Center for Global Economic History

Universiteit Utrecht

CGEH Working Paper Series

Small is beautiful.
On the efficiency of credit markets in late medieval Holland

Jaco Zuijderduijn, Tine de Moor and Jan Luiten van Zanden, Utrecht University

June 2011

Working paper no. 11

http://www.cgeh.nl/working-paper-series/

Small is beautiful
On the efficiency of credit markets in late medieval Holland

Jaco Zuijderduijn, Tine de Moor and Jan Luiten van Zanden, Utrecht University

Abstract

In this paper we analyse the functioning of private capital markets in Holland in the late medieval period. We argue that in the absence of banks and state agencies involved with the supply of credit, entrepreneurs' access to credit was determined by two interrelated factors. The first was the quality of property rights protection and the extent to which property could be used as collateral. The second was the level of interest in borrowing money at the time, as well as such borrowing compared with the interest rates on risk-free investments. For our case study, the small town of Edam, and its hinterland, De Zeevang, in the fifteenth and sixteenth-century, we demonstrate that properties were used as collateral on a large scale, and that interest rates on both small and large loans were relatively low (about six per cent). As a result, many households (whether headed by men or women) owned financial assets and/or debts, and the degree of financial sophistication was relatively high.

Keywords: credit markets, Holland, late Middle Ages, NIE, micro-credit

JEL Codes: N23, N94, 016

Corresponding author: Tine de Moor, t.demoor@uu.nl

Acknowledgements: We would like to thank Heleen Kole and René van Weeren for their important contribution to the dataset on the *Verpachtingskohieren*, the source that plays a central role in this article. We also profited from comments on an earlier draft we presented at workshops in Utrecht and Leiden and from the comments given by the anonymous referees and the editors of the European Review of Economic History (in which this article will be published in due time).

Introduction

How important are capital markets, especially markets for small loans, or 'micro-credits', for economic development? The microcredit or microfinance movement has recently received a great deal of attention as a fundamental contribution to economic development, relying on the capacities of relatively poor men and women to develop entrepreneurial activities (Yunus, 2008). It has also led to a new questioning of the sources of economic growth in Western Europe: what role did capital markets play in the process, and when did 'modern' capital market institutions originate? There is much literature on the financial revolution in different parts of Western Europe which partially addresses this question.[1] Authors concerned with this question have identified 'financial revolutions' in fifteenth-century Northern Italy (Fratianni and Spinelli, 2006), sixteenth-century Holland (Tracy, 1985), and late seventeenth century England (Dickson, 1967), but all these revolutions centred on the (increased) capacities of states to borrow money. It is not always clear how the private sector was affected by these developments. In fact, Clark (2005) and Epstein (2000) have argued that in England the most important changes in the private capital market preceded this financial revolution by as much as three centuries. For obvious reasons such as that the state left many detailed accounts of its activities, but the private sector often did not, it is much more difficult to reconstruct how private capital functioned: who had access to credit, who invested savings in which type of securities, how flexible or inflexible were these markets, and how high were interest rates on small and large loans?

New Institutional Economics (NIE) is a major source for understanding the problems and possibilities of microcredit. The typical problem addressed by the microfinance movement is that in many situations in the current 'developing' world, transaction costs of small loans for female and male entrepreneurs are very high, resulting in extremely high interest rates. This severely limits the number of projects that can be funded and carried out, or may result in the fact that men and women do not have access to credit at all. High transaction costs will mean that although many potential projects are known to entrepreneurs and can be financed at an interest rate suppliers of capital are willing to loan their funds at, they will not find the necessary funding because the capital market does not function well. The result will be economic stagnation, or at least less growth than in a situation of well-developed capital markets.

This market failure may be the result of a number of institutional weaknesses. The first and perhaps most fundamental problem, the 'De Soto problem', is that potential entrepreneurs own certain assets that they might use as collateral but cannot because of imperfect property rights (De Soto, 2001). This may be caused by the absence of clear titles to land and real estate, the insecurity of property rights in general due to corruption and bad governance, the absence of rules about bankruptcy, and/or the liquidation of collateral, or similar institutional problems. These problems make it difficult or impossible to use such assets as collateral for loans, or they can only be used at very high interest rates, because it is unclear whether and how the asset can be liquidated

[1] This literature on 'financial revolutions' is discussed in: Sylla, 2002.

if the debtor defaults on his/her loan. The underlying problem is that when capital markets are embedded in very unequal socio-political structures, it is difficult to develop the kind of transparent property rights necessary for efficient functioning of capital markets.

The second institutional weakness concerns information asymmetries in the capital market. When no collateral is available, or even if it is available, substantial cost is involved in the liquidation of such collateral, and information asymmetries will increase transaction costs. There is an *ex ante* information problem: the bank/lending agency has to assess the viability of the project for which the loan is supplied as well as the payback capacity of the potential debtor. Moreover, how can the lending agency select the most promising projects (Hoffman, Postel-Vinay and Rosenthal, 2000, pp. 62-8)? And there is an *ex post* information problem: the lending agency will need to monitor the debtor's payments and know his/her capacity to pay. If and when he/she does not pay, is that because of *force majeure*, or is the debtor simply being opportunistic?

A third factor influencing transaction costs is related to the 'thickness' of the market. The lending agency will also have other costs, such as overhead, which is part of transaction costs (the costs that must be covered by the interest on the loan). It can be argued that the thinner markets are, the more such overhead will contribute to total transaction costs. Smaller loans, moreover, will have larger fixed per loan overhead cost than large loans, further punishing the small entrepreneur. Once a thick market develops, the cost for small loans can probably be reduced more than for big loans.

We argue that the interest rate that households pay on their loans consists first on the 'pure' reward for time preference, second on a risk premium, which reflects the quality of the institutional framework (to what extent is it possible to enforce contracts and, for example, liquidate the collateral), and third 'pure' transaction costs, which are linked to the thickness of the market and the quality of information available.[2]

In a recent paper Jaime Reis (2007) has suggested a way to assess the efficiency of the local capital market, which he applied to the Portuguese rural capital market in the second half of the nineteenth century. This method measures the interest rate margin between low-risk credits, such as government loans, and the rates usual for mortgages in the countryside. The difference is a measure of the risk premium[3] of lending to farmers and other rural inhabitants, and therefore extent to which rural capital markets worked well to successfully protect the property rights of creditors. The difference he found for Portugal was very significant; there was a gap of three to four per cent between risk-free loans of four to six per cent and the seven to ten per cent that farmers paid (he also found evidence that this was fairly usual for the region: in Spain this 'risk premium' was at a similar level).

[2] See also Clark, 2005, p. 5.
[3] We assume that the real interest rate consists of a rate of pure time preference, a premium that reflects the expected increase of overall income, and a default risk premium (Clark, 2005, p. 5).

We will also apply this idea to the Dutch capital market in the fifteenth and sixteenth century to measure two of the factors: the risk premium and to pure transaction costs that determined the interest rate and reflected the efficiency of the capital market. Following North (1990), the efficiency of the capital market is reflected in low transaction costs and a low risk premium, both resulting in relatively low interest rates for debtor and easy access to the capital market. To explain the patterns found, we will also look at the extent to which households could use their assets as collateral (and the extent to which property rights were protected): did this society have a good solution to the 'De Soto-problem'?

In our case study we focus on the capital market of a small town, Edam, and its hinterland, De Zeevang, in the northern part of Holland in the late medieval period (1460-1560). In other papers we have shown that this was a region which as early as the fourteenth century experienced a process of economic growth and structural transformation, resulting in the famous Golden Age of the seventeenth century (De Moor, Van Zanden and Zuijderduijn, 2009). This is part of the core area of the ´first modern economy´ that has been analysed in detail by De Vries and Van der Woude (2000) in their seminal study of the Dutch economy from 1500 to 1800. They maintain that in the early modern period the Netherlands already had a relatively modern set of institutions, which explains the strong performance of the Dutch economy in this period. By focusing on the capital market, this article can be seen as a way to test this idea, much as Douglass North argued that interest rates are the best proxy for the efficiency of the institutional framework of an economy (North, 1990, p. 69).[4]

We would like to understand why this process of growth began so early in the region of our study, and in particular what role did the capital market play in the process. If NIE is correct, then this precocious process of growth must have had its foundation in efficient institutions related to the capital market, which would allow interest rates paid by (potential) investors to fall to a relatively low level. This implies that large groups of households – not only the rich, but also the middle class, and perhaps even the lower middle classes – participated in capital markets both as lenders and as borrowers, and that this applied not only to households headed by men, but also those headed by women. In some of the literature on microcredit the strategic position of women in capital markets is stressed: in many societies there are formal and informal barriers against women participating in (formal) capital markets. Yet women are often much more entrepreneurial and because of their regular, daily contacts with markets, have better information about potential projects that could be funded. The gains in including women in the (formal) capital markets are therefore very significant. For this reason, in this historical case study we will pay special attention to the role of women in capital markets.

[4] We even go one step further than De Vries and Van der Woude (2000) by arguing that as early as the fourteenth and fifteenth centuries the 'modern' institutions emerged that made possible the highly developed capital market and the strong performance of the Dutch economy; see Van Zanden (2002b) and Van Bavel and Van Zanden (2004).

We will proceed as follows. After a brief introduction to the region and the main institutions governing capital markets in the area, we provide a (necessarily) brief answer to the first 'De Soto' question: how well were property rights developed and did this allow households (headed by men or women) to use their assets as collateral. Next, we turn to the second question and thanks to a very rich source covering the capital market of Edam and Zeevang in the period 1462-1563, we analyse the participation of men and women in capital markets there. We will also try to establish the link between the size of loans and the interest rate – or perhaps the absence of such a link, which would also be significant.

How well were property rights protected?

There is a great deal of evidence that property rights in Holland were clear enough to allow for the emergence of capital markets, at least since the fourteenth century (Zuijderduijn, 2009). The origins of this situation are to be found earlier, during the large-scale reclamations of peat lands in the high Middle Ages. To attract colonists willing to reclaim the area, territorial lords had to offer them freedom and near-absolute property rights, and as a result, even centuries later, peasants still held about two-thirds to three-quarters of the land.[5]

Titles to land were protected by a property rights system based on ratification by local authorities in towns and villages. So, transfers of land within Edam were only valid when contracted in their presence: transferring land in any other way did not invest buyers with property rights. Since conveyance was also required to validate mortgages, there was only one place where property rights on land in Edam could be obtained, checked, and disputed: the Court of Edam (Zuijderduijn, 2009, pp. 184-190).

Local conveyance was practiced as early as the thirteenth century. At first judges or aldermen merely witnessed transactions, and had to rely on their memory if consulted about property rights. Over time they began to issue contracts in writing, presumably because the growing number of transfers required it, and because the increase in literacy allowed it. This is apparent from the existence of several contracts issued by the Court of Edam at that time. But this practice probably started at least a century earlier.[6] The next step in the evolution of conveyance was recording of minutes of ratified contracts in registers. In Edam the oldest register available dates from 1564,[7] but there is ample evidence that this practice may have started much earlier (Zuijderduijn, 2009, pp. 202-3).

This property rights system, in which there was only one institution capable of investing property rights, resolved much of the 'De Soto problem'. The situation in 1564 (and we are sure that Edam kept a register of property rights then) is similar to modern land registries.[8] To be sure, elsewhere in the Low Countries property rights were often less clear, for instance, in regions where

[5] The property rights colonists received are discussed in: Van Bavel, 2010, pp. 83-6.
[6] Waterlands Archief (WA), Stad Edam (SE), inv. no. 448 (1451), 452 (1490). Contracts in writing in the North of Holland in the fourteenth century have been edited by: Vangassen, 1964.
[7] WA SE, inv. no. 3813.
[8] De Soto (2001, p. 52) acknowledges the early emergence of formal property registries in the Middle Ages, but also stresses the importance of national registries. The evidence presented in this paper suggests that local registries could also contribute to efficient capital markets.

property rights were invested by the courts in capital cities, as well as those in small towns and villages.[9]

Of course this property rights system also had to function in practice. To what extent did creditors risk facing bad governance? Medieval government often involved nepotism and corruption: many officials leased offices and had to look for ways to make good on their investments (Blockmans, 1985). Others, such as aldermen, were volunteers recruited from local elites. They were expected to make up for the time they spent in public service in more informal ways.

There were a few checks on corruption, however. From early on, territorial lords took great care to prevent excessive abuse of power. They installed regional, high, and supreme courts, which plaintiffs could appeal to, although this was often a costly and time-consuming procedure.[10] The officials in charge of regional courts also had the task of monitoring the functioning of local authorities. They particularly kept an eye on sheriffs, government agents that presided in local courts, and fined or removed them from office if they engaged in corruption and abuse of power (Zuijderduijn, 2009, pp. 46-52).

Checks on corruption were also present at the local level: abuse of power could cause conflicts and even social unrest. Equally important, the conveyance system allowed local courts to monitor transactions, which was useful for assessing taxes among the population. This system also allowed local courts to monitor whether contracting parties observed customary law with respect to prohibitions on minors selling or mortgaging real estate. Abuse of power was likely to reduce the number of people making use of the conveyance system, and hence, local courts would lose control over local trade.

What happened when mortgagors reneged? Creditors in possession of a ratified contract could immediately ask the sheriff of Edam to seize the mortgage, without having to go to court first. Debtors could appeal to seizure, but risked a fine of 6 s. if their appeal was not upheld, which reduced possibilities to stall legal procedures (Bezemer, 1894, p. 152). The debtor was allowed some time to offer a solution, for instance, a down payment, but if he failed to do so, the sheriff would invest the creditor with property rights. If there was more than one plaintiff, those with the oldest titles were given preference.

How would this affect some of the other problems we identified, such as information asymmetries? Investors looking for ways to assess the payback capacity of the potential debtor only had one place they could go: the Court of Edam, where they could obtain a credit-rating for the mortgage they were about to accept. We also know that elsewhere in Holland local courts actively tried to prevent fraud, and that aldermen took great care to investigate whether or not collaterals were already mortgaged (Zuijderduijn, 2009, pp.193-7).

The best evidence we have linking this institutional framework to the capital market is the register of 1564. This source indicates that the people of Edam had 450-500 transactions in land, houses, ships, and capital registered by the local court every year.[11] They did this in spite of having to pay a fee to the *scribent* and, perhaps more important, revealing their dealings to the local

[9] For instance, in the area around Bois-le-Duc property rights could be invested by this town and village authorities. This unclear situation caused many disputes (Van der Ree-Scholtens, 1993, pp. 90-8).
[10] The Supreme Court was functioning since 1446, and after some changes in the first decades of its existence, it was permanently established in Malines in 1503.
[11] See below, table 4-5.

government, which exposed them to taxation. Moreover, very few people decided to go to nobles or clerics to have contracts ratified.[12] The people of Edam clearly preferred the public court because it linked them to the best institutional framework available.

This does not mean there were no other means to secure transactions: the first thing creditors would have done if they did not receive payments, was to rely on social mechanisms such as peer pressure and group solidarity, and they may also have taken recourse to slander and physical violence (Zuijderduijn 2009, pp. 214-7). But it is difficult to see how these means alone could have convinced creditors to invest considerable sums in the capital market. That is why they also demanded collaterals that were embedded in formal institutional structures: creditors would not have parted with their life savings without such assurance.

The evidence strongly suggests that property rights were well protected. This was in part due to the fact that the society was fairly egalitarian, having only a small feudal elite, the nobles. The nobles dominated high politics in Brussels, but were counterbalanced by the growing power of urban merchants who controlled politics in the cities, and via this channel were increasingly important in the political process. Many farmers owned their land, although land ownership by urban citizens and institutions was also increasing rapidly in these years. People had substantial trust in markets: a large share of the population (30 to 50 per cent, according to different estimates) was (partly) dependent on wage labour (Van Bavel, 2006), and thus relied for a very large part of their livelihood on the market, not only for income, but also for expenditures. The staple foods, rye and wheat, were imported from the Baltic, and therefore also bought on the market; most farmers specialized in livestock products such as butter, cheese, and meat. De Vries and Van der Woude (2000) described this economy as the first modern market economy - they clearly have a point.

Test case: Edam and De Zeevang

The small town of Edam lies about 20 kilometres to the northeast of Amsterdam, at the borders of what was then still known as the Zuiderzee. Recent calculations of population figures are 2,398 inhabitants in 1462, 2,337 in 1514, and 3,752 in 1563. Together with the surrounding countryside (called 'De Zeevang'), it was a region very typical for Holland. De Zeevang was inhabited by 3,363 people in 1462, 3,655 in 1514, and 5,765 in 1563 (Boschma-Aarnoudse, 2003, pp. 421-6). The entire region was very urban (in 1462 more than 40 per cent of its population lived in Edam), and it depended on a mix of activities: agriculture was still important, but a rapidly growing part of the work force was active in fisheries, industries, and trade (Boschma-Aarnoudse, 2003, pp. 367-75ff). Agriculture was characterized by small holdings, another typical feature of the Dutch economy: most (rural) households owned small plots of land they often used to herd a few cattle. They sold cattle and dairy products on the market.[13]

[12] Nobles and clerics had lost their position in the ratification of contracts long before 1542, when ratification by local courts became mandatory (Zuijderduijn, 2009, p. 207).

[13] The economic history of this region is discussed in: Van der Woude, 1972, pp. 362-3; 457-8, 511-3. On the development of the Dutch economy in this period, see: Van Bavel, 2010, *passim*; Van Zanden, 2002, pp.131-63; Hoppenbrouwers, 2001, pp. 49-50; De Vries and Van der Woude, 1995, pp. 236-8.

How does Edam compare to other towns in Holland? To answer this question we used a government questionnaire from 1514, aimed at reviewing tax assessments of towns and villages in Holland (table 1). The source tells us about the population and, as a result of the assessments, the wealth of settlements.[14] Holland had six 'large towns' and 22 'small towns', and clearly, when we look at inhabitants and taxation, Edam was a typical small town, although it may have been relatively wealthy. The villages of De Zeevang compare quite nicely to other rural settlements in this part of Holland as well, both with respect to population and wealth.

The sources we used to analyze the Edam and De Zeevang capital market, the *schotkohieren* and *verpachtingskohieren*, were registers used by the Edam and De Zeevang government to levy taxes. The *verpachtingskohieren* are estimates of household wealth used to assess a distribution key for taxation that was drawn up in the *schotkohieren.* We know little about the incentives the government of Edam had to create the *verpachtingskohieren.*[15] The source was drawn up to apportion the taxes rulers levied on the city of Edam and villages of De Zeevang. The local government apportioned payment for every household according to the *schot*, a division of taxes based on estimates of wealth. Usually, local authorities based such assessments on land ownership or rough estimates, but in 1462 the Edam government decided to take a large number of assets into consideration when it assessed the *schot.* Inhabitants were supposed to have all their assets – varying from houses, land, hereditary tenure, redeemable and life annuities, money, debts, ships, merchandise, animals, to beds – registered when the *verpachtingskohieren* were drawn up every seven or eight years. An assessor walked through the city and villages and stopped by the houses to interrogate the inhabitants. Therefore, the source provides a very detailed report for every household in Edam and the surrounding De Zeevang.

There are a few problems with these sources, however: first, tax registers based on interviews are likely to yield a biased picture because the taxable community will have done everything possible to appear impoverished and escape high taxation. On the other hand, these were small communities in which everybody knew a great deal about everyone else, and citizenship was considered a virtue, which may have enhanced willingness to pay community taxes and services (Prak and Van Zanden, 2006).

The *verpachtingskohieren* provide detailed overviews of the assets and debts of the households in Edam and De Zeevang for several years, of which we have sampled three (1462, 1514, and 1563). The problem with this source is that the values of the properties, particularly the real estate, are not given in a systematic way: they show how many pieces of land or how many beds and houses a household possessed, but not their value, at least not systematically. Only for different kinds of debts and securities (annuities, for example), and, of course, for cash, can we establish the value, although for annuities we often only know the value of the annual sum paid to the household and the interest rate, and only in this way can we calculate the value of the underlying principal. The

[14] The table only provides a general impression of the position of Edam and De Zeevang: towns and villages could expect to receive lower tax assessments when they understated the number of inhabitants. This is why population figures in Holland must have been somewhat higher.

[15] It is likely the incentives were much like those of the Florentine government, which drew up a similar register in 1427, the famous *Catasto*. According to Anthony Molho, the Florentines did this because they wanted 'a more scientific and rational system of taxation' (Molho, 1995, p.97).

other sources that can be used are the *schotkohieren*, which give for the same households in the same years the amount of the capital tax (the *schot*), which is based on an assessment of the net value of the assets of the household, as registered in the *verpachtingskohieren*.[16]

Credit instruments

One striking aspect of the Dutch capital market was the high level of differentiation and specialisation of assets. All kinds of properties were being traded and used as collateral: for example, households did not simply own houses, but shares in houses (for example, in 1514 one Baernt Jansz. owned the house in which he lived, as well as two rooms elsewhere in Edam, one of which was rented to Pieter Pelser).[17] This led to a very mobile market in real estate in which some people owned shares in many houses. The division of property into shares was a general phenomenon, applying to land, wharves, mills, fishing nets, and ships. Most famous is perhaps the system of shares in ships (*scheepsparten*) that emerged in the fifteenth century to finance (and profit from) the rapidly growing shipping industry. People could easily buy such shares, which sometimes were as small as 1/256th part of a ship. According to Boschma-Aarnoudse (2003, pp.156-7), about 15 per cent of the households of Edam owned such a share in a ship.

Shares in real estate could be financed through various kinds of loans. Loans contracted for a few years (*kustingen*) were widely used to finance the purchase of real estate, as well as other goods (Zuijderduijn, 2008, p. 7). We frequently encounter *kustingen* in Edam, where they were secured on real estate and ships, and ran for periods from two to 12 years.[18]

In addition to these financial instruments, a system of *los*- and *lijfrenten* (annuities) had been developed which added to the flexibility of the capital market. Since the second half of the fourteenth century, public bodies and individuals traded *renten*: these annual pensions were in fact long-term loans devised to comply with medieval usury legislation (Zuijderduijn, 2009, pp. 20-1, 48-50; Munro, 2003; Schnapper 1957, 66-67).[19] *Lijfrenten* were paid until the buyer (*rentenier*) (or the person on whose life the annuity was based) died, and *losrenten* until the loan was redeemed. Both were long-term loans, often running for several decades. By selling a *rente*, the *rente* payer attracted funds, whereas the *rentenier* bought an annual pension. The capital market facilitated trade in *renten* and thus helped redistribution of savings. *Los* and *lijfrenten* were used to finance the long-term debts of cities and other public institutions, including, increasingly, states such as the province of Holland. But the system also became popular with individuals: in the fifteenth and sixteenth centuries, it was also used for financing retirement and arranging income flow between generations. For

[16] A detailed analysis of this source is presented in: De Moor, Van Zanden and Zuijderduijn, 2009, and Boschma-Aarnoudse, 2003.

[17] WA SA inv. no. 237 f. 228v.

[18] Especially for 1563. We will be considering these *kustingen* (referred to in the source as *kustingbrieven)* as a particular type of debt. Some examples of *kustingen* on real estate can be found in: WA SE inv. no. 237 f. 16, 187, 221v.; on ships WA SE inv. no. 237 f. 202, 204, 274v; WA SE inv. no. 238 f. 1v. An example of the time span can be found in: WA SE inv. no. 238 f. 8, 34v, 35.

[19] One reason why religious authorities allowed *losrenten* was because only the debtor could decide when to repay the principal – the creditor could not. The scholastic arguments with respect to annuities has been analyzed by: Noonan, 1957, pp. 157-9, 232-6, and Schnapper, 1957, pp 65-79.

example, when a son (or daughter) took over the family properties (the farm or workshop), a *lijfrente* could be based on the father and/or mother who retired, with the properties of the family used as collateral to ensure the parent a permanent income for the rest of his/her life. Similarly, if, for example, a daughter decided to remain single and join a *begijnhof* (beguinage), her share in the family property could be converted to a *lijfrente* for the same purpose.[20]

It is important to point out that the sums involved were usually too large to be merely used for subsistence. For instance, debtors who attracted money by selling a *losrente* thus borrowed large sums: the median for principals was 58 guilders (in 1514), which corresponds to a year's income for an unskilled labourer. We know that *losrenten* and *lijfrenten* were typically instruments used to purchase capital assets such as land, houses, and ships, and that *kustingen* were often used to finance trade (Zuijderduijn and De Moor, 2010).

Access to capital markets: a comparison between men and women

The literature on microfinance stresses the vital role women can play in economic development if given the right opportunities, such as access to capital (Yunus, 2008). We therefore analysed separately the extent to which households headed by men and those headed by women made use of the capital market in Edam and De Zeevang. A striking feature in the sources studied is the large number of households headed by women and their strong economic position.[21] Table 2 below shows that during the sixteenth century nearly 30 per cent of households was headed by a woman. In about 20 per cent of these cases they could be identified as widows, in other cases we do not know, or we are sure that they were not widows (for example, independently living beguines).

That these women effectively headed a household consisting of more than just themselves can be shown from the number of beds recorded for each household. On average, women had nearly as many beds in their houses as men, indicating that they must have been in charge of households of a similar size. On average, households headed by women had fewer assets than those headed by men, and they paid somewhat less taxes as well, but the differences were relatively small (De Moor, Van Zanden and Zuijderduijn, 2009). The fact that the sources provide this kind of information allows us to see the extent women and men had access to capital markets. But first it is important to explain how female households acquired significant capital assets. Dutch women were relatively independent in judicial and financial matters, thus allowing them to be active in that capital market. Most were under the custody of their fathers or husbands, but widows, wives of men who were abroad, and women having express or tacit power of attorney could engage in judicial actions aimed at the acquisition of property (Van der Heijden, 2006, pp. 161-2; Niessen, 2005, pp. 52-3). We know from a number of studies that women in Holland and elsewhere in the Low Countries participated in the capital market, and that they had ample

[20] A beguinage was a collection of smaller and larger (convents) buildings inhabited by a lay sisterhood of the Roman Catholic Church. Beguines often brought considerable amounts of capital with them. For a tentative analysis of the relationship between the European marriage pattern, the development of capital markets, and the emergence of beguinages, see: De Moor and Van Zanden, 2006.

[21] See the detailed discussion in De Moor, Van Zanden and Zuijderduijn, 2009. The large number of female heads of households cannot be attributed to the season in which the tax registers were made, because, as far as we know, this was done in winter, when the fishing and shipping season was closed and the men would be expected to be at home.

opportunity to decide how to manage savings (Hanus, 2006, p. 19; Tracy, 1985, pp. 144-5; Van der Heijden, 2006, pp. 161-5).

It is not easy to analyse the degree to which households had access to capital markets on the basis of information on the assets and debts of these households. The problem is that we can see which households owned certain assets or debts, but we do not know who were excluded from the capital market because the source does not inform us about that. If certain households did not own securities, it can still mean two things: they did not want to buy or sell such property titles (because they may have invested their savings in land, cattle, or other assets), or the market did not 'allow' them to do so (due to high transaction costs). The fact that we can discriminate between men and women is helpful in this respect, as usually women are the weaker party in (capital) markets. If there are large gender differences in observed behaviour, it is possible to suspect capital market failure, indicating that the capital market is only accessible to the happy few, and not to all layers of society.

What can be learned from the results presented in Tables 3 and 4 is that such differences were initially very small. In 1462, 28 per cent of households headed by women had some kind of monetary debt; for men this percentage was 32. In the same year, the average size of women's debts was higher than that of men. Again, this could mean two things: that women did have access to capital markets and could obtain large loans there, or that their wealth was probably less, causing them to need larger loans. In the same year, 37 per cent of the registered women owned some cash, compared to 40 per cent of registered men, but the average sums owned by men were greater than those of women. This situation changed in the next century: it appears that women's access to capital declined: in 1514 only 14 per cent of the registered women (who were heads of households) had some kind of debt; in 1563 this percentage increased to 18. The percentage of male-headed households with a debt did not decline in a similar way: in 1514 it was still 32 per cent, in 1563 it increased to 38 per cent.

If we look at women as creditors, the picture is very different: in this respect they seem to have strengthened their position from 1462 to 1514 (from 6 to 22 per cent, respectively), whereas men moved from 5 to 15 per cent in the same years; after 1514 no important changes occurred in this respect (women: 21 per cent, men: 16 per cent). Trends in cash holdings were very similar: the share of households headed by men as well as by women that invested in cash declined across the board. There was a broad tendency to change from cash to financial assets over time: the number of households that invested in *los-* or *lijfrenten* or in other forms of debts increased over time (from only a few per cent in 1462 to about 20 per cent in 1563), which is a sign of the growing efficiency of the capital market. The amounts invested also increased much more than did the sums held as cash, especially *losrenten* and other forms of debts (including *kustingbrieven*, which started to appear in 1563) were increasingly popular as a way to invest savings.

The picture that emerges is that women and men used the capital markets a great deal in this period, both for investing their savings (in the market, where women acquired a stronger position than men) and for obtaining credit (where men gradually used the capital market more than women). In 1462 we see hardly any gender differences in capital market participation, but from 1462 to 1563 they diverge somewhat. The explanation for these diverging trends is not

straightforward. Were women becoming more cautious, was their access to credit restricted, or were they just doing better than men, and therefore able to redeem their debts? The fact that, on average, in 1563, for the first time women's cash holdings were larger than those of men means that a pessimistic scenario was unlikely.

Total financial securities (including cash) owned by men and women together amounted to 8 to 9 guilders per capita in 1462 and 1514, and 23 guilders in 1563; the ratio between financial assets and gross domestic product (GDP) can tentatively be estimated at about a third in 1462 and 1514, and 38 per cent (of which 11 per cent was cash) in 1563. These are all lower-boundary estimates because they exclude the securities for which there is no detailed information on their value. We do not know what the value of other assets was, and cannot estimate indices of financial sophistication (such as the share of financial assets in total assets) (see Goldsmith, 1969; Goldsmith, 1987), but we think that the ratios between securities and GDP here is another proof of the relatively advanced nature of the financial system in this small town and its environment.[22]

Another way to look at the access to markets is to see how much selling and buying was going on. If markets are very active, it implies that transaction costs are low, and 'thick' markets also mean that overhead costs can be spread over many transactions. For our research area, the first source that contains information for (almost) all transactions covers the year 1564, almost coinciding with the last *verpachtingskohier* of 1563. The Court of Edam was responsible for conveyance: transactions which only had force of law when they were concluded in the presence of the town's aldermen, and the registers they kept have been preserved. We have studied all transactions in the first three months (March, April, and May) of 1564 that are covered by the register in detail. Comparison with the rest of the year shows that this was a busy period, with more transactions that occurred on average during the next nine months.[23] Moreover, we have to take into account that Edam was in the midst of an economic upswing in 1564 (Boschma-Aarnoudse, 2003, p. 212).

The register confirms that this was a vibrant economy, with an estimated 450-500 transactions in markets for land, houses, ships, and capital every year (Table 5), which is a great deal, taking into account the fact that there were only 1665 households. The annual number of annuities contracted in Edam – and hence mortgaged on landed property in Edam and De Zeevang – was ca. 120. There was also a lively trade in houses, ships (Edam was a centre of shipbuilding in these years), and land. Most transactions were between inhabitants of Edam, although there were also quite a few villagers who created long-term debts. Women were prominent participants: they were parties to about a third of all transactions, both as creditor and as debtor. The register of 1564 clearly shows that women actively participated in capital markets, and that, for example, the annuities they declared in the tax registers were not merely inherited.

---

[22] In Western European countries the ratio between financial assets and GDP fluctuated between 48 per cent for Slovakia and 375 per cent for Switzerland; the value for the Netherlands was 298 per cent (in 2000); see European Commission/Eurostat, 2008, *Household financial assets and liabilities*, [Online] (last updated May 27, 2010). Available at: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Household_financial_assets_and_liabilities

[23] The three months we have sampled contain 127 (35 per cent) of the 358 transactions from March 1564 to February 1565.

Interest rates

We now turn to the interest rates found in our sources. As Douglass North has suggested, we expect interest rates to reflect the efficiency of the institutional framework of capital markets (North, 1990, p. 69; also Reis 2007). Applying this idea to Holland in the fifteenth and sixteenth centuries is relatively straightforward. To begin with, we know that interest rates on public debt were already at a relatively low level. In Holland interest rates on *losrenten* (redeemable annuities) declined from about 12 per cent in the first half of the fourteenth century, to about 6 per cent after 1450 (Zuijderduijn, 2009, pp. 243-6). From a number of studies it is also known that from 1450 to 1560 interest rates on government annuities (*losrenten*) were from 5 to 6.25 per cent (Zuijderduijn, 2009, pp. 175-9; Van der Heijden, 2006, pp. 121-3, 280-98; Hanus, 2007, p. 38; Tracy, 1985, pp. 204-14); similarly, the town of Edam in 1550 paid 5 to 5.6 per cent on a number of *losrenten*.

Interest rates paid in private capital markets in Holland compare favourably to those paid in public capital markets – even to those paid on the relatively reliable public debt of the province of Holland (Tracy, 1985, pp. 58, 109). The average interest paid on the annuities we encountered among the households in Edam was about 6.1 per cent in 1462, and dropped to 5.6 per cent in 1563 (Table 6). The standard deviation was also relatively small, at 'only' 0.7 per cent (all interest rates taken together).

These findings suggest that private markets were considered equal to or perhaps even more secure than public markets: in both markets the same interest rates of 5 to 6.25 per cent were normal, with (again in both markets) a slight tendency to decline from 1460 to 1560. This implies that the risk premium and the transaction cost for both kinds of assets will not have differed significantly. The relatively low level of interest rates (5 to 6 per cent is still usual in the twenty-first century) suggests that the De Vries and Van der Woude hypothesis about the modern features of institutions in this society is basically correct.

Another way to understand the default risk premium would be to compare interest rates to rental values of land. Data from 1514 shows that rental values in Holland were about 5 per cent of the value of land,[24] whereas interest rates in Edam were about 5.7 per cent. If we assume that leasing out land was relatively risk-free,[25] and involved more or less the same transaction cost as mortgaging did, it seems that a premium of 0.7 per cent sufficed to convince savers to invest their money in private capital markets rather than in land. It again indicates that in general interest rates were very low, and that the extra risk premium for credit based on collateral was very reasonable.

We tried to discover the factors that determined interest rates on the debts registered in our sources. The Edam and De Zeevang dataset allows us to observe the interest rate (on *losrenten* and other debts) as the dependent variable, and the following independent variables: size of the debt; available collateral (does

[24] Zuijderduijn and De Moor, 2010. The average rate of return to land was calculated using data from 24 villages in the North of Holland.

[25] Compared to lending, where there was always a possibility that the debtor might disappear with the principal, leasing must have been more secure, simply because it was not possible to move the land. This is not to say that leasing did not involve any risks, but just that these risks would usually have been lower than with lending.

the debtor own a house, land, and what is the total value of his/her assets?), is the debtor male of female? What year was it registered (1462, 1514, or 1562)? All regressions showed that only the year mattered, implying that interest rates in 1514 were about 1 percent lower than in 1462, and slightly lower yet in 1563.[26] But all other variables failed to link with interest rates: coefficients were close to zero and always insignificant. This is an important finding: women did not pay higher rates than men, nor did people with many possessions have an advantage over those with few resources. Finally, the size of the debt did not matter either (only in 1514 did we find a very small negative link between size of debt and interest rate, but it was not significant in the regressions). We also tried to test whether loans from or credit to people from outside the region we studied (from Flanders in one instance) tended to have higher interest rates, but the limited number of examples made this not feasible (our preliminary results pointed in this direction, however).

These negative results are very significant. They point to similarities with the 'priceless markets' that have been analysed by Hoffman, Postal-Vinay and Rosenthal (2000, p. 3), who argued that prices also 'did little to allocate capital or inform participants in the flourishing capital market of eighteenth-century Paris'. There, as in Holland in the late medieval period, it was probably the quality of collateral which determined who could borrow money and who could not: 'To base debt transactions on prices, private credit markets would have had to require huge amounts of information. The alternative was for private debt markets to rely directly on information to discriminate among potential borrowers. Intermediaries focused their efforts on acquiring information about borrowers and made little effort to vary interest rates to reflect either a borrower's specific risk or aggregate credit conditions. 'Potential borrowers competed on the basis of their collateral and reputation rather than on the expected value of their projects' (Hoffman et al. 2000, p. 300). Summing up, the absence of a price instrument for allocating capital demonstrates a limitation of this pre-industrial market, but the depth of the market and the low interest rates may have compensated for this deficiency.

Conclusions

We have demonstrated that capital market institutions in Holland were fairly efficient in the fifteenth century; there were very low interest rates (in fact, no higher than they are today), and offered access to credit at low cost to both men and women and to rich and poor households. Households headed by men and those headed by women participated actively in capital markets and, as the register of 1564 demonstrates, there was a lively trade in assets of all kinds, in which, again, women were also quite active (about a third of all transactions).

The key to explaining the depth of this late medieval capital market and its low interest rates is that this society managed to solve the 'De Soto problem' in a relatively efficient way, making it possible to use all kinds of assets as collateral. Property rights were well protected because all transactions had to be registered, and the legal and socio-political systems were transparent, which put severe constraints on the power of the mighty. Note that when the Spanish king

[26] Because almost all results are negative, we do not present the regressions here; the number of observations was 234; the (highly significant) constant term was 5.7%; regression results are available by requesting them from the authors.

Philip II tried to introduce an absolutistic style of government after 1555, it led to open revolt (beginning in 1566), and eventually the establishment of the 'free' Dutch Republic. Well-protected property rights were clearly an important part of the story, but markets generally functioned efficiently, and the actual cost of transacting an asset was also fairly low. Moreover, property was relatively widespread: almost all households owned a house (or part of it) and/or a plot of land that could be used as collateral.

Owning collateral was key to participating in the capital market. In that sense this is not the same as modern microfinance, which is usually not based on such collateral. We also established that prices were not used to discriminate among borrowers, as almost all loans carried the same or very similar interest rates. From 1462 to 1562 interest rates tended to decline; in that respect there is clear evidence that prices were determined by market forces. But the interest charged to individual borrowers did not discriminate between men and women, between households with ample or those with few properties, or among the properties owned by those households. Yet, the broad participation in this capital market suggests that the economy of Holland had 'solved' the microfinance problem in the fifteenth century, and was able to give its male and female entrepreneurs access to the capital required for developing their projects. Therefore, it should not be surprising that this economy was able to generate a process of economic growth resulting in an almost continuous growth of GDP per capita since the fifteenth century (Van Zanden and Van Leeuwen, 2010). In the century after 1563 (when our sources end), this resulted in a 'Golden Age', when Dutch merchants dominated international trade. We believe that this long period of prosperity was based on the solid foundation of well-functioning microcredit system inherited from the late medieval period.

References

Bavel, B. van (2010). *Manors and markets. Economy and society in the Low Countries 500-1500*. Oxford: Oxford University Press.

Bavel, B. van (2006). Rural wage labour in the 16th-century Low Countries: an assessment of the importance and nature of wage labour in the countryside of Holland, Guelders and Flanders. *Continuity and Change,* 21, pp. 37-72.

Bavel, B. van and Zanden, J.L. van (2004). The Jump Start of the Holland economy during the late Medieval Crisis, c 1350-1500. *Economic History Review* 57, 2004, pp. 503-532.

Becker, B. (1928). *Bronnen tot de kennis van het leven en de werken van D.V. Coornhert*. The Hague: Martinus Nijhoff.

Bezemer, W. (1894). Keurboekje van Edam. *Verslagen en mededeelingen van de Vereeniging tot Uitgaaf der Bronnen van het Oud-vaderlandsche recht,* 2, pp. 129-63.

Blockmans, W. (1985). Corruptie, patronage, makelaardij en venaliteit als symptomen van een ontluikende staatsvorming in de Bourgondisch-Habsburgse Nederlanden. *Tijdschrift voor sociale geschiedenis,* 11, pp. 231-47.

Boschma-Aarnoudse, C. (2003). *Tot verbeteringe van de neeringe deser stede. Edam en de Zeevang in de late Middeleeuwen en de 16e eeuw*. Hilversum: Verloren.

Clark, G. (2005). *The Interest Rate in the Very Long Run: Institutions, Preferences and Modern Growth*. [Internet] London: Centre for Economic Policy Research (published April 2005). Available at: http://www.cepr.org/meets/wkcn/1/1626/papers/clark.pdf. [Accessed 30 June 2010].

Dickson, P.G.M. (1967). *The financial revolution in England. A study in the development of public credit, 1688-1756*. London: Macmillan.

Epstein, S.R. (2000). *Freedom and growth. The rise of states and markets in Europe, 1300-1750*. London: Routledge.

Fratianni, M. and Spinelli, F. (2007). Italian city-states and financial evolution. *European Review of Economic History,* 44, pp. 257-78.

Goldsmidt, R.W. (1969). *Financial structure and development*. New Haven: Yale University Press.

Goldsmidt, R.W. (1987). *Premodern financial systems: a historical comparative study*. Cambridge: Cambridge University Press.

Hanus, J. (2006). Bossche renteniersters. Een zestiende-eeuwse rentemarkt als spiegel van vrouwelijk investeringsgedrag. *Historica*, 29(3), pp. 18-20.

Hanus, J. (2007). *Tussen stad en eigen gewin. Stadsfinanciën, renteniers en kredietmarkten in 's-Hertogenbosch (begin zestiende eeuw)*. Amsterdam: Aksant.

Heijden, M. van der (2006). *Geldschieters van de stad. Financiële relaties tussen stad, burgers en overheden 1550-1650.* Amsterdam: Bert Bakker.

Hoffman, P.T, Postel-Vinay, G. and Rosenthal, J.L. (2000). *Priceless markets. The political economy of credit in Paris. 1660-1870.* Chicago: The University of Chicago Press.

Hoppenbrouwers, P.C.M. (2001). Mapping an unexplored field. The Brenner debate and the case of Holland. In: P.C.M. Hoppenbrouwers and J.L. van Zanden, eds. (2001). *Peasants into farmers? The transformation of rural economy and society in the Low Countries (middle ages-19th century) in the light of the Brenner debate.* Turnhout: Brepols, pp. 41-66.

Molho, A. (1995). The state and public finance: a hypothesis based on the history of late medieval Florence. *Journal of Modern History,* 76 (suppl.), pp. 97-135.

Moor, T. de and Zanden, J.L. van (2006). *Vrouwen en de geboorte van kapitalisme.* Meppel: Boom.

Moor, T. de and Zanden, J.L. van (2010). Girlpower. The European marriage pattern (EMP) and labour markets in the North Sea region in the late medieval and early modern period. *Economic History Review*, 63 (1), pp. 1-33.

Moor, T de, Zanden, J.L. van and Zuijderduijn, C.J. (2009). Microcredit in late medieval Waterland. Households and the efficiency of capital markets in Edam en De Zeevang (1462-1563). In: S. Cavaciocchi, ed. *La famiglia nell'economia europea. Secc. XIII-XVIII/The economic Role of the Family from the 13th to the 18th centuries*. Florence: Firenze University Press, pp. 651-68.

Munro, J. (2003). The medieval origins of the financial revolution: usury, rentes, and negotiability. *International History Review,* 25, pp. 505-62.

Niessen, W.J., 2005. *De Nijmeegse onroerend goedmarkt 1570-1630. Een onderzoek naar de bewegingen op en de deelnemers aan de Nijmeegse onroerend goed- en kredietmarkt.* PhD. Radboud University Nijmegen.

Noonan, J.T. (1957). *The scholastic analysis of usury*. Cambridge: Harvard University Press.

Prak, M.R. and Zanden, J.L. van (2006). Towards an economic interpretation of citizenship: The Dutch Republic between medieval communes and modern nation-states. *European Review of Economic History,* 10, pp. 111-45.

Ree-Scholtens, G.F. van der (1993). *De grensgebieden in het noordoosten van Brabant ca. 1200–1795. Institutionele en juridische aspecten.* Assen: Van Gorcum.

Reis, J. (2007*). Institutions and Economic Growth in the Atlantic Periphery: The Efficiency of the Portuguese Machinery of Justice, 1870-1910* I [paper presented at the conference on Law and Economic Development, Utrecht 2007].

Schnapper, B. (1957). *Les rentes au XVI^e siècle. Histoire d'un instrument de crédit*. Paris: Université de Paris – Faculté de droit.

Sylla, R. (2002). Financial systems and economic modernization. *The Journal of Economic History,* 62, pp. 277-292.

Soto, H. de (2001). The *Mystery of Capital. Why Capitalism Triumphs in the West and Fails Everywhere Else.* New York: Basic Books.

Tracy, J.D. (1985). *A financial revolution in the Habsburg Netherlands.* Renten *and* renteniers *in the County of Holland 1515-1565*. Cambridge: Cambridge University Press.

Vangassen, H. (1964). *Bouwstoffen tot de historische taalgeografie van het Nederlands. Noordhollandse charters.* Tongeren: Belgisch Interuniversitair Centrum voor Neerlandistiek.

Vries, J. de and Woude, A. van der (2000). *The first modern economy. Success, failure, and perseverance of the Dutch Economy, 1500-1815.* Cambridge: Cambridge University Press.

Woude, A.M. van der (1972). *Het Noorderkwartier. Een regionaal historisch onderzoek in de demografische en economische geschiedenis van westelijk Nederland van de late middeleeuwen tot het begin van de negentiende eeuw*. Wageningen: H. Veenman en zonen N.V.

Yunus, Muhammad (2008). *Creating a World Without Poverty: Social Business and the Future of Capitalism.* New York: Public Affairs.

Zanden, J.L. van (2002a). Taking the measure of the early modern economy: Historical national accounts for Holland in 1510-1514. *European Review of Economic History* 6, 131-63.

Zanden, J.L. van (2002b) The revolt of the early modernists: an assessment, *Economic History Review,* LV, 2002, pp. 595-623.

Zanden, J.L. van and Van Leeuwen, B. (2010), *The Origins of Modern Economic Growth? Holland between 1347 and 1807* [unpublished paper; see: http://vkc.library.uu.nl/vkc/seh/research/Lists/Working%20Papers/DispForm.aspx?id=56]

Zuijderduijn, C.J. (2008). Conjunctuur in laatmiddeleeuws Haarlem: een eerste aanzet. *Holland Historisch Tijdschrift* 40, 3-18.

Zuijderduijn, C.J. (2009). *Medieval capital markets. Markets for 'renten', state formation and private investment in Holland (1330-1550)*. Leiden: Brill Academic Publishers.

Zuijderduin, J. and De Moor, T. (2010). *Spending, saving or investing. The asset management of sixteenth-century Holland households* [working paper presented at the European Social Sciences and History Conference 13-16 April 2010 in Ghent].

Table 1. Relative position of Edam according to the tax assessment of 1514

	Inhabitants	Tax assessment	Taxation/capita
Holland	288760	60000	0.21
Edam and De Zeevang	3259	770	0.24
Edam	(1929)	(454)	(0.24)
Six large towns (average)	11550	4248	0.38
22 small towns (average)	2128	486	0.23
De Zeevang	(1330)	(315)	(0.24)
Warder	266		
Middelie	(333)		
Kwadijk	399		
Haekswijk	(333)		
Region (average)*	600	158	0.26

Estimates between parentheses.
Since our sources recorded the number of people who received Holy Communion, we have corrected our figures for the people that did not, i.e. infants younger than 13-14. We follow Ad van der Woude's approach, who calculated that ca. 33 per cent of the population must have been younger than 13-14 (Van der Woude, *Het Noorderkwartier* I, pp. 77-85).
The differences between these estimates, a population of 3259 for Edam and De Zeevang in 1514, and the estimates Boschma-Aarnoudse based on the *verpachtingskohieren* (a population of 3655) seem reasonable (we have to accept a certain margin of error).

Since Edam and De Zeevang were one jurisdiction and hence one taxation unit, we have had to estimate the tax assessment for the individual town and villages.

We also had to estimate the number of inhabitants for Edam (indicated in the source as from 1400 to 1500), as well as Middelie and Haekswijk (both villages were taken together in our source).
*Region: 14 villages in the areas of Amstelland, Gooiland, De Zeevang and Waterland of which we have data on population and taxation.
Sources: Fruin, *Informacie*, 185-189; Fruin, *Enqueste*, 271; Naber, *Een terugblik*.

Table 2: Distribution of households in Edam and De Zeevang per sex and year, including the number of widows, in 1462, 1514, and 1563

Year	Male-headed households	Female-headed households	Of which headed by widowwidows	All	Year	Male-headed households	Female-headed households	Of which headed by widows	All
1462	84.39%	15.61%	4.2%	100%	1462	865	160	43	1025
1514	70.81%	29.19%	6.2%	100%	1514	786	324	49	1110
1563	72.37%	27.63%	6.1%	100%	1563	1205	460	74	1665
Total	75.16%	24.84%	4.4%	100%	total	2856	944	166	3800

Sources: WA SE inv. nos. 237-238; *verpachtingskohieren* 1462, 1514, and 1563.

Table 3: Cash, credits, and debts of households headed by women in Edam and De Zeevang (values in guilders), 1462, 1514, and 1563

Female households		Cash	*Lijfrente*		*Losrente*		Debt		*Kustingbrief*	
Year		Creditor	Creditor	Debtor	Creditor	Debtor	Creditor	Debtor	Creditor	Debtor
1462	N	59	1	5	6	23	1	17		
	Average value	57	77	65	62	51	4	17		
(N=160)	% *	37%	1%	3%	4%	14%	1%	11%	0%	0%
1514	N	63	5	6	54	20	10	21		
	Average value	76	89	30	66	42	62	34		
(N=324)	% *	19%	2%	2%	17%	6%	3%	6%	0%	0%
1563	N	41	13	10	67	42	15	28	10	3
	Average value	381	122	84	445	120	158	131	155	178
(N=460)	% *	9%	3%	2%	15%	9%	3%	6%	2%	1%

*percentage of households headed by women.
Source: see table 2.

Table 4: Cash, credits and debts of households headed by men in Edam and De Zeevang (values in guilders), 1462, 1514, and 1563

Male households		Cash	*Lijfrente*		*Losrente*		Debt		*Kustingbrief*	
Year		Creditor	Creditor	Debtor	Creditor	Debtor	Creditor	Debtor	Creditor	Debtor
1462	N	348	5	25	25	128	9	124		
	Average value	91	75	30	114	22	66	25		
(N=865)	% *	40%	1%	3%	3%	15%	1%	14%	0%	0%
1514	N	185	15	66	67	60	33	127		
	Average value	142	111	10	60	55	79	40		
(N=786)	% *	24%	2%	8%	9%	8%	4%	16%	0%	0%
1563	N	131	9	128	127	151	48	160	49	7
	Average value.	355	127	33	301	95	156	180	268	140
(N=1205)	% *	11%	1%	11%	11%	13%	4%	13%	4%	1%

* percentage of households headed by men.
Source: see table 2.

Table 5: Transactions in the 1564 *schepenregister* of Edam and De Zeevang

Selling/buying	Over three months	Yearly (estimated)*
House	47	141
Land	11	33
Annuities	40	120
Ships	25	75
Others: marriage contract	1	3
Testament	5	15
Other	3	9

*because of the over-representation of transactions in the three months we sampled (35 per cent of all transactions from March 1564 to February 1565), we estimated that the annual transactions were not four times those of our sample, but rather three times.
Source: WA SE 3813.

Table 6: Average interest rates (per cent) on private loans in Edam and De Zeevang (redeemable annuities)[27]

	1462	**1514**	**1563**
Edam	6.1 (9)	5.7 (103)	5.6 (109)
Zeevang	-	5.3 (11)	5.8 (3)
All	6.1 (9)	5.7 (114)	5.6 (112)

N between parentheses.
Source: see table 2.

[27] Zuijderduijn (2009, p. 177), and a few additions based on a more detailed analysis of the sources.