Spending, saving or investing?

The asset management of sixteenth-century Holland households.

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First, preliminary draft

NOTE: this is a first, very preliminary draft, written under a great deal of time pressure, meaning a.o. that the data-analysis still needs to be fine-tuned. We'd be very grateful for any comments.

Introduction[1]

Capital markets have been a hot topic among historians for a while now – even before the financial crisis we have been witnessing since 2008.[2] Usually the focus is on large scale investors, on aspects of the institutional framework such as the stock market or the development of the insurance sector. Or the focus is on groups within society that are obviously linked with investing, such as investment bankers. The current crisis however has shown the importance of the behaviour of households on the capital market. The collective action of small-scale investors can have a massive impact on the whole economic system; whilst their behaviour might not have been the primary cause of the present-day crisis, small-scale investors have proven to be a group not to be neglected in the investment sector. The decisions taken by households give us an impression of the trust they show in new and old methods of investing their surplus income. Cash seems to be an attractive way to hold capital these days, and the saving accounts remain popular, notwithstanding the fact that they hardly give any interest.

Our interest in capital markets that forms the basis for this article is driven by the question how households, the smallest units of economic behaviour in society, invest their assets and to what extent they are affected by changes in the economy and society at large. We try to specify and answer these questions for sixteenth-century Holland. There are a number of reasons to do so. Investigating the possibilities households had to defend themselves against risk may enhance our understanding of the process of economic growth in history. Surely growth was often frail, but at least some regions managed to prosper for a relatively long period of time, in spite of war, pestilence and floods. Furthermore, consumer behaviour in historical societies has recently gained attention, for instance by the work of Jan de Vries, who has suggested that households responded to the introduction of luxury products by stepping up their labour participation (De Vries, 2008). Thus, households responded to external developments by rearranging labour management, which according to De Vries (2008) affected the course of economic history. To what degree did households also adapt their asset management to external developments? Do households, in times of hardship, return to the more "traditional" and safe methods of investment? Do they start to spread risks? And what happens when things turn for the better again?

We try to answer these questions for sixteenth-century Holland, on the basis of a remarkable taxation source, the so-called *verpachtingskohieren* of the Zeevang, an area northeast of Amsterdam, consisting of the small town of Edam and a few surrounding villages. These sources give us an overview of the composition of household wealth in the course of time, and as such also of the types of (working) capital households invested in: from houses to rents, from life annuities to fishing nets, and this for the period between 1462 and 1563, at intervals of seven to eight years. Apart from a complete analysis for the years 1462, 1514 and 1563 for the whole area, we have also sampled one part of Edam called Oorgat, which was a rather poor part of town, for a number of intermediate years (for population figures see table 3). As the sources provide insight in the composition of household capital, it is possible to investigate changes in the composition of capital over time. However, before analyzing this unique historical data set, we first of all need to distinguish the different options households had in sixteenth- century Holland to invest their savings, and put these into the larger framework of investment behaviour theory.

The paper starts off with a discussion of the investment opportunities available to the people of Edam and then looks at external shocks that may have affected investment behaviour. Based on these analyses we formulate four hypotheses as to how we would expect households to have behaved, which we will then test using our taxation sources.

1. Investment opportunities and risks

According to economic theory, one of the functions of capital markets is to allow households to spread risks. It is likely that demand for this function of capital markets was particularly high in historical societies, where external shocks threatened vested interests in real estate and movables. Little research has been done on investment choices – and how these evolved – in pre-industrial times, on the household level. Few sources tell us how households invested their income, and to what extent they changed their strategy during their life course, and virtually none tell us why they did so. Although we know that common folk were active on capital markets from the late Middle Ages onwards in North Western Europe, it is hard to retrieve to what extent they actually trusted these markets, whether they decided to shun risk or not. In this paper we try to get an impression of the way households made use of markets during the sixteenth century, and to what extent capital investments changed during their life-cycle – and thus to what degree they used these to employ true investment strategies.

. Before the emergence of insurance one of the best ways to reduce risk may well have been to invest in several factor markets, for instance by spreading investments among real estate, capital market and cash savings, which can be considered as the main categories to choose from as an investor, thus by creating a diversified portfolio. Before we get into the question of asset management, it will be useful to give an impression of the profitability and risks of the assets the people of Edam could invest in.[3] Some assets were more risky than others, some required more monitoring costs, and some were more liquid. When people would have spread risks, it is to be expected that they would have invested in several assets, some profitable, some at low monitoring costs and some that were very liquid. What were the characteristics of the most popular assets?

Table 1 provides a schematic depiction of the assets the local government recorded to assess the wealth of households. The figure serves to give the reader a sense of some of the elements that affected the decision making process of households; obviously there were others as well, such as personal preferences, for instance for luxury goods. Judging on the taxation records of Edam land, houses, cattle, annuities, shares in ships and cash savings were the most important in sixteenth-century Holland. At least, these were the assets that were assessed by the government of Edam, and it is safe to assume that these represented the investment opportunities available to the population.[4] For most of these assets, markets had already emerged in the late Middle Ages, so people usually had little trouble to and ample experience in investing and disinvesting in any of these (Van Bavel, et al., ####; Gijsbers, 1999). Whatever their previous experience, it does remain necessary to estimate to what extent investors in the period we study could actually reap the benefits of their investment of choice. We first start with the most obvious type of investment: land and houses. In general the rental value of land in the north of Holland was little less than five per cent (Table 2).[5] As we will see, this is a relatively low rate of return at relatively large expenses: owners were required to make investments, pay taxes and they often had trouble evicting tenants after termination of the lease (Van Bavel, ####). As a result the net profits are likely to have been closer to four per cent. On the other hand real estate – particularly land – was a safe investment. In respect to liquidity, in this part of Holland owners of real estate usually had full ownership titles. In most cases our sources only mention small sums to be paid as tithes. Such ancient levies were of minor importance and did not restrict the functioning of markets.[6] Whether liquidity was very high is however doubtful: landowners requiring cash would probably have had trouble selling on short notice: to find someone interested in buying a plot of land at *that* specific

location, or a house in *that* particular street in Edam, would have been relatively time-consuming.

Secondly, we turn to the movable forms of property. The region of Edam was an important centre of dairy production and many households owned one or more cows.[7] It is very difficult to determine a figure for the profitability of these investments though, because data are absent.[8] In Table 2, we have estimated profits to be at five per cent. Although, considering the small scale of dairy production the individual yields cannot have been very high, in total agriculture and cattle breeding did play an important role in the area. Even in the town of Edam, more than half of the population held land and cattle. In the surrounding villages four out of five households held land, and 70 to 75 per cent held cattle. Even those involved in shipping easily held a number of cows (Boschma-Aarnoudse, 2003, p. 13). Considering the wide-spread involvement of the rural part of the Zeevang in cattle breeding, investment in cattle was thus probably quite a reasonable and straightforward option. With respect to liquidity, it does not seem that there were many obstructions to trade in cattle, so people will probably have had little trouble selling cows.[9] All in all, cattle as investment was definitely not void of 'natural' risks – a cow might die, or a plague might kill the whole herd, but the circumstances were beneficial considering the importance of dairy production in this area. At the same time, it is unlikely that we would find any cattle in households that have no knowledge at all about the business.

Another option was to invest savings in life annuities and redeemable annuities. Life annuities yielded the investor a life-long annual pension of around ten per cent of the principal sum. With respect to liquidity, even though selling life annuities was not completely unheard of, we may rest assured that demand for these assets was very low. Redeemable annuities yielded about six per cent, but had the advantage of being transferable, for instance through gift or resale. These investments were secured with special mortgages on real estate or, in case of annuities sold by public bodies, with a general mortgage. Investors relied on an extensive institutional framework that protected them against fraud, theft and loss (Zuijderduijn, ####). One of the main drawbacks was the possibility that pensions would suffer from inflation. Also, since 1542 annuities were taxed by the provincial government.

The people of Edam could also make use of other types of credit. The so-called *custing* was a debt that was to be repaid over several years, usually three to four. It was mostly contracted as consumer credit for purchases of land, houses or ships (Zuijderduijn, 2009a). The government of Edam apparently deemed these mid-term debts to be investments that were to be taken into account when taxes were assessed. And indeed, sellers could decide

to 'invest' assets in a *custing* by extending credit to purchasers. What did they gain by this? Without any doubt, a *custing* contained some hidden interest. However, we remain pretty much ignorant about the returns involved, presumably because these were simply added to the principal and thus do not emerge in our sources. With respect to security, the *custing* was mortgaged on the good that was transferred (Unger, 1978, pp. 158-9). Furthermore, it seems that the *custing* could be alienated at will, so liquidity was reasonable.[10]

The so-called *scheepsparten*, shares in ships, were used to spread risks: investors could buy shares up to 1/256 in ships, and by dividing their capital among ships (and/or other investments opportunities) they did not run the risk of losing too much when a ship they had invested in was lost at sea (Van Gelder, 1972/1973, vol. I, pp. 426, 444, 455 etc.). Gelderblom (2003) estimated that shares in ships yielded a profit of 12.8 per cent at the end of the sixteenth century. Although there is evidence of shares being resold, the general view in the literature is that the liquidity was not all that great (Kole, 2003, p. 25; cf. Van Gelder, 1972/1973, vol. I, pp. 415, 440, 450-451 etc.).

As a last option, one could hold his savings simply in cash. Cash savings were however not profitable, even on the contrary: in times of inflation keeping money around the house over a long period resulted in losses.[11] It was also risky: money could be stolen, or get lost. In sum (see overview in Table 1): assets with a distinct profitability, risk and liquidity were widely available, and this means that there were ample possibilities for investment strategies, and thus diversified portfolios. Individuals may for instance have chosen for some profitable, but risky investments in maritime trade, some less profitable and less risky investments in real estate, and might have kept some money around the house for purposes of liquidity (cf. Mathias, ####, p. 8). Those involved in agriculture or trade might have chosen to invest part of their liquid assets in cattle. We realize that the assets mentioned in Table 1 do not cover the complete spectrum of potential assets that can be included in a portfolio. We miss for example merchant goods or the investment in working capital, e.g. for a craftsman's workshop.[12] These were to a certain extent mentioned in the sources we are using but we consider these data to be too unreliable to actually use them in our analysis.

2. Potential external shocks: war, pestilence, floods

It can be expected that the choice for spending income surplus on one or several of the above assets is influenced by different external shocks, varying from inflation, political factors (in particular wars in which the country of residence is either involved or not involved), bad harvests in agriculture and economic success in general. Each type of investment will be

particularly vulnerable for particular shocks. What were the main developments the households of sixteenth-century Edam may have reacted to? We have selected a few variables: warfare and piracy, epidemics (both those affecting humans and animals), bad harvest, extreme weather conditions, and cycles in the long-term economic development. The general view that arises from the analysis underneath is that the period 1506-1530 was difficult, due to economic depression and the threat of hostile troops, piracy, and floods. The later period (1530-1563) was more stable, with an economic upswing since 1540 and peace with the hostile duchy of Guelders since 1536 (all potential shocks were put on a timeline, as can be seen in Figure 1).

[Figure 1 about here]

Warfare & piracy

In the period under investigation, 1506-1563, the North of Holland suffered little from internal warfare. However, shortly before, in 1491, a major peasant rebellion broke out that provoked armed interference by the central government. This rebellion was part of recurring partisan struggles that held large parts of the Northern Low Countries in its grip during the fifteenth century. As it turned out, the rebellion was the last Holland would see of partisan struggle: domestic warfare would only reappear during the Dutch Revolt – but this was something the people of Edam could not foresee of course.

This is not to say that warfare was not an issue in Edam. The first half of the sixteenth century was characterized by hostilities between Holland and other provinces under Charles V and the duchy of Guelders. Edam would not have been under immediate threat of invasions because fighting mainly occurred in the Southeast of Holland (Burgers, ####). Still, it seems that the people of Edam felt threatened by the presence of hostile troops in the area: according to Boschma-Aarnoudse (2003) many inhabitants fled to safer places. Particularly the neighbourhood Oorgat met with depopulation around 1512. The main effect warfare with Guelders had on the people of Edam was probably piracy on the Zuiderzee, where a pirate by the name of Grote Pier ransacked ships from 1515 onward (Boschma-Aarnoudse, 2003, pp. 203-4; Koster, 1929, p. 120-2). Attacks from Guelders were only resolved with a peace treaty in 1536.

Epidemics and bad harvests

First of all, in the sixteenth century the risk of untimely death was larger than nowadays: heads of households and their children could quickly pass away due to (epidemic) disease. This risk has been highlighted as a reason why interest rates in the Middle Ages were high (cf. Burr Litchfield, 1969, pp. 191-2). A major consequence was that the planning of investment strategies was relatively difficult, and that heads of households may have particularly valued liquidity. Among the many potential health threats, we will here consider only the impact of the Plague, an epidemic that frequently emerged ever since the mid-fourteenth-century. To get an impression of 'Plague years' in Edam, we have used the data provided by Leo Noordegraaf and Gerrit Valk (1988 of 1996).Although their sources do not mention 'Plague years' for Edam, there can be no doubt that this town also had to cope with the epidemic. To get a general impression, we have processed 'Plague years' in the North of Holland, the area above the river IJ, in figure 1. It seems that 1515-1535 and 1550-1560 may have been years the people of Edam had to cope with disease.

On the other hand, it is important to stress that there is no direct evidence of outbreaks of the Plague in Edam. Also, population figures increased in the sixteenth century, both in the town and villages. Recent calculations of population figures arrive at 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 persons in 1462, 3.655 in 1514 and in 5.765 in 1563 (Boschma-Aarnoudse, 2003, for population figures: pp. 421-6; for economic developments: pp. 371-5 and passim). In a century's time the population of the whole area had thus expanded quite rapidly, by a factor of 1.6. Considering this development, epidemics are thus unlikely to have brought about major changes, for instance in property structure, as was the case after the first outbreak in the mid-fourteenth-century. We believe population crises can in the context specific to sixteenth-century North-Holland be discarded as an influential factor on asset management, in particular real estate. In the period we investigate the Plague was probably more a frequently returning event that cannot be regarded as a major external shock that caused households to adapt their asset management.

[orig. Table 3]

Livestock could also fall victim to epidemics, such as cattle plague. However, we are poorly informed of cattle plagues in the fifteenth and sixteenth centuries. Boschma-Aarnoudse (2003) mentions cattle plagues in 1514, 1530 and 1545 – although she bases her claim on an early-eighteenth-century study by Le Franq van Berkhey.[13] When we look at the development

of the number of livestock in Edam, there is no clear evidence for cattle plague: the number of livestock in Edam and the surrounding villages remained at ca. 2000 between 1506 and 1554 – which pretty much rules out major outbreaks like those of the eighteenth century that decimated more than half of the herd.[14] However, between 1554 and 1563 the number of cattle in Edam declined with ca. 250, while the same is visible in the villages of De Zeevang. This may suggest an outbreak of cattle plague – although the very cold winter of 1563 may also have had part in this.[15]

Extreme weather conditions

In spite of its town charter, sixteenth-century Edam was still an agrarian settlement: many inhabitants owned plots of land they used to grow crops or to graze cattle (Boschma-Aarnoudse, 2003, p. ###). In this society extreme weather may have acted as an external shock that affected investment behaviour. Several types of extreme weather are processed in figure 1. The general impression is that the inhabitants of Edam had to prepare themselves for bad weather: between 1500 and 1565 there was hardly a year without snow, hail, heavy storms or floods. Although this may have induced people to spread risks, there is no clear pattern visible that may have caused shifts in investment strategies – with the exception of severe floods, of which there were several between 1501 and 1516.

We know that the floods of 1507 and 1508 also hit Edam. On October 16 1507 the *St. Gallusvloed* caused the main dike protecting the North of Holland, the *Westfriese Omringdijk*, to collapse, causing much damage in Edam and surroundings.[16] The inhabitants had hardly fixed the dikes when in 1509 the *Cosmas- en Damianusvloed* caused the dikes of Spaarndam and Diemen to collapse; to the south of Edam large parts of Holland were inundated (Buisman, 1995, pp. 283, 290; Gottschalk, 1971-7).

Temperatures affected the profitability of land. Winter and summer temperatures are processed in figure 2 and figure 3. Our data originate from Buisman, who wrote numerous volumes about the history of weather in the Low Countries. Since Buisman could not provide actual temperatures, the data in both figures only reflect whether summers were cold or hot and whether winters were cold or mild – both on a scale from one to ten.[17] Harsh winters, such as those from 1511 to 1514 may have destroyed crops and may also have killed livestock.[18] However, in general it is difficult to imagine that the few cold winters Edam experienced would have caused households to adapt their asset management.

Weather had a much more profound indirect effect: due to physical and environmental conditions, it was nearly impossible to grow bread grains in Holland. The people of Holland

therefore depended on large scale imports of bread grains. Bad harvests in regions such as the Baltic could well contribute to high prices and famine.[19] So-called 'expensive times' may have induced some households to sell assets to make ends meet.

To get an impression of high prices we look at the development of prices for rye in Utrecht, one of the main towns in the northern Low Countries and located c. 50 km southeast of Edam. In his study into the standard of living in Holland, Leo Noordegraaf calculated to what extent rye prices in Utrecht deviated from the average price of the prior eleven years moving average. Figure 4 gives the years in which prices were more than 30 and 50 per cent higher than the 11 years moving average, as well as reports of expensive years by contemporaries. The figure indicates periods of high prices in the 1470s and 1480s, the early 1520s and the 1550s.

When we recapitulate this, it seems that extreme floods and expensive years were the only truly extraordinary events the households experienced. For the rest, bad weather was something households had to deal with on a yearly basis: this may have forced them to take on risk-spreading strategies in general, but is unlikely to have caused shifts in investment behavior.

Cycles in the long-term economic development

Perhaps even more so than other regions, Holland was a market-oriented society. The country's wet soil did not allow for growing bread grains, so Holland already depended on grain imports at an early stage. With little possibilities for self-sufficiency, the county's inhabitants had to produce for the market, and as a consequence they greatly depended on economic cycles.

What do we know of long-term economic cycles in Edam? One way to get a general impression of economic development is by looking at the volume of capital markets. Since the 1970s the number of long-term loans contracted has been used as an indicator of economic growth, for instance for Antwerp and Ghent (Soly, ####; Dambruyne, ####). Such studies are not available for Edam, but a reconstruction of the volume of the capital market of Haarlem, ca. 30 km. southwest of Edam, may provide an impression of what happened in the sixteenth century. Figure 5 provides these data, corrected for population growth and inflation. It turns out that the development of Haarlem's capital market accords with the more sketchy sources we have for production of cloth, linen, beer and shipbuilding – Haarlem's main industries (Zuijderduijn, 2008). But do the main economic upswings and downswings presented in figure 4 also apply to Edam? In the most important work on the Edam economy available,

Boschma-Aarnoudse characterizes the period 1495-1521 as one of economic recovery, 1521-1540 as one of depression and 1540-1565 again as one of recovery (Boschma-Aarnoudse, 2003, p. 212). This seems to accord reasonably with the data from Haarlem.

[Fig. 4]

We also have to consider general developments in prices and wages. On the whole, inflation was relatively mild, at about 1.4 per cent. However, whereas before 1540 fluctuations were mild, after 1540 prices increased faster and trends were more volatile (De Vries & Van der Woude, 1995, p. 41). This is also visible in the price trend of butter, one of most important commodities the people of Edam brought to the market (Figure 5). With the exception of a temporary rise in butter prices in the 1480s, which was probably caused by the depreciation of coinage, prices were stable until 1500, when they gradually began to rise, speeding up after the 1540s.

How would price movements have affected the people of Edam? Leo Noordegraaf (1985, pp. 186-7) characterized the period 1465-1495 as one of 'a decrease in purchasing power'. Purchasing power increased in large parts of Holland from 1535 to 1565, and in this respect the households of Edam may have been able to improve their position, profiting from rising butter prices.[20]

[figure 5]

Conclusion: external shocks and investment strategies

What can we conclude from our discussion of external shocks in Edam (see also the overview in Figure 6)? First of all, several elements will have created 'structural uncertainty' and induced households to adopt risk-reducing strategies, but did not present themselves as incidental external shocks that caused people to change investment strategies. Epidemics were recorded every couple of years and even though there is no direct evidence of the Plague hitting Edam, once in a while some people must have fallen victim to disease. This would not have wiped out a large part of the population – there are no sources indicating large scale mortality – so we will not regard epidemics as external shocks. The same goes for bad weather: the people of Edam had to prepare for snow, hail and storms, but these came almost every year, and therefore they cannot be regarded as external shocks.

Then there are some elements that gradually changed and caused conditions in Edam to alter. Warfare, rebellion and piracy were pretty much indigenous until the 1520s. More peaceful conditions from the 1530s onwards are likely to have had an effect on asset management, inducing people to take more risks. Long-term economic cycles may have had a similar effect.

Finally, there were some external shocks: major floods, such as those of 1507 and 1508, ruined harvests and killed livestock, which may have induced households to pull out of agriculture. Expensive years were particularly tough on households depending on monetary revenues - wage labour and rents. They may have induced people to add to their portfolios some assets that would allow for self-sufficiency. Warfare caused a threat to crops and livestock, while piracy hindered fisheries and trade.

[Figure 6]

Given these externalities, we will answer our central research question on the ability of households to spread their assets according to risks from external shocks by testing a number of hypotheses regarding asset management.

It is clear that in particular the period between 1506 and 1530 must have been a difficult time for the inhabitants of Edam and surroundings: wars, piracy, pestilence and floods threatened their everyday life. Moreover, Edam was still recovering from the crisis of the late fifteenth century, so by 1506, households would already have adapted to risk-averse strategies. We assume that they continued to spread investments until the 1530s, when a more peaceful and prosperous era began. Thereafter, a shift between the *verpachtingskohieren* of 1530 (risk-averse) and 1546 (less risk-averse) can be expected. This hypothesis can be split up into the following:

a. we assume that small-town middle and lower classes also turned to risk-spreading to protect themselves against external shocks. Of course, people with few assets had fewer possibilities to create a diversified portfolio – if only because of the transaction costs involved with asset management. Still, we assume that the level of economic development and acquaintance with capital markets, as can be assumed on the basis of the relatively low interest levels, would have offered the possibility for even households in the poorest neighbourhood of Edam, called Oorgat, to adapt to external shocks by spreading risks.
b. we also assume that households used asset management as a means to reduce the impact of the movement of prices and wages. We hypothesize that they combined investments in agriculture (i.e. varying returns) with investments in capital markets (i.e. fixed returns);

c. in the last period (ca. 1546-1563) there would however also be more opportunities for those able to invest, which might entail more specialized and concentrated investment in specific assets. This should translate in households with portfolio's consisting of fewer types of assets;
d. together with a turn towards more "risky behaviour" we find it likely that capital investments (in particular redeemable rents) gain in popularity after ca. 1546.

3. Verpachtingskohieren: a unique source for the analysis of investment strategies in sixteenth-century Holland

Answering such a research question for pre-modern Europe requires data that are indeed hard to find. In this article we can rely on a most unique source for sixteenth- century Holland. The small town of Edam lies about 20 kilometres northeast of Amsterdam, at the borders of what was then still known as the Zuiderzee. The whole region was highly urbanized (already in 1462 more than 40 per cent of its population lived in Edam), and the population was dependent 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.[21] The economy was characterized by smallholding, another typical feature of the Holland economy: most (rural) households owned small plots of land they often used to herd cattle. They sold cattle and dairy products on the market.[22]

To get an impression of investment strategies in sixteenth-century Edam, we use a rather unique source. As far as we can judge this, the tax assessments that the government of Edam decided to reorganize in 1462 are among the oldest in their kind – meaning: with such richness in data – worldwide.[23] Before, these were probably based on landed property or rough estimates, but in the wake of specialization and commercialization the town government probably felt the need to take other assets into consideration as well. To this end they recorded *verpachtingskohieren*: estimates of household wealth, which were used to assess a distribution key for taxation. This again was drawn up in another source, the *schotkohieren.* In this last source the local government apportioned every household to the *schot*, a portion in taxation based on estimates of wealth. This was done in pretty much the same way as the *verpachtingskohieren*: a local official went from door to door to note down the *schot*.

In 1462 the Edam government decided to take a large number of assets into consideration when it assessed the *schot* (Boschma-Aarnoudse, 2003, p. 205):

> *…goeden, huijsen, erven, landen, ewelicke renten, losrenten, lijffrenten, gelt, schult, schepen, waeren, comanscappen, beesten, bedden, ende alle andere goeden.…*
>
> …goods, houses, premises, land, hereditary tenure, *losrenten*, *lijfrenten*, money, debts, ships, merchandise, salesmanships, animals, beds, and all other goods…

Inhabitants were supposed to have their assets registered when the *verpachtingskohieren* were drawn up, every seven or eight years. The earliest *verpachtingskohier*, from 1462, was probably drawn up to assess the taxes the Edam and De Zeevang inhabitants had to contribute to the ten-year subsidy (*bede*) the Holland Estates (*Staten van Holland*) agreed to in 1462 (Boschma-Aarnoudse, 2003, p. 403). An assessor walked through the city and villages and stopped by the houses to interrogate the inhabitants. He recorded hundreds of posts like the following:

> *Item lijsbeth jan woutersdr. tverndeel van jan woutersz. huus, II deymt in die langweren after an vegers langweren, I Rijnsgulden ter los, XV Rijnsgulden an gelt, een bed*[24].
>
> Lijsbeth Jan Wouters daughter [:] a quarter of Jan Woutersz. house, 2 *deimt* in the *langweren* behind Vegers *langweren*, 1 *Rijnsgulden* redeemable, 15 *Rijnsgulden* in cash, one bed.

Meaning: Lijsbeth, the daughter of Jan Woutersz., owned a quarter of her father's house, some land (2 *deimt*, *deimt* being a square measure) and a bed. She either received or owed a *losrente* of 1 *Rijnsgulden* (Rg.) and held 15 Rg. in cash. The source gives a very detailed report for every household in Edam and the surroundings, De Zeevang.

To understand the reasoning behind the local taxation system that was introduced in 1462, and that resulted in the *schot*- and *verpachtingskohieren*, we need to have a look at the central taxation system. Already in the fifteenth century Philip the Fair ordered a large investigation into the wealth of towns and villages, the 1494 *Enqueste*, an exercise that was repeated with the 1514 *Informacie*. These investigations must be regarded as attempts to refine the late-medieval taxation system that had been based on landed property, number of houses or population figures. The 1494 and 1514 investigations show a concern for public

finance and commerce to name a few, and thus recognized that by then landed property and population were no longer reliable indicators of wealth.

This idea was probably behind an attempt to reorganize Holland's taxation system in 1542, when Charles V (1515-1555) introduced country-wide taxes on the profits of trade, industrial and business capital, and real estate (Tracy, 1985, pp. 71-107; 't Hart, ####, p. 13; Grapperhaus, 1982, pp. 46-50). Over time taxes on property became the backbone of Holland finances and even surpassed excise taxes in importance.[25] However, in our period, most people managed to evade these taxes, except for taxes on real estate, which were relatively easy to levy because of the already existing registration system (Fritschy, ####; Zuijderduijn, ####). This tenth penny tax on the profits of real estate affected leases and those life annuities and redeemable annuities that were mortgaged on land, and may have affected decisions to invest in land, houses and the capital market. On a local level the government of Edam already experimented with much more elaborate tax assessments since 1462, when the first *verpachtingskohieren* were recorded. By and large, all assets under investigation here affected the taxation of households.

As the *verpachtingskohieren* were recorded every seven or eight years, and most of them have been preserved, it is not only possible to look at the composition of assets at several points in time, but also to follow several households through time. This will allow us to investigate whether households invested and de-invested in the course of their life cycle, and possibly also subsequent life-cycles,[26] and also to what degree they tried to spread risks by maintaining a diversified portfolio.

However, several shortcomings of our source make this a difficult task. First of all, linking households in one *verpachtingskohier* to another proved to be difficult. This required the identification of heads of households, which is always difficult because of the many people carrying similar names. But the richness of the data lended us a hand in this: in those cases where the links between two cases was uncertain we could rely on other similarities in their possessions over time (e.g. the same description of house or land). In the district we sampled we were able to cross-reference 63 heads of households. These can be traced over at least two, and sometimes even up to four *verpachtingskohieren*.[27] In four cases of these 63 at least one of the years concerned a household that by succession owned assets of a household mentioned in the previous years of taxation. Including such cases is interesting: it offers us an idea not only of how persons decided upon their property but also whether this original strategy was pursued by their descendants. We will pay particular attention to this later on.

Furthermore, tax registers based on interviews are likely to yield a biased picture, because the taxable community will have done anything possible to appear impoverished in order to escape high taxation. On the other hand, these were small communities, in which probably everybody knew a lot about everybody else, and citizenship was considered a virtue, which may have enhanced the willingness to pay for the community services (Van Zanden & Prak, 2006).

The *verpachtingskohieren* give us detailed overviews of the assets and debts of the households in Edam and De Zeevang. The problem with this source is, as the example mentioned above shows, that the values of the properties – and in particular of the real estate – are not given in a systematic way: it tells us how many pieces of land or how many beds and houses a household possessed, but not its value, at least not in a systematic way. Only for different kinds of debts and securities (*losrenten* for example), and of course for cash, we can establish the value, although in the case of *los-* and *lijfrenten* – see again the example of Lijsbeth Wouters – we often only know the value of the annual sum paid out to the household, and have to estimate the value of the underlying principal sum.[28] The 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 *verpachtingskohier*. For 1514 and 1563 it is possible to link the two sources for a large part of the households. For 1514, 74 per cent or 821 out of 1.110 households of the *verpachtingskohier* could be linked to the information in the *schotkohier* of that same year. For 1563 we can even link nine out of ten of the households mentioned in the *verpachtingskohier* (1.559 out of 1.665, or 93.6 per cent). Due to the less systematic way in data collection and the lesser detail in the notation of the names in both sources of 1462, we could – so far – link no more than 34 per cent (35 out of 1.025) persons of the *verpachtingskohieren* to the data in the *schotkohieren*, which is insufficient for further analysis (cf. De Moor, Van Zanden & Zuijderduijn, 2008).

Another problem we faced during the data analysis is the difficulty to position a head of household as a debtor or a creditor of an annuity. In the *verpachtingskohieren* it is not always clearly indicated whether households received or paid a *rente* (interest). We encounter references like '25 guilders annual *losrenten*', without any further information; especially the 1563 register has many of these records. We have reasons to believe that these must be *renten* the household received. Often these unclear references to *renten* are found in the middle of a long list of the possessions of the household. Take for example Reijner Jan Coppertsz., who declared to own '…half a share in Pieter Jaep Claesz. [ship], half a share in Jan Geert

Rengertsz. [ship], another 54 guilders annual *losrenten*, furthermore in his business cash and merchandise worth 2300 guilders'[29]. Although the source does not explicitly state whether this Reijner received or paid the *losrente*, the way in which the record is structured suggests that it must have been a possession – just like the shares in ships that precede the *losrente* and the cash and merchandize that follow. Thus, Reijner received this *losrente*, and has thus been considered a creditor in our dataset.

In this paper we use two types of sample: first we have sampled all households of 1462, 1514 and 1563. Next, we have sampled the households of one of the districts of Edam for all the years for which we have *verpachtingskohieren*: 1506, 1514, 1530, 1546, 1553 and 1564.[30] For practical purposes we have chosen the district called 'Oorgat'; this consisted of a string of buildings on both sides of the canal connecting Edam with the Zuiderzee [insert figure 8: Edam in 1564]. The reason to choose this district, is that it is the only district that could be clearly identified in our sources: some of the *verpachtingskohieren* do not distinguish any other districts in Edam and to sample the whole town would be too time consuming – at least for now. 'Oorgat' was the least prosperous district of Edam (Table 4; cf. Boschma-Aarnoudse, 2003, p. ###; see also table 5). This obviously has some drawbacks (to what degree did the poor have enough assets for spreading risks) but it also yields an image that is not distorted by data of elite households.

[table 4]

[table 5]

4. Data analysis and results

To test the hypotheses that have been formulated above we will be using two samples of data: the first sample consists of the data about the whole area without the most impoverished area, called the Oorgat. For this area we have data for 1462, 1514 and 1563. The other sample consists of only the data for the Oorgat, and this for the years 1462, 1506, 1530, 1546, 1553 and 1563. The subdivision in two different samples will allow us to make a clearer distinction between the wealthier and poorest part of the area under study.[31]

Hypothesis a: Spreading risks?

We assumed earlier on that in the first half of the sixteenth century the number of households involved in various types of assets would be greater than in the later part of the century, due to less favourable economic conditions in the first half. Analysing the popularity of assets for the

samples as a whole, we notice that holding cash and cattle became less popular among the households of the area (sample 1) whilst the typical capital investments (redeemable and life annuities) were clearly gaining popularity. Whether this was also translated in a financial commitment towards certain assets will be discussed as part of Hypothesis c.

Our data on household portfolios shows a large differentiation in 1462: households had invested in land, houses, cattle and a number of other assets, and many also possessed ready cash. General conditions in 1462 were quite good (section 2): this was a relatively prosperous time, which historians have deemed the Golden Age of Burgundy. Duke Philip the Good (1433-1467) had restored peace, causing trade to flourish (Zuijderduijn, 2008). The situation was quite different in our next benchmark year, 1514, when Holland experienced several fundamental crises. Contrary to what one might expect, judging on sample 1, this did not cause households to spread risks by diversifying portfolios. They rather did the opposite, reducing the number of different assets in households. This reduction is also visible in 1563, when Edam had experienced some decades of recovery.

By and large, we see a continuous decline in the number of different assets in the portfolios of the households of Edam; the crisis around 1500 apparently did not cause them to increase risk-spreading strategies. In this sense, Hypothesis a should be rejected.
How did the relatively poor households of the Oorgat respond to externalities? The number of different assets of households declines, just like elsewhere in Edam. However, our in-debt analysis of 1506-1563 reveals one remarkable shift: the percentage of households that invested in land rose until 1514, then declined heavily, only to increase again after 1553. It thus seems that the people of the Oorgat responded to rough times by investing in land – hence the rise from 10 per cent in 1462 to 33 per cent in 1514 (Table 6). This behaviour differs markedly from that of the households of the rest of Edam, whose investments in land do not seem to have changed much over time (Table 7), which gives the impression that poverty went together with a more conservative investment behaviour.

Investments in land went at the expense of keeping ready cash around the house (from 29 per cent in 1462 to 8 per cent in 1514) and debts (from 19 per cent in 1462 to 8 per cent in 1514). However, it does not seem that households merely exchanged cash and outstanding debts for land and back again after 1514: these types of assets remained at low percentages after 1514. Therefore, the decline of cash and debts must rather be considered an element of the general specialization we find in Edam.

Thus, our analysis of the Oorgat confirms that households did not use risk-spreading strategies, but also shows that poor households may have reacted to harsh times by including

land in their portfolios. In our risk profile (Table 1), we have considered land a relatively safe investment and in this respect developments in the Oorgat may be regarded as a conservative reaction to the crisis. One question remains to be answered though: since this shift towards investments in land does not pick up in our analysis of Edam (sample 1), was this a strategy that was specific to lower classes?

[Table 6]

[Table 1]

Hypothesis b: Negative correlation of assets?

According to Modern Portfolio Theory, careful asset management allows people to maximize return and minimize risk. In fact, asset management should allow for the creation of a portfolio that collectively has a lower risk than any individual asset. The way to realize this, is by choosing assets that change in value in opposite ways: for example, if stocks decrease in value, bonds often increase in value, so investing in both reduces risks. The trick is to invest in assets of which the values show a negative correlation to specific risks.

To expect that sixteenth-century households had such an understanding of asset management would be foolish, of course. But they may have had a basic understanding of how to create a portfolio that reduced external shocks. They should have picked this understanding up by way of 'learning by doing', and by knowledge handed over to them by ancestors.

Which assets show a negative correlation to risk? First of all, there is an obvious negative correlation between real estate/cattle on one hand, and life annuities/redeemable annuities on the other. When prices for agricultural products dropped, and returns to real estate and cattle followed, fixed incomes from life annuities/redeemable annuities remained stable – and in fact would buy the investor a relatively large quantity of agricultural products. The same is true in the event prices for agricultural products rose: returns to real estate and cattle would rise, whereas returns to annuities would drop. We would therefore expect households to combine real estate/cash with annuities in an attempt to reduce risks of price fluctuations.[32]

We have also tried to envisage positive correlations between assets in Table 8. We expect a strong positive correlation between real estate and cattle, since these both suffered equally from warfare/piracy, floods, storms and inflation/price movements. The same goes for real estate/cattle and shares of ships: these assets responded the same way to warfare/piracy

and storms. Life annuities, redeemable annuities and cash responded the same way to inflation/price movements.

With respect to cash, we suppose there is a negative correlation with real estate/cattle: when prices of agricultural products would rise, purchasing power of cash would fall, and the other way around. There is a positive correlation with life annuities and redeemable annuities because these would have responded to inflation/price movements in a similar way as cash.

Based on these assumptions, an ideal portfolio would contain a combination of real estate/cattle and life annuities/redeemable annuities/cash. By diversifying a portfolio in this way, households would have reduced risks of price fluctuations. We would expect portfolio's to respond to this composition, rather than being made up of 'risky combinations of assets': real estate + cattle; real estate/cattle + shares in ships; life annuities/redeemable annuities + cash.

To what degree do our sources support Hypothesis b? In 1462 only 36 per cent of the households with two assets shows a preference for a combination of variable returns and fixed returns. Among households with more assets this preference increases, for instance to 62 per cent among households with three assets. However, even when we look at households with as much as six assets, only 71 per cent had invested in land/cattle and life annuities/redeemable annuities/cash. Thus, there is little evidence in support of hypothesis b – at least for 1462.

[Table 8.]

Hypothesis c: Asset specialization?

Regarding the first hypothesis about the specialisation in the types of assets households invested in, we find that the average number of assets per household clearly diminishes over time. However, again this trend is already visible between 1462 and 1514, at a time when we would have expected reduced specialization due to deteriorating circumstances.

When we compare Edam in general to the Oorgat, it turns out that the percentage of households with assets with only 1 type of asset is clearly much smaller and increases to a much lesser degree in Edam than in the Oorgat (Tables 9 to 11).

[Table 9]

[Table 10]

[Table 11]

It could be argued that the trend towards asset specialization, that can be noticed in both the "poorer" and "richer" parts of the Zeevang area, is a consequence of social polarization: some households grew more wealthy and could thus afford to take on other strategies, while other households would have impoverished to the extent that they lost assets.

However, with respect to the Oorgat, this does not seem very likely: surely, the first things households that would have amassed wealth would do, was to move to a better part of town – or perhaps even more accurately, to move into town, as the Oorgat really was outside the town wall, and did not offer inhabitants much protection. Indeed, when we look at the distribution of the *schot*-tax, it becomes clear that the Oorgat did not experience social polarization, but rather the opposite: in the course of the sixteenth century an increasing number of households ended up paying a schot of 0.5-1.5.Does this mean that the rich took their assets and moved to other parts of town? There is no reason to believe that this was the case either. First of all, the development of the average value of *schot* in the Oorgat follows the trend of Edam, which seems to rule out any major movements of assets (see also Table 4). This is probably the closest we will get to proving Hypothesis b: the decline of the number of assets did not cause the amassed wealth to decline.

Hypothesis d: An evolution towards riskier assets?

The evolution of the average value of rents over time might tell us something more about the popularity of the capital markets and the willingness of investors to shift their capital from the more secure types like real estate to the less secure. Though we cannot estimate the value of all the assets that are given in the source, we do have data on the value of rents and we can set these off against the amounts of cash held by the households.

We have already discussed the risks of assets in Table 1. Over time households invested more in high-risk – and hence more profitable – assets, such as redeemable annuities, but also life annuities, *scheepsparten*, and the contracting of debts. Land, cattle and cash became much less popular. This seems to indicate that rather than spreading risks (hypothesis a), investing in more and less risky assets may have been a more important way of dealing with risk. Thus, when circumstances in Edam gradually improved after 1514, particularly the popularity of redeemable annuities increased.

[Table 12]

5. Conclusions

Asset management of households rather seems to have been influenced by long-term developments that already started in the fifteenth century and gradually continued during the sixteenth century. There is little evidence of households adjusting portfolio's as a reaction to external shocks, such as those of the beginning of the sixteenth century. These did not cause risk spreading by increasing the number of assets (Hypothesis a). Nor do we see households combining specific assets that might have guarded them from the effects of price fluctuations (Hypothesis b). We rather see the continuation of a trend towards specialization, where the people of Edam reduced the number of assets (Hypothesis c). In the composure of the portfolios we see a development towards more risky and profitable investments in capital markets (Hypothesis d).

Differences between Edam and the poor neighbourhood the Oorgat are negligible. This seems to indicate that whatever strategies households employed, middle and lower class households did about the same. The main exception is investments in land, which became more widespread in the Oorgat in 1506 and 1514. This seems to indicate that the harsh times around 1500 induced many households to invest in land.

What does this tell us about asset management in Edam? When composing portfolios, households apparently did not react very much to external shocks. This either meant that they did not apply risk spreading techniques at all, or that they already applied these from the start and saw no reason to adapt portfolios to external shocks. The latter is feasible, particularly when we consider that external shocks need not have changed households' anticipations of what the future might bring. To put it another way: households may well have conceived the series of floods between 1507 and 1509 as incidents that did not warrant a change in portfolios.

The trend toward specialization seems to indicate that risk spreading was not deemed the most important way of reducing risk – or at least that risk spreading was used decreasingly. Unless households used other techniques to secure themselves against risk, they would have become more vulnerable to external shocks at the end of the period we have investigated. We were able to discard one technique already: matching assets with a negative correlation to risks (hypothesis b). Another technique may have been the rise of civic institutions. Citizens of Edam may have come to rely increasingly on public initiatives that may have helped them trough harsh times. Of course this would not compensate much for loss of cattle or ships, but it may have compensated for price fluctuation.

But we cannot rule out the possibility that households indeed became much more vulnerable to external shocks due to specialization. When we assume that the most wealthy households would have maintained diversified portfolios, and specialization to one or two assets was predominantly something of middle and lower classes, the latter may have become much more vulnerable to external shocks and may have impoverished due to external shocks. In this way, a lack of asset management may have contributed to social polarization in Edam.

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ENDNOTES

1 We would like to thank Jan Luiten van Zanden for comments on an even more preliminary draft of this paper and René van Weeren for his important contribution to the collection of all the data.

2 We refer here only to a number of well-known studies, such as ###
3 In general investment opportunities in pre-industrial Holland are often deemed insufficient. For instance, Ad van der Woude (1972, vol. I, p. 48-9) wrote that the lack of investment opportunities created an impulse for investments in land reclamations. According to Van der Woude, the main long-term investment opportunities were government debt, land reclamations and construction.
4 Cf. this source Sparreboom (1981); Boschma-Aarnoudse (2003, pp. 200-4) A somewhat odd asset recorded in our sources are beds. The value of a single bed could be considerable, as becomes clear from inventories: four guilders a piece (Schoorl 1568), four or five guilders a piece (Haarlem 1568) (Van Gelder, 1972/1973, vol. I, pp. 353; 582-3).
5 The average rent/purchase price ratio is 4.8 per cent when the somewhat unclear figures of Schermer, Bakkum and Alkmaar are excluded, and 5.0 per cent when these are included.
6 Info over tithes, schatting van grootte tienden.
7 According to the sources used for this article, the number of people owning a horse was very limited.
8 We have explored virtually all archival documents that might have included cattle prices for the region studied here, but could not find any data. Other literature also does not provide ample information about this..
9 Cows were valued at 12 guilders each (Schoorl 1568) (Van Gelder, 1972/1973, vol. I , pp. 351, 353). Market prices for cows quoted by Posthumus 28.8 guilders (1563) and 31.2 guilders (1568) (Posthumus, 1964, vol. II, p. 805).
10 Cf. examples Waterlands Archief Purmerend, Oudrechterlijk Archief Edam, inv. nr. 3813, f. 1, 1v, 2 etc..
11 Inflation in the 'long 16th century' was on average 1.4% (De Vries & Van der Woude, 1995, p. 42).
12 Probate inventories would be useful to complement our source but unfortunately these are not plentiful in the sixteenth century.
13 Noot
14 Faber mentions that three quarters of livestock died during outbreaks in the eighteenth century, Van der Woude gives varying figures of about 60-70 per cent (Faber, 1962; Van der Woude, 1972, vol.II, pp. 587-8).
15 Boschma-Aarnoudse refers to Le Franq van Berkhey, who reported outbreaks of cattle plague in 1514, 1530 and 1545 (Boschma-Aarnoudse, 2003, pp. 215, 307). However, it is difficult to get an impression of the validity of Le Franq's claims; for instance, an elaborate report from September 1514 about the economic situation in Edam does not mention the death of cattle (Fruin, 1866, pp. 185-7).
16 In 1514 the government of Edam stated to have sold annuities in 1507, 1508 and 1509 to repair dikes (Fruin, 1866, p. 186).
17 This means that the figures do not tell us anything about the development of temperatures.
18 In 1494 the government of Edam stated that during 'wet years' – i.e. years with much rain – part of the livestock had been killed (Fruin, 1876-7, p. 101).
19 For measures against famine by towns in the North of Holland in the 1550s cf.Van Tielhof (1995, pp. 145-9).
20 Recovery or at least stabilization in real wages is also visible in the data Jan de Vries and Ad van der Woude (1995, pp. 719-21, esp. figures 12.7.1 and 12.7.2) collected .
21 These population figures are based on Boschma-Aarnoudse, (2003, p. 421-6; cf. economic development p. 367-375 and passim).
22 On the economic history of this region, see Van der Woude, (1972, vol. I, pp. 362-3, 457-8, 511-3). On the development of the Holland economy in this period, see Van Zanden (2002); Hoppenbrouwers (in Hoppenbrouwers & Van Zanden, 2001, pp. 49-50), De Vries & Van der Woude (1995, pp. 236-8).
23 An older and more or less comparable source is the 1427 *Catasto* made for Florence (Herlihy & Klapish-Zuber, 1978).
24 Waterlands Archief (WA SE), Stad Edam (SE), inv. nr. 237 f. 1v.
25 Cf. a survey of property taxes levied under the Dutch Republic (Liesker & Fritschy, 1996, pp. 369-71).
26 Some of the households could be followed not only through their own life-cycle but also through the next one, when a previously junior family member became the head of household.
27 Our complete dataset of the verpachtingskohieren for the years 1502, 1514, 1530, 1546, 1553 and 1563 contained 3018 records (=households). Of these, 147 records were part of a "string" of data, of at least two years, wherein the same household was mentioned. Most of the cases we found were mentioned only twice.
28 For a more detailed discussion of these sources see Boschma-Aarnouds (2009) and Zuijderduijn (2009a, 2009b).
29 Waterlands Archief, Archief Stad Edam, inv. nr. 238, f. 25v.
30 For the second half of the sixteenth century few *verpachtingskohieren* have been preserved.
31 We can rely on the follow number of households with some sort of assets for the different years:

Year	Oorgat	The rest	Total	
1462	200		2.914	3.114
1506	131		131	
1514	140		3.394	3.534
1530	90		90	
1546	67		67	
1553	122		122	
1563	143		4.549	4.692
Grand Total	893		10.857	11.750

In these totals the households in possession of a bed were included. In further analyses these will be excluded as we do not consider this as a real asset. The number of beds in a household will however be included whenever we need to estimate the size of a household.
32 We assume that the return to shares in ships depends on the profits skippers made: general price movements would not have had much of an effect on the profitability of trade.