the current account of the Swedish producers (table 2). Deutz and Van Gangelt charged 5 to 6 per cent on this revolving credit collateralized on the pitch and tar supplied to them, in addition to which they gave their Amsterdam buyers credit on sales.[41]

When Van Gangelt retired in 1668, Joseph Deutz initially continued their business along similar lines, once again extending large advances 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 per cent 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.[42] After the contract had been renewed in 1672, a dispute arose between Deutz and his principals about sums due. This led to Deutz relinquishing the contract to the Swedish Tar Company, which then sent one of its directors, Philip Botte, to Amsterdam to take charge of sales. 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 per cent (figure 5).[43]

Having given up his pitch and tar business, Deutz considerably expanded his loan portfolio (figure 6). From the late 1660s until the mid-1670s he generally had

[39] Thijs, *'Werkwinkel'*; Lis and Soly, *De Heyder*; cf. de Ruysscher, *'Naer het Romeinsch recht'*, for the definition without formal legal introduction of the *société en commandite*.

[40] Klein, '17th century Monopoly game', pp. 466–8.

[41] Ibid.

[42] Ibid.

[43] The 1679 peak interest payments had three causes. First, Deutz entered the remainder of a debt owed to the old Tar Company; second, he received interest arrears on loans dating from 1678; third, the Tar Company lombarded a large quantity of iron in this year (ACA, inv. 234, no. 294, fo. 164).

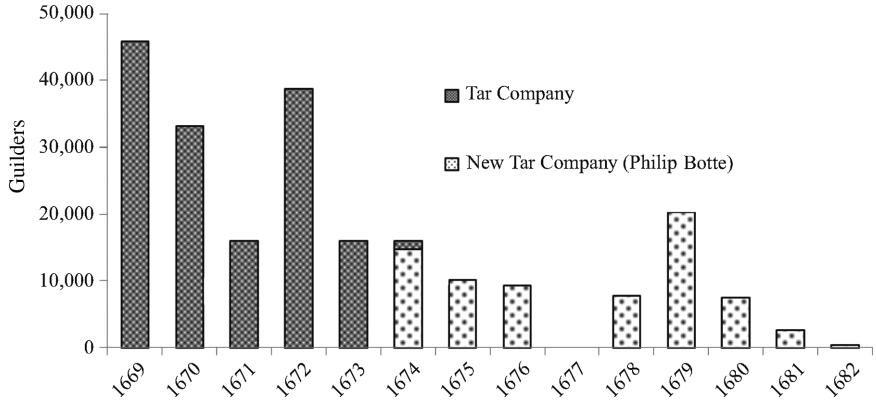

Figure 5. *The annual interest charged by Joseph Deutz to his suppliers of tar and pitch, 1669–82*
Source: ACA, inv. 234, nos. 292–5.

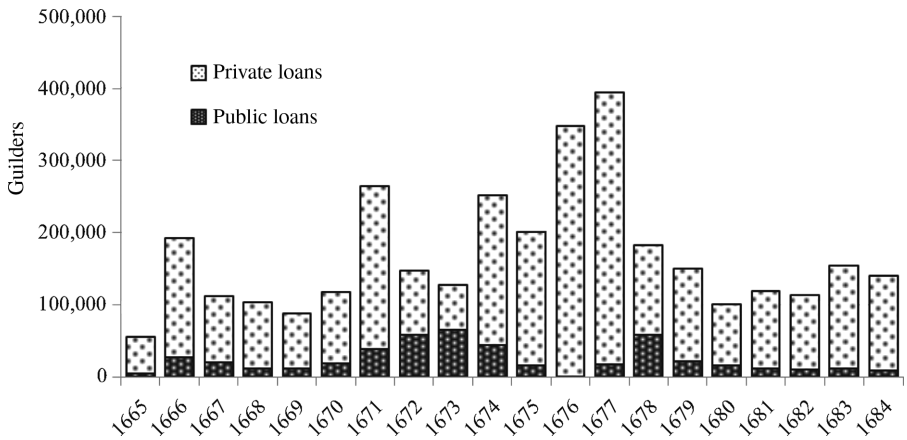

Figure 6. *The average amount of Deutz's loans outstanding in Amsterdam, 1664–84*
Source: ACA, inv. 234, nos. 291–5.

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 was moving on a large scale 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.

First, Deutz financed the quadrupling of his loan portfolio entirely from his own means, which must therefore have been both ample and liquid. Second, although Deutz's loan revenue 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

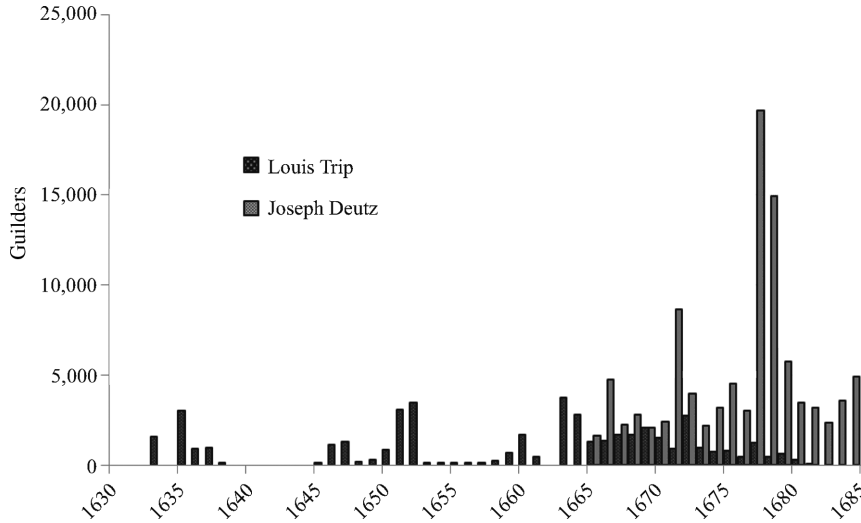

Figure 7. *The annual interest received on private loans by Louis Trip and Joseph Deutz, 1655–84*

Source: ACA, inv. 5060, nos. 50, 51; inv. 234, nos. 291–5.

of his household expenses, which ran to 10,117 guilders in 1674.[44] 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 compared to other investment opportunities. Until the mid-1650s public and private interest rates appear to have moved together, dropping from 6.25 per cent to 5 per cent.[45] The two then diverged. Public rates fell to 4 per cent, but private rates sank a further 0.5–1 per cent, those charged by Trip tending towards the lower bound, those of Deutz towards the upper one. Whereas the yield on Holland's bills 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 (figure 8).

In sum Deutz, like Trip, engaged in direct finance. He effected payments and transfers across time, space, and sectors, but did so in the private equity mould, without pooling and dividing, i.e. attracting deposits. Deutz raised debt with his family to obtain and keep the pitch and tar monopoly, not to fund his subsequent money market operations, presumably because narrow spreads prevented that.

IV

The variety of investments which both Trip and Deutz managed gives a distinct impression that, in their search for yield, they considered every available

[44] ACA, inv. 293, carta 158.
[45] Gelderblom and Jonker, 'Public finance', fig. 8.

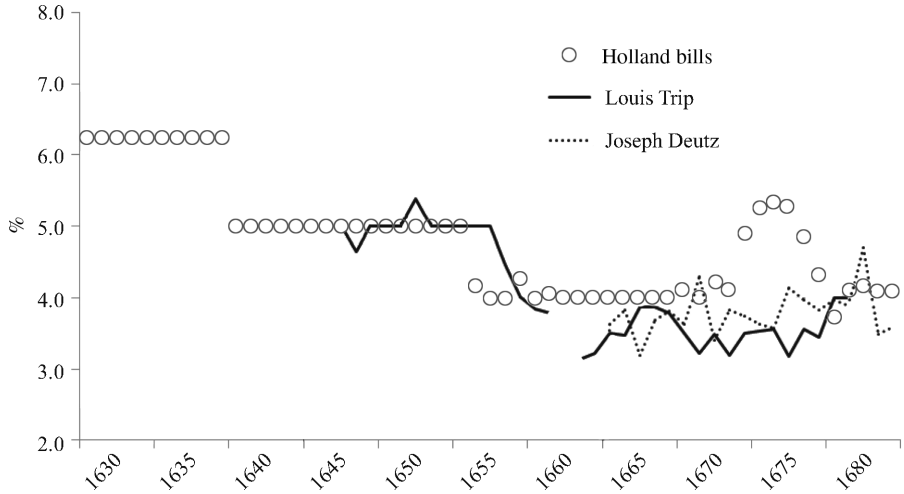

Figure 8. *The yield on Holland debt and the average annual interest rate charged to private borrowers*[a] *by Louis Trip and Joseph Deutz, 1630–84*
Note: a *Weighed by loan amount and maturity.*
Source: ACA, inv. 5060, nos. 50, 51; inv. 234, nos. 291–5.

opportunity. They held part of their wealth in real estate and in public debt, but otherwise invested in, on the one hand, the supply of trade credit to particular supply chains and, on the other, in private loans to fellow merchants and to the securities trade.

We now return to the key question raised above, whether this type of lending can be called a market. From the Trip and Deutz ledgers we obtained detailed information on 205 loans extended to 37 different counterparties by Trip over the period 1644–81 and 412 loans extended by Deutz to 129 different counterparties over the period 1662–85, including 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. These data contain missing observations of loan characteristics for some of the loans. Table 3 provides an overview of the data bearing out both similarities and differences between the lending of Trip and Deutz. For both merchants, bills obligatory were the dominant form of loan type. However, while Joseph Deutz possessed a wide circle of counterparties and supplied credit for a substantial part in the form of collateralized loans, most of Trip's loans were non-collateralized and granted to close relations.

A regression analysis shows that their lending did indeed follow patterns which suggest a market did exist (table 4). We wanted to know what determined the interest rate charged and the amount lent, accepting that what we observe was the outcome of a negotiation about interest rate, principal, and maturity between debtor and lender on which theoretically both had equal influence. Consequently the regression results do not, strictly speaking, provide evidence on what caused what, but they do allow us to establish specific patterns and relations 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

Table 3. *The characteristics of the private loan portfolios of Louis Trip (1644–81) and Joseph Deutz (1662–84)*

Panel A: Loans, Trip

		Principal (guilders)		Interest (% per year)		Maturity (years)	
Collateral type	No.	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
None	173	10,324	9,633	3.94	0.74	0.99	0.39
Shares	13	7,308	3,449	3.31	0.34	0.72	0.34
Bonds	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Trade (goods)	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Unknown	19	2,442	551	4.76	0.56	1.00	0.17
Total	205						
Loan type							
Bill obligatory	164	10,438	9,396	3.90	0.70	0.98	0.40
Current account	9	8,500	0.00	3.50	0.00	1.00	0.00
Schepenkennis	7	1,386	212	4.00	0.00	1.00	0.00
Other	17	2,497	423	5.18	0.73	0.98	0.08
Unknown	8	10,900	13,989	3.44	0.18	0.81	0.53
Total	205						
Debtor type							
Semi-public	52	5,712	1,954	4.02	0.15	1.10	0.30
Heirs	4	14,250	1,500	3.31	0.13	0.63	0.25
Family	52	11,183	9,529	4.11	1.02	0.98	0.28
Partners	28	11,172	10,905	4.54	1.22	1.04	0.33
VOC/WIC	17	16,118	3,498	3.85	0.23	1.00	0.00
Other	81	9,007	11,458	3.91	0.87	0.91	0.48
Total	205						

Panel B: Loans, Deutz

Collateral type	No.	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
None	265	6,404	7,231	3.98	0.58	1.13	1.34
Shares	112	13,262	5,999	3.48	0.49	0.50	0.16
Bonds	5	5,832	4,032	3.80	0.45	0.63	0.57
Trade (goods)	22	11,928	12,884	3.94	1.07	0.87	0.51
Unknown	8	6,598	5,917	3.94	0.54	0.76	0.28
Total	412						
Loan type							
Bill obligatory	389	8,316	7,384	3.82	0.61	0.89	0.93
Current account	2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Schepenkennis	2	7,500	707	4.00	0.00	1.50	0.71
Other	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Unknown	19	17,867	15,030	4.18	1.01	1.83	3.44
Total	412						
Debtor type							
Semi-public	32	3,315	1,624	4.02	0.09	0.99	0.25
Heirs	27	3,497	2,405	4.05	0.40	0.98	1.07
Family	27	10,736	13,001	3.97	0.28	1.25	1.19
Partners	37	7,884	11,786	3.82	0.34	1.10	0.60
VOC/WIC	8	5,163	4,894	3.73	0.49	1.25	0.46
Other	303	9,882	7,714	3.80	0.70	0.89	1.23
Total	412						

Notes: The column numbers do not add up to the total for the category 'debtor type', due to the fact that there is overlap between the dummies for 'heirs', 'family', and 'partners'.
Source: ACA, inv. 5060, nos. 50, 51; inv. 234, nos. 291–5.

Table 4. *Regression results for loan principal and interest rate*

	Loans Trip			*Loans Deutz*	
	Interest rate-4	*Interest rate-4*	*Principal*	*Interest rate-4*	*Principal*
Intercept	−0.31*** (0.07)	−0.32** (0.12)	17,824 (3,475)	−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	−0.83** (0.38)	−1.24*** (0.32*)			
Maturity		0.23** (0.10)	−6,681** (2,790)		
Family		−0.19** (0.07)			
Heirs					−4,160*** (932)
Loan type unknown					11,176** (4,340)
Adj. R^2	0.48	0.34	0.14	0.12	0.23
N	161	161	161	396	400

Notes: $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$. In the regressions for the interest rate, the principal amount is expressed in 100,000 guilders. Nos. in parentheses are standard errors. Explanatory variables–apart from the principal and maturity–are dummy variables equal to 1 when the characteristic applies and zero when it does not. The final regression results were obtained by starting from the most general specification including all explanatory dummy variables given in table 3 and eliminating insignificant terms. Since the interest rate, principal, and maturity of the loan are typically determined simultaneously, the regressions should not be interpreted as causal relations but as stylized descriptions of lending behaviour by Deutz and Trip.

statutory issuing rate on Estate of Holland bills since 1655. Finally, we note that in each regression, the number of observations is somewhat lower than the total number of loans reported in table 3. This is partly due to the fact that for some loans at least one of the regression variables is missing. In addition, loans issued by Trip prior to 1660 are excluded, since we wanted to focus only on the period in which both Trip and Deutz were active.

The regression results show a remarkable similarity in the lending behaviour of the two merchants, with the exception of the role of share collateral in the regressions for the principal amount. Trip dealt mostly to known counterparts and Deutz to a wider circle of borrowers, but both clearly incorporated information on their debtors and the loans in pricing decisions, the latter shadowing market rates somewhat closer than the former. Deutz charged the benchmark rate on government debt to his private debtors, but about 0.5 percent less on repo loans, the liquidity of the shares pledged justifying a discount not granted to other types of collateral. 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.

The regressions for the principal loan volume show that, on average, Trip made somewhat larger loans than Deutz. Accounting for other factors, collateralized loans by Deutz were about 6,000 guilders larger than other loans, while collateralized loans by Trip were about 6,000 guilders smaller than other loans. Loans to semi-public institutions typically had a below-average size as did Deutz's

loans to heirs. For Trip, maturity played 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 the existence of a money market with mechanisms to generate price information, tackle asymmetric information, and manage risk, enabling these two merchants to tailor their lending to specific demand. Moreover, the interest rate spread between loans of various kinds was very small indeed. The rate on the most liquid short-term loans, VOC share repos, was only 0.5 per cent below that on the 4 per cent issuing rate of risk-free Holland bills, so various types of credit were clearly interconnected, while family deposits moved in a band of 3–4.625 per cent. This narrow spread explains why both men remained private equity investors. With the one exception already mentioned, the family deposits with which Deutz bought the Swedish monopoly, neither Deutz nor Trip used leverage to raise their game, probably because the narrow spread prevented it.

Their avoidance of leverage stands in marked contrast to Hans Thijs around 1600. Thijs raised large amounts of debt to finance his expanding business in jewels, leather, and VOC shares, but 50 years later this practice was no longer viable, probably as a result of Holland's economy entering its climacteric. As profit margins in the commodity trade declined, the spread between local interest rates narrowed because of surplus wealth chasing available opportunities. This eliminated the scope for deposit-taking and reinforced the already marked evolution of lending patterns in two directions.

First, international traders like Trip and Deutz started using the widening spread between local rates and foreign rates to control supply chains by extending cheap credit backward and forward, tying in entrepreneurs along the line and effectively keeping outsiders out. It was precisely this finance-based array of services which enabled Amsterdam merchants to hang on to commodity flows which would otherwise have bypassed them once the Dutch economy started slowing down during the last quarter of the seventeenth century.[46]

Second, the existing practice of short-term lending on collateral of securities led to lombarding, that is, the borrowing of money against securities or commodities, becoming the dominant form of commercial credit in Amsterdam. This evolution appears to have taken place during the last decades of the seventeenth and the first decades of the eighteenth century. A first indication appeared during the early 1690s in the form of an extension of the city's ban on brokers dealing for their own account to include lombarding.[47] By 1727 Le Long's description of Amsterdam trade printed new brokerage fees for lombarding plus a separate section detailing the practice and conditions for lombarding any kind of commodity.[48] The section described it as lending on collateral of just about anything for six months, funded by anyone with money to spare, and intermediated by brokers using printed forms for transactions. During the 1740s lombarding received official recognition when the city council laid down new brokerage terms, including standard fees for all kinds of lombard transactions and their roll-over, which were introduced at the

[46] Jonker and Sluyterman, *At home*, pp. 73–115.
[47] Le Long, *De koophandel van Amsterdam* (1714), p. 18.
[48] Le Long, *De koophandel van Amsterdam* (1727); neither appears in the 1724 edition of the book.

end of the 1740s.[49] Because ready money was always available, commented Le Long, Amsterdam had become the cashbox as well as the commodity entrepôt of Europe.[50]

Thus between 1690 and 1730 short-term collateralized loans intermediated by brokers became a key form of commercial lending, that is to say, a pattern of supply and demand for credit in which bankers were conspicuous by their absence. That pattern remained dominant all the way to 1914 and is generally taken to explain the very late rise of joint-stock deposit banking.[51] In our view, Trip and Deutz stood at the half-way mark in this evolution. One part of their lending was still relationship-based, the other part no longer. But both parts show clear signs of market mechanisms existing, since they behaved similarly in response to changing circumstances. Indeed, that market had cut interest rate spreads to such an extent that, for merchants like Trip and Deutz, deposit banking was already out of the question. Therefore allocating surplus savings became the domain of a fee-driven service provided by brokers.

V

From the often-used perspective of financial evolution Amsterdam's financial system during the Dutch Golden Age has always looked a peculiar anomaly: a highly sophisticated market with an innovative bank at its centre, yet without deposit banking. Wanting to understand this anomaly, we first applied a functional analysis to the system and found it highly segmented. The intermediaries present lacked either the functional scope, or the scale to engage in deposit banking. The Wisselbank was not allowed to do credit operations, but its central position in the payments system denied other intermediaries the deposit base with which to build such a business. Instead, an active bill market developed. As in Antwerp, merchants circulated private IOUs, but soon after the introduction of VOC shares they started using them as collateral for short-term loans. By 1620 this market also absorbed short-term paper floated by government offices and the colonial companies themselves with remarkable ease.

We then analysed the investments and portfolios of two prominent merchants active around 1650, Louis Trip and Joseph Deutz. Providing credit was central to both their businesses. They exploited the spread between local interest rates and those abroad to control international supply chains, and they supplied short-term loans, partly against securities, partly against other collateral. The data show that Trip and Deutz tailored their loans to the specific demand to match debtors' profiles. Contrary to merchants active earlier in the seventeenth century, neither Trip nor Deutz relied on debt for their operations. Very occasionally they raised debt with their family, for instance to capture an opportunity, but as a rule they avoided deposits and remained private equity operators because the local interest rate spread left no margin. A consequence of the Dutch economy entering its climacteric, their behaviour helped to set the Amsterdam market's peculiar

[49] Le Long, *De koophandel van Amsterdam* (1753).
[50] Le Long, *De koophandel van Amsterdam* (1714), p. 18.
[51] Jonker, *Merchants*; idem, 'Alternative road to modernity'; idem, 'Cradle of modern banking'.

character, centring on an active and very liquid short-term credit market which dominated operations until 1914 and handicapped the rise of deposit banking.

Our analysis also shows that applying Merton and Bodie's functional categories affords a better understanding of how the Amsterdam financial system worked than the simple dichotomy of bank-based versus market-based. Yes, the system had a large bank in the middle, but credit was overwhelmingly supplied through the market with a technique that may not have generated lots of traded or quoted securities, but which did succeed in supplying large volumes of credit at very low cost, tailored to the needs of debtors and creditors alike.

Finally, our findings underline that we should be careful to take the emergence of particular forms of financial intermediation such as deposit banks to gauge the dynamics of financial modernization. We need to analyse each system for its particular merits. 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 nineteenth 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 as easily perform.[52]

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[52] Cf. Levine, 'Financial systems'.

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