

The mortgage market in early modern Bodegraven, c. 1670-1780

Characteristics, developments, consequences



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Abstract

In the credit-based economy of the early modern period Dutch farmers used the financial institution of the mortgage market to acquire external financing for capital expenditures, such as land purchase. The mortgage market was supported by political and legal institutions for protection of property rights and the mandatory registration of real-estate transactions. In this thesis the rural mortgage market of the village of Bodegraven and its polders in the east of the province of Holland is investigated, in the period between 1670 and 1780, based on a detailed analysis of archival transaction data sets. The thesis addresses the composition of the mortgage market and its relationship with the real-estate market. Additionally it analyses the influence of external events, notably the impact of warfare and cattle plague, on these markets. Farmers in the Bodegraven region were able to utilize the mortgage market to cope with the effects of warfare and to expand their landed property over the course of the period.

Keywords: finance, markets, mortgage, real-estate, loans, credit, farmers, rural economy, agrarian economy, 17th century, 18th century, Dutch Republic, Holland, cattle plague

Preface

The importance of *institutions*, the collection of informal and formal rules that guide and govern society, for economic and social development in past and present has been widely accepted. The study of origins, role and effects of institutions is one of the strategic themes of Utrecht University, focusing among others on the role of institutions in innovation and economic growth. The impact of organized markets in the late medieval and early modern period has recently been analyzed by Utrecht researchers. Other researchers have studied the emergence of the credit market as an important institution for financing personal and business affairs, often in an urban context. This thesis contributes to the growing body of knowledge about institutions by focusing on the nature and development of the *rural* mortgage market in Holland during the seventeenth and eighteenth century, and presents the results of the analysis of mortgage and real-estate transaction data from the village of Bodegraven between 1670 and 1780.

This master thesis is the final document of a BA and MA program in history at Utrecht University, in which I participated as a part-time student from 2008 until 2014. Twenty-nine courses, ranging from introductions into ancient and medieval history to in-depth treatments of democracy and inequality provided fascinating insights in the interactions of people and institutions in societies in the past. A strong personal incentive for this study was getting to understand the behavior of people in shaping past and present societies. This indomitable urge to learn and to share will remain, even after this study is completed.

During the studies, and especially during a seminars and theses, I got supported and motivated by teachers, fellow students, friends and family. I want to especially thank Christiaan van Bochove, Joost Jonker and Oscar Gelderblom for their guidance and advice during the rather long trajectory of this thesis. My good friends Bert Roos, Vincent van Arkel, Nico van Eckeveld, Bram Valkenburg and Frank and Jacomina Hartog motivated me in no small manner during visits and Sunday conversations. Last but not least I want to thank my dear family for their continuous support during these long years. Thank you, Marien, Elise, Jo-Anne and Stefan, and Frederike!

*“Ad sapientiam pertineat aeternarum rerum cognitio intellectualis,
ad scientiam vero temporalium rerum cognitio rationalis”*

Augustine of Hippo, De Trinitate, Book XII, 25

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1 Introduction

1.1 Rural financial markets

A well-functioning agricultural sector was of prime importance for the early modern Dutch Republic. The sector contributed significantly to the commercial success of the Republic as the economy and society depended on this sector for the production of butter and cheese for the export, for the production of raw materials for several industries and for the grain and dairy produce for urban consumers. The dynamics of the agrarian economy are hard to understand without deeper knowledge about the financial and economic circumstances of the agrarian entrepreneurs, and more specifically how they obtained financial resources for continuation of their farming business and for investments in land and livestock.¹ In early modern Europe credit was used on a large scale to finance business investments and to pay for household expenses. Commercial enterprises in the cities depended heavily upon access to credit facilities. For agricultural historians it is evident that early modern farmers also could not survive without access to credit, especially because in the early modern period the investments in farm and land purchases by farmers increased significantly. The farmers were also confronted with the destruction by warring armies, the steadily increasing costs for protection against water and the replenishment of livestock after periods of cattle-plague that happened several times, all of which required significant amounts of capital. Farmers who could not afford these investments were forced to abandon farming; it is estimated that about 30% of the farmers in this period were not able to sustain farming.²

It is striking that the role of *credit* in Dutch *agriculture* has received comparatively little attention from Dutch historians of the seventeenth and eighteenth centuries.³ Detailed studies into credit and the rural

¹ P.J. van Cruyningen, 'Credit and agriculture in the Netherlands, eighteenth-nineteenth centuries', in: *Credit and the rural economy in North-western Europe, c. 1200-c. 1850*. CORN Publication Series 12 (Turnhout 2009) 99–107; Jan De Vries, *The Dutch rural economy in the Golden Age, 1500-1700*. Yale series in economic history (New Haven 1974); C. Baars, *De geschiedenis van de landbouw in de Beijerlanden* (Wageningen 1973); B. J. P. Van Bavel, 'Rural development and landownership in Holland, c. 1400-1650', in: *The political economy of the Dutch Republic* (Farnham 2009) 167–196.

² Sheilagh Ogilvie, Markus Küpker and Janine Maegraith, 'Household Debt in Seventeenth-Century Württemberg: Evidence from Personal Inventories', *CWPE* (2011); Oscar Gelderblom and Joost Jonker, 'Completing a financial revolution: The finance of the Dutch East India trade and the rise of the Amsterdam capital market, 1595–1612', *The Journal of Economic History* 64 (2004) 641–672; Jean-Laurent Rosenthal, 'Credit markets and economic change in southeastern France 1630-1788', *Explorations in Economic History* 30 (1993) 129–157; Jan Bieleman, *Five centuries of farming: a short history of Dutch agriculture, 1500-2000*. Mansholt publication series v. 8 (Wageningen 2010); Piet J. van Cruyningen, *Behoudend maar buigzaam* (Wageningen 2000); Milja van Tielhof, 'Financing Water Management in Rijnland, 1500-1800', in: *The Political Economy of the Dutch Republic* (Farnham 2009) 197–222.

³ Both Maarten Prak and Jonathan Israel mention the specific characteristics of Dutch agriculture, but pay almost no attention to the specific financial circumstances. Maarten R. Prak, *Gouden eeuw : het raadsel van de Republiek* (Amsterdam 2012); Jonathan I. Israel, *De Republiek, 1477-1806* (Franeker 2008).

economy have been performed in several European countries, such as Belgium⁴, France⁵ and Germany⁶. A number of detailed studies for the peripheral regions of the Dutch Republic have been performed, but the central region of Holland has been studied less intensely.⁷ These regional studies cover a variety of aspects of agricultural life, including prices and wages, but do in general not pay much attention to the specific ways and means of farmers to obtain financial resources.⁸ Little detail is known about the structure of the credit market, the different types of credit, the borrowers, lenders and intermediaries and the agrarian financial institutions, particularly about these institutions in Holland. De Vries suggests that urban capitalists were important investors in the agrarian sector, but that farmers themselves were also capable of lending significant amounts to their fellow farmers. However the details of these transactions are not clear. Van Cruyningen confirms these farmer-to-farmer transactions by studying the financial dealings of a small number of farmers in West-Zeeuws-Vlaanderen.⁹ De Vries and Van der Woude also state that the agrarian depression of the late seventeenth and early eighteenth century led to a withdrawal of urban investments in the countryside, while farmers themselves increased their investments, but they do not explain what the sources of the farmers' capital were.¹⁰ Research into the credit markets of the seventeenth and eighteenth century can benefit from studies of earlier periods, or alternatively from investigations of later periods, and a long term history of credit markets in the Netherlands can thus be constructed.¹¹

⁴ Thijs Lambrecht, 'Rural credit and the market for annuities in eighteenth-century Flanders', in: *Credit and the rural economy in North-western Europe, c. 1200-c. 1850*. CORN Publication Series 12 (Turnhout 2009) 75–98.

⁵ Gérard Béaur, 'Credit and land in eighteenth-century France', in: *Credit and the rural economy in North-western Europe, c. 1200-c. 1850*. CORN Publication Series 12 (Turnhout 2009) 153–168.

⁶ Christine Fertig, 'Urban Capital and Agrarian Reforms: Rural Credit Markets in Nineteenth-Century Westphalia.', in: *Credit and the rural economy in North-western Europe, c. 1200-c. 1850*. CORN Publication Series 12 (Turnhout 2009) 169–196.

⁷ Adrianus Maria van der Woude, *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* 18 (Utrecht 1972); A. Th van Deursen, *Een dorp in de polder: Graft in de zeventiende eeuw* (Amsterdam 1994). Several authors have studied the Holland region north of Amsterdam. No studies have been found for the region between Amsterdam, Utrecht and Rotterdam.

⁸ Baars, *De geschiedenis van de landbouw in de Beijerlanden*; van Cruyningen, *Behoudend maar buigzaam*. Van Cruyningen is an exception; he pays specific attention to the financing of land purchases.

⁹ De Vries, *The Dutch rural economy in the Golden Age, 1500-1700*.

¹⁰ Jan de Vries and Ad van der Woude, *The First Modern Economy. Success, Failure, and Perseverance of the Dutch Economy, 1500-1815* (Cambridge 1997).

¹¹ The studies of Van Bavel and Zijlenderduijn about financial institutions are available and for the nineteenth century the publication of Van Zanden and Van Riel can be consulted, but for the eighteenth century the scientific studies are scarce. Bas J.P. van Bavel, 'Land, lease and agriculture: the transition of the rural economy in the Dutch river area from the fourteenth to the sixteenth century', *Past and Present* (2001) 3–43; Jaco Zijlenderduijn, *Medieval capital markets: markets for renten, state formation and private investment in Holland (1300-1550)* 2 (Leiden

More insight in the financial instruments used by the farmers is important to increase the understanding of the structure and behavior of the early modern rural credit markets. Increased insight in the interdependence between credit market and broader social-economic developments is relevant for understanding the agricultural development processes in contemporary developing countries. Note however that the current study will focus on *rural* financial institutions, markets and resources in particular.¹² The study focuses specifically on farmers in the southern part of the province of Holland, in the late seventeenth and the eighteenth century. These farmers showed remarkable resilience when faced with a number of exogenous events. They were subjected to a prolonged agrarian depression in the Dutch Republic, which occurred approximately between 1675 and 1775, to several periods of warfare including the Dutch War (1672-1678) and the war of the Spanish Succession (1702-1713), and to outbreaks of cattle plague (1713-1720, 1744-1765, 1768-1786) that decimated their livestock, sometimes up to 70%.¹³ The archival sources substantiate the destruction of a large number houses by the raging of the French army in Bodegraven in December 1672; 31% of the mortgages in the years 1674 till 1679 mentions a burned-down house.¹⁴ However many farmers were able to restore their farms and continue their farming business. The high number of mortgage loans in the 1670's and 1680's, 93 mortgages for an amount of fl. 113.796 show their willingness and self-assurance to acquire and pay back loans, which were mostly repaid within ten years.¹⁵ They purchased significant amounts of land, 715 ha for fl. 215.728, from urban investors using externally acquired capital. They secured loans to purchase cattle in other regions and countries to replenish their livestock. The emergence of some cattle merchants as wealthy landowners and financiers is an indication that the farmers were actively building up their herds after the plague.¹⁶ The use of the mortgage market by those farmers for financing their business is the subject of this study. The availability of studies for other regions in the Republic and for

2009); Jan Luiten Van Zanden and Arthur Van Riel, *The strictures of inheritance: The Dutch economy in the nineteenth century* (Princeton 2004).

¹² Erik Thoen and Tim Soens, 'Credit in rural Flanders, c. 1250-1600: its variety and significance', in: *Credit and the rural economy in North-western Europe, c. 1200-c. 1850*. CORN Publication Series 12 (Turnhout 2009) 19 – 38; Bas Van Bavel et al., 'The organisation of markets as a key factor in the rise of Holland from the fourteenth to the sixteenth century: a test case for an institutional approach', *Continuity and Change* 27 (2013) 347–378.

¹³ Thimo de Nijs and Eelco Beukers, eds., *Geschiedenis van Holland, Deel II, 1572 tot 1795* (Hilversum 2002).

¹⁴ And 16% of the real-estate transactions mentions a burned-down house.

¹⁵ The mortgage transactions are analyzed in detail in a next chapter.

¹⁶ C. A. Spinage, *Cattle plague: a history* (New York 2003). Maarten van den Bos, who appears many times in the transactions, was a cattle merchant with a large social network.

surrounding countries make it to some extent possible to compare agricultural financial instruments which agrarian entrepreneurs used to obtain capital.¹⁷

1.2 Bodegraven

In this investigation of the rural mortgage market the village of Bodegraven and its polders, located in the east of the province of Holland, is taken as a case study. Bodegraven farmers experienced a number of rural crises between 1670 and 1780, which forced them to acquire considerable amounts of money to survive in their farming business and to solve the financial challenges, or alternatively to turn these crises into opportunities and increase their landed property. The destruction of a large part of the village and its polders by the French army in 1672 was a remarkable example of such a situation. The majority of the farmers were able to maintain their farming business, although estimates of farmers that ended their independent farms, the so-called 'spa-steken' are up to 30%. Several farmers or local investors even increased their land ownership over the course of that period. Bodegraven was located in the southern part of the province of Holland, for which not many detailed studies are available, yet it was close enough to major cities like Amsterdam, Utrecht, Leiden, Gouda and Rotterdam for financial relationships to exist between the village and the cities. The lands in the polders were owned by a variety of property owners, without a single dominant party or social class like in other regions, thus offering a varied view on land ownership. Bodegraven and its polders offer a collection of raw archival materials related to financial undertakings (real-estate transactions and mortgages) for a longer period of time, which when analyzed and combined in a proper way will provide answers to the research questions. The small size of the village allowed to perform a detailed analysis of the available source materials on financial transactions, which number about 725 agrarian real-estate transactions and 360 agrarian mortgage deeds. Specifically the information about land ownership, land transactions, mortgages and collateral over the period of 1670 to 1780 allows one to develop longer term trends and compare them to other regional studies into the structure and development of agricultural business in the Republic or beyond. Note that the study concerns the last quarter of the seventeenth century and

¹⁷ Most studies provide insight in the social composition of the rural population and provide some insight in the financial position of various groups in that population. The monograph of Van Cruyningen about West-Zeeuws-Vlaanderen is of course more extensive than this study, but in contrast to other studies this author pays specific attention to questions about acquisition of financial resources and the social networks that were used for that purpose. Rosenthal focuses on financial intermediaries (notaries, Jews).

most of the eighteenth century, in which the economic boom of the Dutch Golden Age was reduced to a prolonged agrarian depression.¹⁸

1.3 Research questions

Mortgage market composition

Farmers in rural economies in the early modern period used different sources of capital to finance their farming business, and the *mortgage* was an important instrument to obtain foreign capital.¹⁹ People participated in the mortgage market for several reasons. Investors looked for opportunities to invest their capital with good profits while limiting the risks of defaulting and fraud. Borrowers wanted to acquire loans for making larger land purchases, for dealing with life cycle events or for recovery from crises. A detailed understanding of the mortgage market is required for further investigations. Various studies have explored the structure and participation in the mortgage market in other regions.

Rosenthal, Hoffman and Postel-Vinay, three leading economic historians from the United States and from France, have investigated the capital markets in France, studied the role of notaries as financial intermediaries in eighteenth century Paris and in rural French regions, and analyzed the motives of borrowers and lenders to participate in the financial markets.²⁰ Rosenthal mentions three reasons for French farmers to acquire loans. The first reason was to purchase land for farm expansion, the second reason was to grow the farming business in concord with the growth of the urban economy and the third reason was to deal with agrarian crises such as failing or delayed crops.²¹ In the regional studies for the Dutch Republic, ample evidence is provided that farmers used external capital to finance land

¹⁸ Primary sources: *Oud-rechterlijke archieven van het Dorpsbestuur van Bodegraven* (called municipal archives in the remainder of this paper) and *Archieven van het hoogheemraadschap Rijnland* (called waterboard archives in the remainder of this paper).

¹⁹ Christiaan van Bochove, Heidi Deneweth and Jaco Zuijderduijn, 'Real estate and financial markets in England and the Low Countries, 1300–1800' (2013).

²⁰ Jean-Laurent Rosenthal, 'Rural Credit Markets and Aggregate Shocks: The Experience of Nuits St. Georges, 1756–1776', *The Journal of Economic History* 54 (1994) 288–306; Philip T. Hoffman, Gilles Postel-Vinay and Jean-Laurent Rosenthal, 'Information and economic history: How the credit market in old regime Paris forces us to rethink the transition to capitalism', *The American Historical Review* 104 (1999) 69–94; Philip T. Hoffman, 'Institutions and Agriculture in Old-Regime France', *Journal of Institutional and Theoretical Economics (JITE)/Zeitschrift für die gesamte Staatswissenschaft* (1989) 166–181; Philip T. Hoffman, Gilles Postel-Vinay and Jean-Laurent Rosenthal, 'History, Geography, and the Markets for Mortgage Loans in Nineteenth-Century France', in: *Understanding Long-Run Economic Growth: Geography, Institutions, and the Knowledge Economy* (Chicago 2008) 155–176; Gilles Postel-Vinay, 'Debt and agricultural performance in the Languedocian vineyard, 1870–1914', *Agrarian Organization in the Century of Industrialization: Europe, Russia, and North America* 1 (1989) 161–186.

²¹ Rosenthal, 'Credit markets and economic change in southeastern France 1630–1788'.

purchases which led to higher political and social status within the community.²² Van Cruyningen studied the financial behavior of large farmers in Zeelandic Flanders in the eighteenth century. These farmers used regional sources of credit, notably their own families, other wealthy farmers and to some extent the local bourgeoisie. In the second half of the 18th century both working capital and land investment capital was mainly obtained from personal or family wealth, leading to lower indebtedness of these farmers. The landed property of the urban investors dropped sharply between 1700 and 1800, from 69% to 14%.²³

The first research question addresses the details of the mortgage market in Bodegraven, the amount of loans obtained, the quantity of land involved and the social composition of the market participants. The analysis of the social class and the place of residence of the actors is used to determine changes in participation in the market and to check if a shift occurred from urban investors to local investors. Time series information about stock and flow of amount borrowed and quantity of land mortgaged offers insight in the indebtedness of actors and in the ratio of land mortgaged versus total acreage during the period of 110 years. Initial review of the archival material reveals that the social composition of the actors in the mortgage market in Bodegraven changed to some extent in the 1670-1780 period. At the supply side wealthy local inhabitants took over the role of investors from urban patriciate and nobility. The demand side concentrated sharply over the years as an elite of wealthy farmers emerged with active participation in the market. These changes indicate that the wealth distribution in the Bodegraven society changed in the eighteenth century.²⁴

Mortgage market and land market

Land transactions required significant amounts of capital, which could be obtained by arranging a mortgage loan with landed property as security. Preliminary analysis of the mortgage and real-estate transaction data indicates that there is a statistically significant relationship between the amount of capital involved in real-estate transactions and the amount of mortgage being acquired. Van Bochove et al. provide evidence that the development of a well-functioning mortgage market in which landed property could be used as collateral depended upon legal property rights registrations and favorable

²² Paul Brusse, *Overleven door ondernemen: de agrarische geschiedenis van de Over-Betuwe 1650-1850* (Wageningen 1999); Zanden, van J.L., 'De opkomst van een eigenerfde boerenklasse in Overijssel, 1750-1830', *A.A.G. Bijdragen* 24 (1984) 105–130; van Cruyningen, *Behoudend maar buigzaam*.

²³ van Cruyningen, *Behoudend maar buigzaam*, 3, 4, 9, 52, 66, 92, 123, 222, 299, 302.

²⁴ Research question 1 with its hypotheses are discussed in the chapter three about *the mortgage market in Bodegraven*.

mortgage laws.²⁵ Given those dependencies, the specific nature of the relationship between the land market and the mortgage market in Bodegraven needs further investigation.

Several authors have commented on the relationship between landed property and mortgages in their studies of rural regions in Western Europe and often signal a contraction of landed property in the hands of an emerging large farmer elite. Van Cruyningen analyzed the social structure of farmer communities in Zeelandic Flanders and found that between 1650 and 1800 an elite of farmers emerged, who accumulated large amounts of lands for economic, political and social reasons.²⁶ The same pattern was noticed by Baars in the Beijerlanden region, who saw an active farmer community acquiring significant amounts of landed property during the eighteenth century and partially financing these purchases with mortgages from urban and local investors. Baars used a social stratification system with three classes: (i) nobility and urban patriciate, (ii) farmers and (iii) bourgeoisie and institutions. In that region an important shift in landed property occurred between 1680 and 1800. The noble and urban landowners reduced their investments in lands from 85% in 1680 to 20% in 1800, while an emerging class of large farmers increased its share in landed property from around 10% in 1680 to approximately 75% in 1800. The farmer class invested in landed property because of economic reasons, such as the profitability of the lands, and social reasons, like status and political influence. Farmers mortgaged their properties more often than the other classes; between 15% and 30% of farmer's land was mortgaged compared to 5% to 10% for the noble and urban investors. In the period 1680 – 1720 they did finance a large part, about 85%, of their investments in landed property with mortgage loans, while in the period 1780 – 1800 that percentage was about 50%. These numbers show that farmers bought and financed landed property with external capital resulting in high levels of indebtedness in the short term, but with long-term profitability and wealth accumulation. This trend is also reflected in the class of lenders they approached for loans. In the earlier years most loans were obtained from urban patriciate, but from 1750 onwards the farmers could access sources of capital in the local community, in which some people apparently achieved sufficient wealth to act as lender.²⁷

Brusse did find similar shifts in land ownership in his study of the Over-Betuwe region. In this region an elite of large landowning farmers emerged in the second half of the seventeenth century, who invested

²⁵ van Bochove, Deneweth and Zijderduijn, 'Real estate and financial markets in England and the Low Countries, 1300–1800'.

²⁶ van Cruyningen, *Behoudend maar buigzaam*; V. Enthoven, 'PR Priester, Geschiedenis van de Zeeuwse landbouw circa 1600-1910', *BMGN-Low Countries Historical Review* 114 (1999) 572–573; Peter R. Priester, *Geschiedenis van de Zeeuwse landbouw circa 1600-1910*. HES studia historica d. 20 ('t Goy-Houten 1998).

²⁷ Baars, *De geschiedenis van de landbouw in de Beijerlanden*, 107–108, 110, 119–120, 124, 176.

significantly in landed property for political and social reasons. They financed their purchases with retained revenue from their farming business and with external capital. They also obtained loans to deal with the economic crisis of the early eighteenth century. The numbers indicate that the share of these farmers increased from 27% in 1650 to 44% in 1790, while the share of nobility and patriciate declined from 48% to 41% and the share of institutions dropped from 23% to 15%. In the region a process of concentration of land ownership took place, with political and economic consequences. Brusse does not provide many details about the financing of the land purchases.²⁸ In a 1984 article about the emergence of a landowning farmer class in Overijssel, in the period 1750 to 1830, Van Zanden studied the changes in land ownership and their consequences in that eastern region of the Dutch Republic. Between 1600 and 1800 the share in landed property of the nobility decreased to approximately 25% while the share of farmers increased to 70%. The nobility, the government and the bourgeoisie sold large quantities of lands to a group of large farmers, who used their position as landowners to obtain political power in the local and regional councils.²⁹

In France a movement into the opposite direction took place. Rosenthal investigated the rural mortgage practice in southeast France and found two dominant social groups in that market: the nobility and the farmers. However the participation in the mortgage market was extensive, and the loans were to some extent used to purchase lands on the land market. The result was a democratization of the landed property, where many small farmers owned small parcels of land which were used for intensive agricultural activities like vineyards, mulberry orchards and fruit and vegetable cultivation. The loans were also used as working capital and for family lifecycle events. In another study by the same author about the credit market in Burgundy, the credit market was used for short and medium term loans, used as working capital and for dealing with rural crises. The participation in the local market was extensive, but since farmers owned little land, the long-term loans with land as collateral were out of reach. Rosenthal found a democratization of land ownership as more people were able to acquire loans to purchase a parcel of land.³⁰ As several authors have linked indebtedness to concentration of land control, to the development of wealth inequality and to the development of economic growth towards

²⁸ Brusse, *Overleven door ondernemen*, 52, 118–120, 133, 319–321, 364.

²⁹ Zanden, van J.L., 'De opkomst van een eigenerfde boerenklasse in Overijssel, 1750-1830'.

³⁰ Rosenthal, 'Credit markets and economic change in southeastern France 1630-1788', 151, 153, 156.

capitalism, understanding these relationships in the Dutch regional context can contribute to the debate about the transition from feudalism to capitalism.³¹

The second research question is concerned about the nature and the significance of the relationship between the mortgage market and the land market. The number of actors involved in land transactions and mortgage transactions provides insight in the market participation, while detailed analysis of the land ownership and mortgage level of prominent actors of the main social classes may establish evidence for concentration of landed property or lack thereof. Stock and flow analysis of mortgage amounts and quantity of lands, related to stock and flow of real-estate transactions should provide insight in the parallel development of the two markets. The data suggests that in the period between 1670 and 1780 Bodegraven farmers increased their share of landed property. These real-estate transactions were (partially) financed through mortgages on landed property. Although the loans caused higher indebtedness for the farmers, the profitability of their farming business allowed them to quickly amortize these loans.³²

Mortgage market and crisis management

Life in the early modern period was perilous and many people struggled to sustain their families in difficult times. They were confronted with external calamities, for instance raging wars, adverse weather conditions, bad harvests, flooding and plagues. Personal circumstances could change rather abruptly when relatives died, or moved away for economic or social reasons. In many cases these events had a significant financial impact. The data set from the Bodegraven region shows that the calamitous events in December 1672, when the French army plundered and destroyed the village, led to a peak in the number of mortgages and real estate transactions to reconstruct the farms and houses in the community.

Baars noticed that the Beijerlanden farmers were capable of sustaining and even growing their farming business during the agrarian depression in the first half of the eighteenth century. The cattle plague did not affect these farmers in a significant way.³³ According to Van Cruyningen the large farmers in Zeelandic Flanders were well prepared to deal with the agrarian depression in the first half of the 18th

³¹ P. C. M. Hoppenbrouwers and J.L. van Zanden, *Peasants into Farmers? The transformation of rural economy and society in the Low Countries (Middle Ages-19th century) in light of the Brenner debate*. CORN Publication Series 4 (Turnhout 2001).

³² Research question 2 and its hypotheses is discussed in chapter four about *real estate market and mortgage market*, and uses base data from chapter three.

³³ Baars, *De geschiedenis van de landbouw in de Beijerlanden*, 171.

century and actually profited from the high prices and low costs.³⁴ Rosenthal indicates in his paper about rural Southeast France that farmers did use loans for short-term smoothing to deal with agrarian crises, such as late harvests, requiring that the mortgage market mechanisms for information exchange and ease of access were sufficiently developed to quickly connect lenders and borrowers.³⁵ The question about the relationship between mortgage loan and actual crisis situation might be answered in different ways, depending on the information required and available in the sources. If there is information about the application of the loan, a direct relationship can be established. An example is a direct reference between a mortgage transaction and a real-estate transaction, or the note that the mortgage involved a house burned down. A statistical relationship can be inferred when information about the calamities and information about the mortgages is available for the same regions. An example of this relationship is the link between a family life cycle event and the transaction, indicated by the terms *widow*, *orphan*, and *curator* in the transaction record. The detailed information gained in this way would provide interesting insight in the personal financial situation of an early-modern farmer.

The third research question addresses the financial resilience of Bodegraven farmers when confronted with warfare or environmental disasters. The consequences of warfare and cattle plague caused farmers to obtain foreign capital by mortgaging their landed property. The financial resilience of the farmer community increased during the 1670-1780 period, as both the amount of mortgage and the acreage mortgaged decreased significantly during the period.³⁶

1.4 Summary

In this chapter the research domain of agrarian mortgages in a rural village in Holland in the early modern period was introduced and a number of research questions were formulated. In the next chapter the village of Bodegraven is described in more detail, to provide background to the case study.

³⁴ van Cruyningen, *Behoudend maar buigzaam*.

³⁵ Rosenthal, 'Credit markets and economic change in southeastern France 1630-1788'.

³⁶ Research question three and its hypotheses are discussed in chapter five about *warfare, cattle plague and mortgage*, again using base data from chapter three.

2 The village and polders of Bodegraven

Bodegraven was a village at the banks of the Rhine, in the east of the province of Holland, and today it is one of the medium-sized cities in the Dutch Randstad and ‘Groene Hart’. In the seventeenth and eighteenth centuries it was surrounded by six polders, *Noordzijderpolder*, *Zuidzijderpolder*, *Meijepolder*, *Meijehornpolder*, *Weijpoort* and *Weijland*. The village was first mentioned in a document from 1064 where emperor Hendrik IV formally defined the boundaries of the bishopric of Utrecht and the county of Holland. The small settlement Bodegraven belonged at first to Utrecht, but in 1280 it was transferred to the count of Holland, the famous Floris V. In the thirteenth century the reclamation of lands to the north and the south of the Rhine established the five polders, *Meijepolder*, *Noordzijde* and *Weijland* at the north side and *Zuidzijde* and *Weijpoort* at the south side. The polders at the south side belonged to the Water Board (*Hoogheemraadschap*) of Rijnland, the polders at the north side to the Water Board (*Groot-Waterschap*) of Woerden. In this study the *Meijehornpolder* is combined with the *Meijepolder*.³⁷

The acreage of Bodegraven and its five polders *Meijepolder*, *Noordzijderpolder*, *Weijland en de Bree*, *Weijpoort* and *Zuidzijderpolder* is shown below. The information from the Water Board of Woerden is in line with the information from the provincial documents. However the acreage of the polders *Weijpoort* and *Zuidzijderpolder* is not equal to the acreages reported in the *morgenboeken* of the Water Board Rijnland: a difference of about 82 ha for the *Zuidzijderpolder* and about 37 ha for the *Weijpoort* polder has been found.³⁸

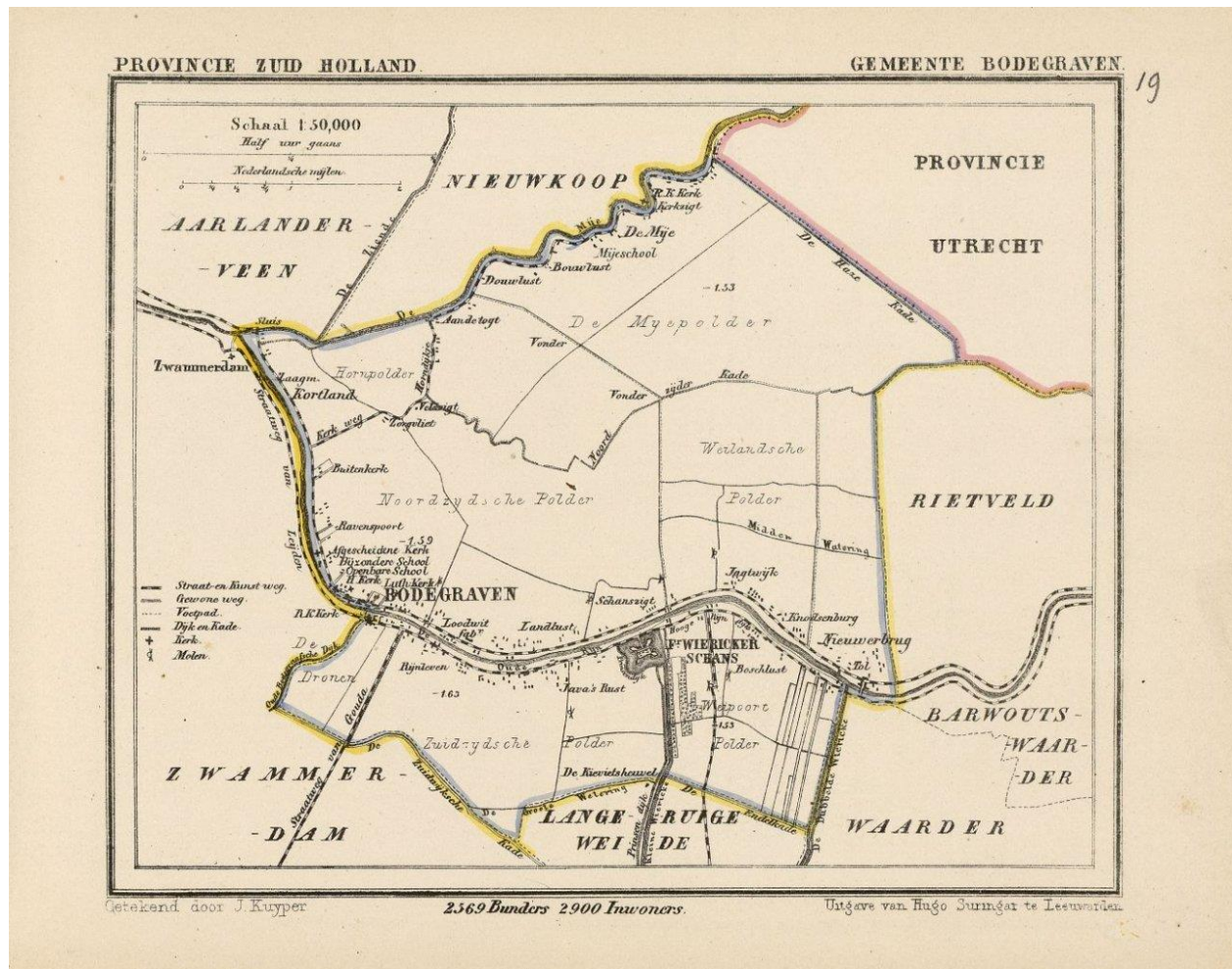
Table 1 Acreage of Bodegraven. Source: Province of Zuid-Holland, *Waterschap Woerden*

Area	Groot Waterschap Woerden	Provincie Zuid-Holland	% of total acreage
Bodegraven	269.41.44	269*	8%
Meijepolder	707.09.71	707	22%
Noordzijderpolder	676.79.38	675	21%
Weijland en de Bree	774.05.30	774	24%
Weijpoort	245.01.13	245	8%
Zuidzijderpolder	500,42,08	500*	16%
Total	3172.79.04	3170	100%

³⁷ This division implies that the archives of both water boards need to be consulted for documents pertaining to the polders, for example the *morgenboeken*.

³⁸ Introductie van de inventaris Archief Grootwaterschap Woerden, RHC H094a. Beschrijving van de provincie Zuid-Holland behorende bij de waterstaatskaart (1937). Entries marked with * are calculated from totals stated in sources. See chapter 3 for the property overviews of the *morgenboeken*.

Figure 1 Map of Bodegraven and its polders, 1858



The population of Bodegraven, as can be derived to some extent from the archival documents, consisted of farmers, laborers, artisans, merchants and a few notables. Bodegraven was governed by the *Ambacht*, with a limited number of officials, among them the sheriff. In that sense it confirms to the broader statements made by Van Haute et.al, that village societies were strongly oligarchic organized, with the power resting in the hands of the land owners.³⁹ Many farmers were smallholders, either owning a few *morgen* of land or renting the land from a wealthy landowner. A small number of farmers and merchants became very wealthy through a combination of agricultural entrepreneurship, trading in real-estate and acting as a local investor and money lender. An example was Maarten van den Bos, a cattle merchant, farmer and rentier, whose name appeared 25 times in the real-estate acts and 26 times in the mortgage deeds, for a total value of fl. 56,050 (6% of the total amount) and fl. 52,150 (9% of the

³⁹ Eric Vanhaute et al., 'Making a living in rural societies in the North Sea area, 500-2000', *MPRA Paper No. 38285* (2012).

total amount) respectively. The following table shows the percentages of amount in real-estate transactions and mortgage transactions that the top 15 most active persons dealt with, which indicates that most inhabitants were relatively inactive, but some people were very active. If only the local population is taken into consideration, the percentages for the top 15 are even higher (see the second column). The 15 most active persons from Bodegraven were responsible for between 1/5 and 1/3 of the transaction volume.⁴⁰

Table 2 Top 15 of most active persons as percentage of active parties, and the percentage of amounts they traded

	# active parties		Top 15 persons		Amount by top 15	
	All	Local	All	Local	All	Local
Buyers	474	295	3.2%	5.1%	19.2%	24.0%
Sellers	539	380	2,8%	3.9%	17.0%	20.9%
Lenders	253	168	5.9%	8.9%	29,1%	34.6%
Borrowers	232	188	6.5%	8.0%	30.8%	33.5%

Around 1650 the Bodegraven agricultural economy mainly consisted of livestock farmers, hemp growers and horse breeders, the latter being renowned for their breeding skills. In 1672 the village was heavily impacted by the ‘Dutch’ war between the Republic and France; as part of the Dutch ‘Waterlinie’ Bodegraven became the center of Dutch resistance against the French armies of Louis XIV. The polders were inundated, but during the winter of 1672 the retreating French army used the frozen plains to attack Bodegraven and burn it to the ground. It took considerable time, effort and financial resource to rebuild the village and restore the polders after the war, signs of which can be found in the local archives. In the eighteenth century the people in Bodegraven and its polders were able to reinvigorate the local economy and to become prosperous again.⁴¹

2.1 Demography

For reference purposes a number of statistics about Bodegraven, its population and its acreage have been researched and calculated. In the middle of the seventeenth century Bodegraven had a population of about 500 persons in some 100 houses, half of which lived in the polders. During the eighteenth century the population increased from about 1000 in 1700 to approximately 1500 in 1750, living in about 360 houses. The first official census records of Bodegraven, resulting from the 1795 census in the

⁴⁰ See chapter three for a more detailed analysis of the data.

⁴¹ W.R.C. Alkemade, *Inventaris van het archief van het dorpsbestuur van Bodegraven (1530) 1560-1813* (Woerden 2008) 2–4. The introduction to the inventory contained a brief overview of the history of Bodegraven, without many literature references.

Bataafse Republiek, registered a population of 1694. Thus the longer-term population development of Bodegraven differed from several other rural villages, which saw a decline of the population during the agrarian depression that occurred in the period between 1670 and 1770. Under the assumption that the average household consisted of 5 inhabitants in 1700 and 4.2 in 1750, the population would comprise of approximately 200 households in 1700, 360 households in 1750 and 400 households in 1795. For the polders the figures are 100, 180 and 200 respectively.⁴² Again assuming that half to two-third of these polder households belonged to the poor without farm properties, the group of independent owners of real estate may have varied between 35 and 50 in 1700, 60 and 90 in 1750 and 65 and 100 in 1795. The following table provides some population and growth figures, although these numbers need to be taken as approximate numbers. Only the 1795 figures are derived from the actual census data.⁴³

Table 3 Population numbers of Bodegraven and polders for a number of years.

Year	1375	1515	1650	1700	1750	1795
Population	400	700	500	1000	1500	1694
Growth	-	75%	-29%	100%	50%	13%
Yearly growth	-	0.4%	-0.75%	1.4%	0.8%	0.3%
Houses	-	-	100	200	360	400
Houses in polder	-	-	50	100	180	200
Persons/house	-	-	5	5	4.2	4.2
Owners	-	-	17-25	35-50	60-90	65-100

As can be seen in the table above, Bodegraven suffered a significant decline of almost 30% during 16th and early 17th century, which was only recovered in the late 17th century. The population growth between 1650 and 1700 was approximately 1.4% annually; between 1700 and 1750 the growth percentage was about 0.8% and between 1750 and 1795 the percentage was around 0.25%.⁴⁴ The number of houses and farms was found for 1650 and 1750, the other numbers are calculated. The number of houses in the polders is derived from the statement that half of the population lived in the polders, which means it is an approximation as it is unknown if there was a difference between the

⁴² De Vries, *The Dutch rural economy in the Golden Age, 1500-1700*, 86–87, 96; Annemarie Bouman, Jaco Zuijderduijn and Tine De Moor, *From hardship to benefit: A critical review of the nuclear hardship theory in relation to the emergence of the European Marriage Pattern* (Utrecht 2012) 14. This is not taking into account the number of servants within the population, which may have been at least ten percent.

⁴³ Website Volkstellingen 1795-1971

(<http://www.volkstellingen.nl/nl/volkstelling/jaartellingdeelview/VT179501/index.html>). Introduction to the archive inventory of the village council of Bodegraven, 1560-1813, RHC Rijnstreek, 2008.

⁴⁴ These growth numbers were retrieved from a single secondary source: the Introduction to the Archives of Bodegraven. The 1.4% growth between 1650 and 1700 seems quite high for a village.

village and the polders in the number of persons per house. The number of persons per house (household) is considered to be in line with other literature.⁴⁵ These numbers tell that the number of *agrarian* households varied between approximately 50 in 1650 and 200 in 1795. The numbers do not provide sufficient information to determine the exact number of farms in Bodegraven. The mortgage transactions and real-estate transactions can provide more information about this measure, however with the notes that not all farms are necessarily mortgaged or sold, and some farms may have been mortgaged or sold multiple times.

As notary deeds from the period 1675-1700 indicate, several farmers mortgaged their land to finance rebuilding their destroyed farm houses. The redemption of these mortgages in the last quarter of the seventeenth century and the first quarter of the eighteenth century impacted the local credit market. The archival index should have contained a list of houses that were destroyed, but this document could not be retrieved.

2.2 Geography

The territory of Bodegraven consisted of the village, four larger polders and one smaller polder. For two of the polders, Weijpoort and Zuidzijderpolder, the minimum and maximum number of properties over the 110 year period are retrieved from the property registers of the Water Board *Rijnland*. The average size of the properties, as derived from the notarial deeds, varies significantly between the polders.

Table 4 Acreage, number of properties and average size of a property, in Bodegraven and its polders

Area	Acreage (ha)	Percentage	# Properties	Avg. size (ha)
Bodegraven	269	8%		7.49
Meijepolder	707	22%	> 34	11.59
Noordzijderpolder	676	21%	> 37	8.58
Weijland	774	24%	> 13	15.14
Weijpoort	245	8%	16-19	18.16
Zuidzijderpolder	500	16%	66-94	9.31
Total	3170	100%		

For the Weijpoort and Zuidzijderpolder an approximate number of properties was retrieved from the property registers of the Water Board. When these numbers are related to the number of transactions for these polders, it shows the following data for a selected number of years.

⁴⁵ Nelleke Bakker, *Vijf eeuwen opvoeden in Nederland: idee en praktijk, 1500-2000* (Assen 2006) 103; Adrianus Maria van der Woude, 'Demografische ontwikkeling van de Noordelijke Nederlanden 1500-1800', *Algemene geschiedenis der Nederlanden* 15 (1980) 134–139.

Table 5 Number of properties related to number of transactions, for two polders of Bodegraven

Area	Year	# properties	# mortgage trans.		# real estate trans.	
Weijpoort	1670	26	12	46%	8	31%
	1700	19	2	11%	7	37%
	1720	19	5	26%	3	16%
	1740	19	2	11%	7	37%
	1760	19	3	16%	2	11%
Zuidzijderpolder	1670	90	12	13%	33	37%
	1700	92	5	5%	6	7%
	1720	66	12	18%	30	45%
	1740	69	16	23%	21	30%
	1760	94	14	15%	15	16%

In the decades between 1670 and 1700, where the real estate market was quite active, between a fifth and a third of all properties in the two polders changed hand. In 1670 almost half of the properties (46%) in the *Weijpoort* was mortgaged. The high market activity for the last quarter of the seventeenth century will be analyzed in more detail.⁴⁶

⁴⁶ In fact this phenomenon has a major impact on the whole study, significantly impacting the market statistics and the comparisons between the decades of the period.

3 The mortgage market in Bodegraven

The institute of the mortgage market offered early modern property owners a means to obtain larger amounts of capital secured with real-estate collateral for capital expenditures. Gaining insight into the mortgage market and its relationship to other aspects of personal and communal life, such as indebtedness, landed property and resilience to shocks, in an early modern agrarian society, requires an in-depth analysis of quantitative and qualitative historical data. Demographic data provides insight in the population size and composition at several moments in the 110-year period being studied. Geographical information about the Bodegraven areas and properties helps understanding the volume of real-estate traded during the period. The archives contain a significant collection of financial and fiscal data about real-estate transactions, mortgage transactions, bonds and landed property. The real-estate transaction data, the mortgage transaction data and the information about the bonds originate in the *Oud-Rechterlijke archieven van het Gemeentebestuur van Bodegraven*.⁴⁷ The agrarian property information is found in the *archieven van het Hoogheemraadschap Rijnland*.⁴⁸ It must be noted that the data sets from the archives are not complete for all years in the period between 1670 and 1782. The following table shows the number of years for which the archives were kept, and actual mortgage and real-estate registrations were found. This information is necessary to assess the transaction data in relationship to the temporal dimension and to properly observe and interpret the trends.⁴⁹

Table 6 Number of years per decade for which transactions were registered, and for which mortgage deeds were found

decade	# years in archives	# years with mortgage deeds	#years with real-estate deeds
1670	10	6	9
1680	10	4	10
1690	10	2	10
1700	8	7	7
1710	1	1	1
1720	10	9	10
1730	10	9	10
1740	10	7	9
1750	3	1	3
1760	9	9	9
1770	10	10	10
1780	3	3	3

⁴⁷ Archieven van het Gemeentebestuur van Bodegraven is called *municipal archives* in the remainder of this paper. The information about the bonds, for the 1760's and 1770's is not discussed in detail in this paper.

⁴⁸ Archieven van het Hoogheemraadschap is called *Water Board archives* in the remainder of this paper.

⁴⁹ The first column is derived from the archival metadata which lists the years for that particular archive. The other columns show the counts of year per decade, for which actual deed registrations were found. It may be necessary to remove the decades with less than 3 years of data from the analysis, as their numbers will significantly influence the results. Those are the 1710's, 1750's and 1780's.

3.1 Transactions

The total number of agrarian mortgages with securities in real estate in the 110-year period totaled 362. The total amount mortgaged reached fl. 566,590. For the real-estate transactions the numbers were 722 and fl. 1,799,497 respectively. The mortgage transactions involved 243 combinations of farms and lands, and 119 transactions with only lands, with a total acreage of 4300 ha used as securities in loans; for real-estate transactions the total acreage was 6443 ha.

Table 7 Overview of mortgage transactions

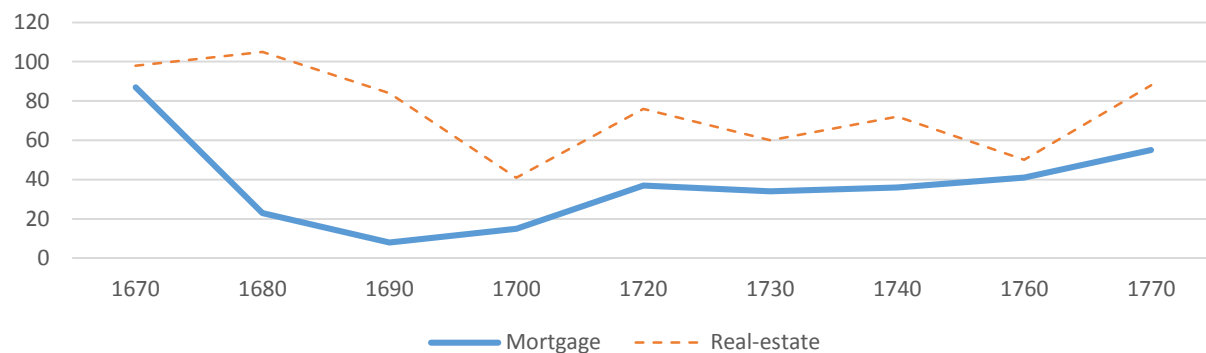
Decades	Freq.	Amount	%	Avg.	Std. Dev.	Acreage	%	Price/ha
1670	87	118,826	21.0%	1,366	941	907	21.1%	172
1680	23	34,120	6.0%	1,551	2,548	213	4.9%	151
1690	8	12,100	2.1%	1,513	1,690	95	2.2%	159
1700	15	15,714	2.8%	1,048	924	141	3.3%	148
1710	4	1,900	0.3%	475	206	31	0.7%	79
1720	37	37,812	6.7%	1,022	740	503	11.7%	91
1730	34	46,830	8.3%	1,377	1,116	443	10.3%	129
1740	36	51,850	9.2%	1,440	806	414	9.6%	248
1750	4	4,500	0.8%	1,125	340	76	1.8%	69
1760	41	77,463	13.7%	1,889	1,525	536	12.5%	247
1770	55	130,325	23.0%	2,370	1,520	702	16.3%	504
1780	18	35,150	6.2%	1,953	1,372	238	5.5%	236
Total	362	566,590	100.0%	1570	1340	4300	100.0%	225

Given that the total acreage of the region was 3170 ha, the data shows significant mortgaging in the region, and with an estimated number of 100 farms in 1670 and 200 farms in 1795 it also indicates that many farms were mortgaged. The data reveals peaks of mortgage transactions at the beginning and end of the period, and an increase of average loan size in the late eighteenth century. In particular the 1670's and 1680's witnessed high mortgaging activity with 30% of all transactions taking place in those decades. The average price per ha provides insight in the value of the land as collateral for mortgages, which hit low marks in 1710 and 1720 but increased significantly from 1760 onwards. The number of mortgage transactions was approximately half of the number of real-estate transactions, which suggests that buyers of real-estate used other types of credit next to mortgaging to finance their purchases. Furthermore the average amount of the mortgages was significantly lower than the average amount of the real-estate transactions, which reinforces the previous conclusion. The average size of the properties in Bodegraven was not very large, suggesting that many small farmers were active in agricultural business. The average prices per ha are roughly comparable with the land prices Baars calculated in his

Beijerlanden study. The high standard deviation in the 1680's was caused by one high-value transaction of fl. 12,000.⁵⁰

The development of the mortgage market over time is visualized in the following diagram, with the development of the real-estate market put in for comparison. The diagram clearly shows the high activity in the early decades, followed by a long period of much lower activity with an increase in the 1760's and 1770's. The explanation for this behavior is believed to be the impact of the Dutch war, to be discussed in detail in chapter 5. Another remarkably notion is the difference in development of the two markets, with the real-estate market staying more active until 1700 before it slows down as well. The relationship between the mortgage market and real-estate market is subject of chapter 4.

Figure 2 Development of the mortgage market over time, in frequency per decade



The frequency data for the mortgages provides some insight in the number of transactions and the amounts of money and lands involved. A next step is the calculation of cumulative values for the mortgages to assess the total indebtedness over time. The stock is the amount of mortgage at a certain point in time, for example January 1st 1700. The inflow is the amount of mortgage borrowed in 1700, while the outflow is the amount of mortgage paid back in 1700. The stock and flow calculation takes the inflow and outflow of mortgages based on the year of the transaction and the year of payback. The 50% payback term is the period in which 50% of the mortgages was paid back.⁵¹ The mortgage deeds contained payback information in 64% of the deeds, with the 50% payback term at 19 years. For the mortgages without payback information a payback period has been interpolated, using five-year moving averages of the mortgages paid back. After interpolation the 50% payback term became 7 years, while after 19 years 86% of the mortgages was paid back. After the payback period has been established, the

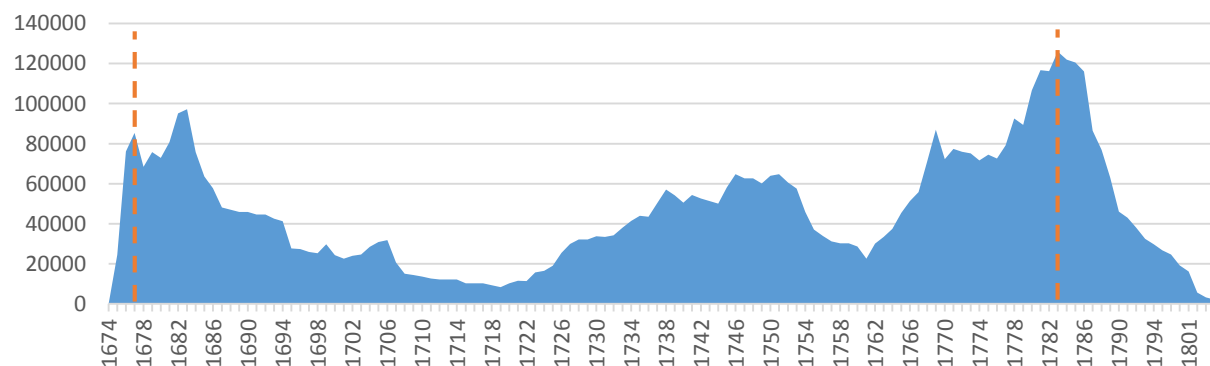
⁵⁰ Baars, *De geschiedenis van de landbouw in de Beijerlanden*, 112.

⁵¹ See <http://www.systemdynamics.org/DL-IntroSysDyn/stock.htm> for an introduction to stock and flow calculation.

stock and flow can be calculated for both the amounts and the lands in the transactions. These calculations are made over the unfiltered data set and take all years between 1674 and 1809 into account.⁵² There is no mortgage stock information available for the years before 1674, which means that the initial stock could not be determined. The last recorded payback on a mortgage was in 1809.

The stock diagram for the mortgage amounts is shown below. The first dotted line has been added at 1677 to indicate that the stock before that period is not known. The second dotted line has been added at 1782 to emphasize that the inflow beyond that point is not known, thus the graph beyond the line only registers the stock after outflow. The graph shows the high levels of mortgaging in the early years, which were repaid around 1720. The inflow highlights the financial needs of the borrowers, the outflow shows their capabilities to pay back. The borrowers in the Bodegraven mortgage market did experience a number of situations with high financial needs, especially in the first and last decades. But apparently they were able to earn sufficient money to sustain their farming business and to pay back their debts.

Figure 3 Stock of mortgage transactions in amounts

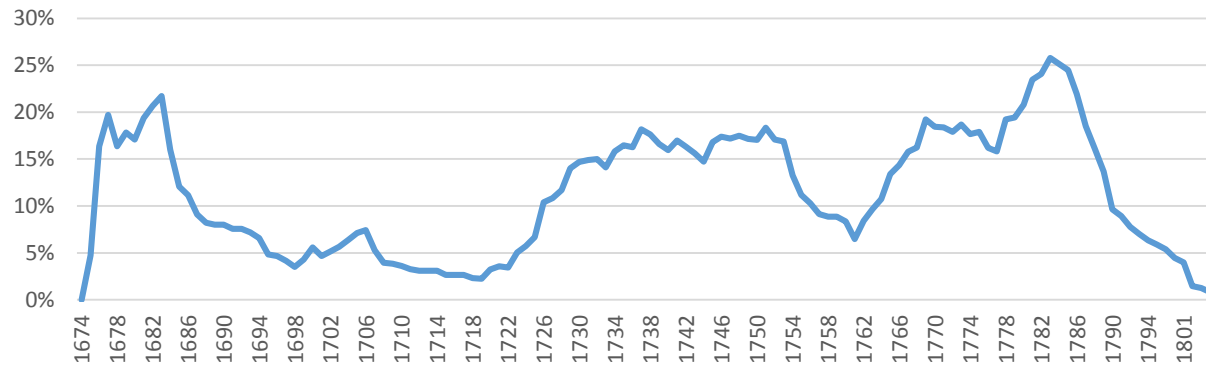


When the stock calculation is performed for the quantity of lands mortgaged and measured against the total acreage in the region, the indebtedness in terms of percentage of lands can be calculated. The total acreage in Bodegraven and its polders was 3170 ha. The percentage of mortgaged lands, excluding the years at the begin (1670-1680) and at the end (1783-1804), varies between 2% and 26%, the latter mark was reached in 1782.⁵³

⁵² It is important to take all years into consideration, not just the years for which mortgage transactions were found. Otherwise the paybacks are not recorded in full.

⁵³ The reason for exclusion is the lack of information about the stock in 1674 and the inflow after 1782. The length of the excluded initial period is based on the 5-year average of the payback term. Note that the 2% minimum is not very accurate either, because of lacking data in some periods.

Figure 4 Percentage of lands mortgaged measured against the total acreage of 3170 ha



Even taking into account the lack of mortgage data for some periods, the graph shows significant percentages of land (and houses) under mortgage. Not surprisingly the percentages were high in the 1670's and 1680's and in the last decades of the periods. But it seems fair to say that the long term indebtedness was in the 15%-20% range for most of the time, increasing to 25% and beyond in the last decades. When these numbers are compared to the mortgage percentages for the Beijerlanden (which are split in three social classes: nobility, bourgeoisie, farmers), they are quite similar to the percentages for the farmers. The Bodegraven data set currently does not have details about the landed property per social class, making it hard to calculate exact indebtedness percentages for each class. Nevertheless the significant amounts of lands used as security for mortgage loans illustrate the importance of the mortgage market to obtain foreign capital.⁵⁴

3.2 Actors

People play an important role in the mortgage and real estate market. First the basics about the actors are established: how many were there, who were they, where did they come from? Unfortunately the information about the actors lacks occupation and residency details in many cases; 22% of the mortgage deeds do not provide details about residency and occupation of the parties involved.⁵⁵ Still it is possible to perform a number of analyses on the data set. The total number of unique actors⁵⁶ involved in mortgage transactions is approximately 485, spread over 232 borrowers and 253 lenders. The

⁵⁴ Baars, *De geschiedenis van de landbouw in de Beijerlanden*, 119.

⁵⁵ There is reason to assume that in cases where no residence was listed Bodegraven was the place where the actor lived, especially for the mortgage borrowers as the lender would have required this information to secure the loan against defaulting or fraud.

⁵⁶ Determined by grouping on names, after the cleanup of the data. Some authors noted that dealing with names of early modern people is not a trivial task, as there are many variations and other complexities. The cleaning and grouping has taken dates, occupations and locations into account, as well as cross-references between mortgage and real-estate transactions.

distribution of the transactions is rather skewed: the analysis shows that 29% of the total amount was loaned by the top 15 lenders and 31% of the total amount was borrowed by the top 15 borrowers. Most of this capital was borrowed by residents of *Bodegraven*; about 81% of the borrowers lived in the village or its polders. For the lenders of capital the spread is broader; about 66% of the lenders were residents of *Bodegraven*, while people from *Gouda* and *Leiden* provided significant amounts as well. This data implies that on one hand a small minority of the population was very active in the mortgage market, but on the other hand a large majority of the population participated in mortgage transactions. Especially in the 1670's the local inhabitants were active with 53 parties active as borrower and 37 as lender. With an estimated number of property-holding agrarian households in that period between 35 and 50, the data proves that a large proportion of the farmers was involved in mortgaging.⁵⁷

It is interesting to compare the two decades with the highest activities, the six years between 1674 and 1679 and the ten years between 1770 and 1779.⁵⁸ In the 1670's the 61 unique borrowers took 87 loans for a total value of fl. 118,826, which amounts for each of them to fl. 1,948 with 14.9 ha land as collateral. Of the 61 borrowers 53 lived in Bodegraven, which means that practically all property owners were mortgaging their property to acquire loans. In contrast, the 29 borrowers in the 1770's took 55 loans for a total value of fl. 130,325, which amounts to fl. 4,494 with 24 ha as collateral per borrower. Of the 29 borrowers in that period 21 lived in Bodegraven, which is between 21% and 32% of the land owners. These numbers indicate that on the demand side of the mortgage market a significant difference is visible, with a 52% decrease in the number of borrowers and per borrower a 131% increase in amount borrowed and a 60% increase in lands put up as collateral. For the supply side a similar calculation reveals a 50% decrease in the number of lenders and per lender a 116% increase in amount loaned. It is interesting to note that the ratio between local borrowers and foreign borrowers decreased with 14%, while the ratio between local lenders and foreign lenders increased with 9%, when 1670 is compared to 1770.⁵⁹

When the full period is taken into account with regards to frequency of borrowers compared to size of the landowning population, and with regards to average amount per borrower and per loan, the development mentioned above is visible again although it seems to have happened in the early decades.

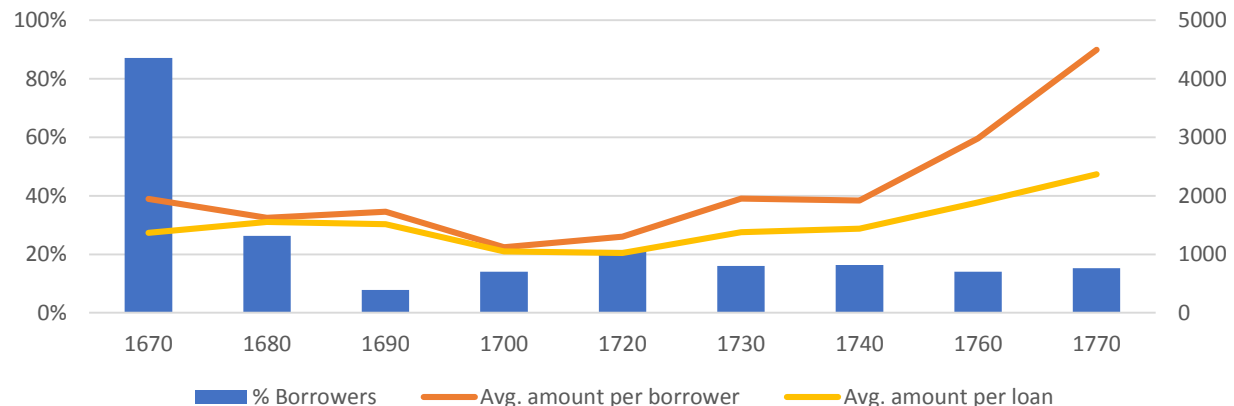
⁵⁷ See chapter 2 for the population figures.

⁵⁸ No mortgages were registered for the period 1670-1673. However the absence does not strongly impact the conclusion of the comparison. On second thought, one might have compared the 1674-1683 period with the 1770-1779 period, which would have increased the difference between the two periods.

⁵⁹ The deeper analysis of the changes in the residency and occupation of borrowers and lenders is considered out of scope for this paper.

The percentage of borrowers in the population (i.e. the number of unique parties that obtained a mortgage loan as a percentage of the estimated number of landowners in the population) dropped from 87% in 1670 to around 21% in 1720 and stabilized on approx. 15% in subsequence decades. Thus the 1670 decade is rather exceptional in the number of borrowers, which may be an indication of an influential external factor (warfare) in the market.⁶⁰ The change in average amounts per borrower and per loan from 1740 onwards is +53% and +28% respectively, for which a number of explanations can be formulated. The change may be due to an external factor (cattle plague), or it may be related to development in the real-estate market or it is caused by high level of capital investments about which no further information is present.⁶¹

Figure 5 Percentage borrowers of the landowning population, average amount per borrower and average amount per loan, over time



3.3 Summary

The mortgage market in Bodegraven fluctuated significantly during the 110-year period. A high transaction volume and high participation was recorded for the 1670's. In the next decades the market underwent a prolonged period of low activity and low participation. In the 1760's and 1770's the transaction volume increased again, but the participation stayed on the lower level. The average amount of the loans was fl. 1,570 against an average collateral of 11.9 ha, in 33% of the cases combined with a farm house. The percentage of lands mortgaged varied between 20% and 25%, while most loans were paid back within 20 years. A large percentage of the actors on the market originated from the local

⁶⁰ In the 1670's the number of 61 unique borrowers is more than 2 times higher than the 1720's and the 1770's with 29 unique borrowers. The amount of fl. 118,826 in 1670 is only surpassed by the fl. 130,325 in 1770. The quantity of land mortgaged in 1670 was 907 ha, which is 30% higher than in 1770 with 702 ha. The specific details for the 1670's are discussed in chapter 4 and 5.

⁶¹ In chapter 4 the relationship with the real-estate market is discussed. In chapter 5 the relationship with external factors is discussed.

population, although foreign lenders were providing significant amounts of mortgaged credit in the early decades.

4 Real estate market and mortgage market

The real-estate market in Bodegraven in the 1670-1780 period was fairly active with more than 720 transactions, amounting to almost fl. 1.8 million for 6443 hectares of land and 357 farm buildings. Mortgaged loans were often used to finance real-estate transactions, as a number of cross-references in the deeds indicated or can be derived from comparing the dates and actors of mortgage deeds and transaction deeds.⁶² Statistical analysis of the correlation between the mortgage loans and the real-estate transactions shows that both the amounts of the loans and the quantity of the lands in the deeds are related in a statistically significant way.⁶³ Some authors in the secondary literature comment on the pronounced changes in landed property in the early-modern period, often resulting in higher land shares for the farmers with political and socio-economic consequences. Other authors mention the use of mortgage loans to finance land transactions, although it must be noted that these transactions were often financed through a combination of own capital and foreign capital. Insight in the nature of the relationship between the real-estate market and the mortgage market is important for understanding the development of those institutions and their impact on economic change.⁶⁴

In the secondary literature considerable attention is paid to the actors in the real-estate market. Typically a distinction is made between nobility and gentry, urban patriciate or merchant elite, institutions, middle class and farmers. In the late Middle Ages and the early modern period nobility and gentry were large landowners in the eastern provinces of the Republic, but even in Holland and Zeeland they owned significant landed properties. The merchant elite in the Republic enriched themselves during the profitable Golden Age and invested large amounts of capital in the rural economy. The investment strategies of these groups changed in the late seventeenth century from direct participation to indirect financial investments through mortgaging or to investments in foreign countries and government bonds. Detailed discussion of these investment strategies is outside the scope of this document. Interesting though is the relationship between the investment policies of these groups and the mortgage and real-estate markets in agrarian regions like Bodegraven. Other groups, such as the farmers, took advantage of the retreat of foreign investments to increase their share of landed property

⁶² The real-estate transaction data set contains 41 transactions that directly refer to mortgage loans. 213 unique parties were active on both the mortgage and the real-estate market.

⁶³ The Pearson correlation coefficient is 0.410 between the amounts and 0.367 between the quantities. The Kendall tau correlation coefficient between the quantities is 0.229 and the Spearman rho correlation coefficient is 0.314. For all cases the correlation is significant at the 0.01 level.

⁶⁴ van Cruyningen, *Behoudend maar buigzaam*; Rosenthal, 'Credit markets and economic change in southeastern France 1630-1788'; Baars, *De geschiedenis van de landbouw in de Beijerlanden*; Brusse, *Overleven door ondernemen*; Zanden, van J.L., 'De opkomst van een eigenerfde boerenklasse in Overijssel, 1750-1830'.

for economic, political and social reasons. The analysis of the mortgage market activities of both local and foreign actors from different social classes provides more insight in the composition of the market.⁶⁶

4.1 Real-estate transactions

The data set of the real-estate transactions shows a total of 722 transactions in the 110-year period, for a total amount of fl. 1,799,497. The transactions cover 357 purchases of land and 365 purchases of farms and land, with a total acreage of 6443 ha. The decline in the first half of the eighteenth century is clearly visible in the total transaction amounts per decade and the average transaction amount per ha. Another trend that is visible in the dataset is the increase in prices for land after the 1740's, from a low mark of fl. 1,670 in 1730 to a high mark of fl. 3,719 in 1770. When the average price of 1670 is taken as the base, the recovery of the prices to the same level only happened in the 1770's.⁶⁷

Table 8 Overview of real-estate transactions

Decade	Freq.	Amount	%	Avg.	Std. Dev.	Acreage	%	Price/ha
1670	98	324,443	18.0%	3,311	2,438	759	11.8%	427
1680	105	201,751	11.2%	1,921	2,248	728	11.3%	277
1690	84	157,291	8.7%	1,873	2,000	672	10.4%	234
1700	41	98,688	5.5%	2,407	2,236	416	6.5%	237
1710	5	5,825	0.3%	1,165	1,331	40	0.6%	144
1720	76	155,815	8.7%	2,050	1,660	641	10.0%	243
1730	60	100,184	5.6%	1,670	1,031	464	7.2%	216
1740	72	143,926	8.0%	1,999	1,773	741	11.5%	194
1750	27	75,566	4.2%	2,799	1,107	313	4.9%	241
1760	50	155,053	8.6%	3,101	2,862	573	8.9%	271
1770	88	327,249	18.2%	3,719	2,736	934	14.5%	350
1780	16	53,706	3.0%	3,357	2,362	161	2.5%	333
Total	722	1,799,497	100%	2,492	2,260	6443	100%	279

The total acreage in Bodegraven was 3170 ha, which means that the turnover rate was 203% for the whole period and for 1670 and 1770 the turnover rates were 24% and 29% respectively. The average size of the real-estate properties ranged between 7.7 ha in 1670 and 10.6 ha in 1770, with standard deviations ranging between 5.4 in 1670 and 9.6 in 1770. Most of the transactions involved properties between 5 ha and 25 ha; these transactions covered 60% of all transactions, 70% of the amount and 73% of all lands, and even 150% of the turnover was realized through properties of that size. On the

⁶⁶ Zanden, van J.L., 'De opkomst van een eigenerfde boerenklasse in Overijssel, 1750-1830'; Brusse, *Overleven door ondernemen*; Oscar Gelderblom and Joost Jonker, *Early Capitalism in the Low Countries* (Utrecht 2013).

⁶⁷ Of course with the exclusion of 1710 and 1750, and an adjusted calculation for 1700 and 1780.

real-estate market approximately 474 unique buyers and 539 unique sellers were active, but the distribution is skewed. The top 5% of the sellers sold 25% of the properties, while the top 5% of the buyers purchased 26% of the properties. The high market activity in the last quarter of the seventeenth century is remarkable, especially when looking to the number of active parties and the total acreage. The number of unique buyers and sellers in the period was 206 and 245 respectively, which is approximately 44% of all parties. The distribution was less skewed: the top 5% of the sellers sold 21%, the top 5% of the buyers bought 23%. The 2159 ha of land sold in the period was 68% of the total acreage, which is a high turnover.⁶⁸

The analysis shows that out of the 362 mortgages in the period, only 42 (12%) were *directly* related to real-estate transactions. This number is surprisingly low, given that purchase of real-estate typically involved large sums of money. It may have been caused by difference between time of registration of the real-estate deed and the mortgage deed, or by registration irregularities. However in the 1770's, 13 (24%) of the 55 mortgages were associated with real-estate transactions. Seven of the 15 loans were made by Maarten van de Bos, a wealthy farmer and cattle merchant. These details indicates that over time local farmers were investing more extensively in real-estate, financed by mortgages. This results is in alignment with general observations stated by Baars that in the last quarter of the eighteenth century farmers became increasingly active in real-estate transactions. It also aligns with the statements of Bieleman that the agricultural recession was ending in this period, leading to more investments in agriculture.⁶⁹

4.2 Relating mortgage market and real-estate market

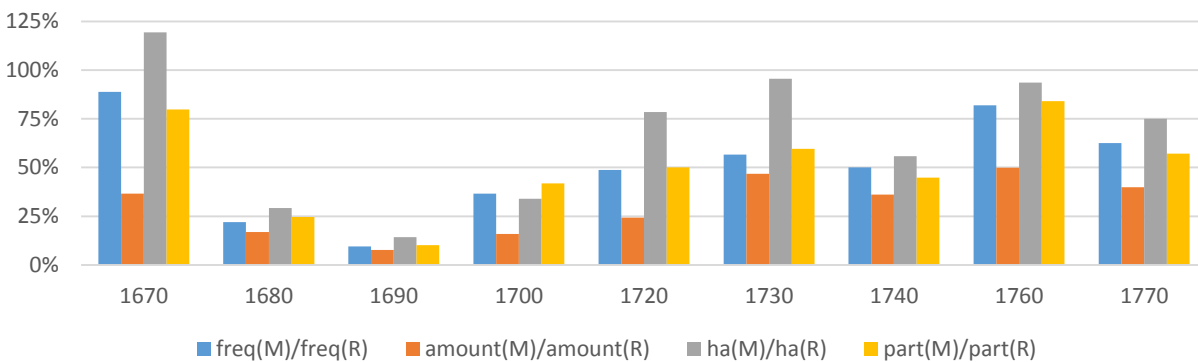
The relationship between the mortgage market and the real-estate market is analyzed in the following way. The analysis of the two data sets, presented in section 3.1 and 4.1, presents time-based aggregates and ratios of the transactions, including the frequency, total amount, total acreage involved and average price per ha. From the data sets a number of derivations have been made regarding market participation and levels of indebtedness. To determine the relationship a number of ratios between mortgage (M) and real-estate (R) transactions are defined, with the time series of decades. The

⁶⁸ The high market activity by some prominent persons is nicely illustrated by the transaction history of Maarten van den Bos, a wealthy Bodegraven farmer. He was mentioned 25 times in real-estate deeds, and 26 times in mortgage deeds, which involved fl. 56,050 (3%) and fl. 52,150 (9%) respectively. In 1780 he possessed 115 ha in the Zuidzijdepolder alone. The probate inventory is said to consist of an extensive list of properties, including multiple farms and considerable amounts of money, as is attested by the fact that each of his five children received a farm and fl. 5,000 in their inheritance. Unfortunately the inventory is lost.

⁶⁹ Baars, *De geschiedenis van de landbouw in de Beijerlanden*; Jan Bieleman, 'Dutch agriculture in the Golden Age, 1570-1660', in: *The Dutch economy in the Golden Age* (Amsterdam 1993) 159–182.

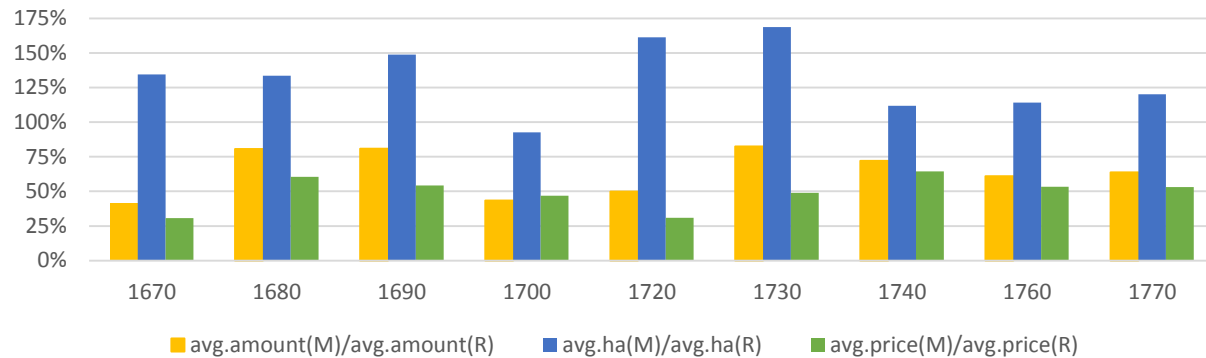
financing ratio M / R can be determined for a number of properties of the transactions, such as $\frac{freq(M)}{freq(R)}$ or $\frac{avg.amount(M)}{avg.amount(R)}$. The financing ratios of frequencies and acreage are linear: a change in M should correspond to a change in R , which reflects a market expansion or contraction. The financing ratios on total amounts, average amounts, total ha and average ha are also linear, and reflect an increase or decrease in financing needs. The price ratio $\frac{avg.price(M)}{avg.price(R)}$ is less interesting than the relationship between the average price for real-estate and the average amount for mortgage: one would expect higher average mortgage amounts when the average price for real-estate increases. The participation ratio $\frac{part(M)}{part(R)}$ can indicate different market movements: if the ratio decreases it may indicate more wealthy participants with alternative financing options, while as the ratio increases it may indicate higher debts for more people.

Figure 6 Ratios between mortgages (M) and real-estate sales (R), for totals



The decades 1680 and 1690 are exceptionally low, due to the lack of mortgage deeds in those decades. The frequency ratio and the acreage ratio indicates that a significant part of the land purchases was used as collateral in mortgage loans. However the amount ratio shows that the coverage of the purchase amounts by mortgage loans was significantly lower. Buyers of property did apparently use the mortgage market to finance part of the purchase, but used other means of financing as well; the mortgages covered between 37% and 50% of the purchase amounts. The participation ratio shows that a significant number of people was active on both the real-estate market and the mortgage market.

Figure 7 Ratios between mortgages (M) and real-estate sales (R), for averages



The average mortgage loans covered between 40% and 80% of the real-estate transactions. The properties used as collateral were on average greater than the lands being purchased, but as the amounts are lower the total value of the loan did not cover the purchase. That is confirmed by the rather low ratio of the average mortgage loan per ha, which is around 50%. A rather careful conclusion is that purchase of landed property may have been financed through mortgage loans, especially in the 1760's and 1770's. For the first decades it appears that land purchase was financed through other means, which can be explained by the composition of the market at that time: many sellers were local farmers, and many buyers were non-local investors.

The amounts of the transactions are compared in the following table, with an aggregation into five classes. The mortgage amounts were on average smaller than the real-estate amounts, which may indicate that borrowers did not fully mortgage their properties and financed their purchases through other means. The majority of the mortgage amounts varied between 500 and 2500 guilders. That was a significant amount for an average farmer household, especially because the farms were not very large. The real-estate amounts were in majority in the range between 1000 and 5000 guilders.⁷⁰

Table 9 Mortgage loans and real-estate amounts comparison, using five price classes

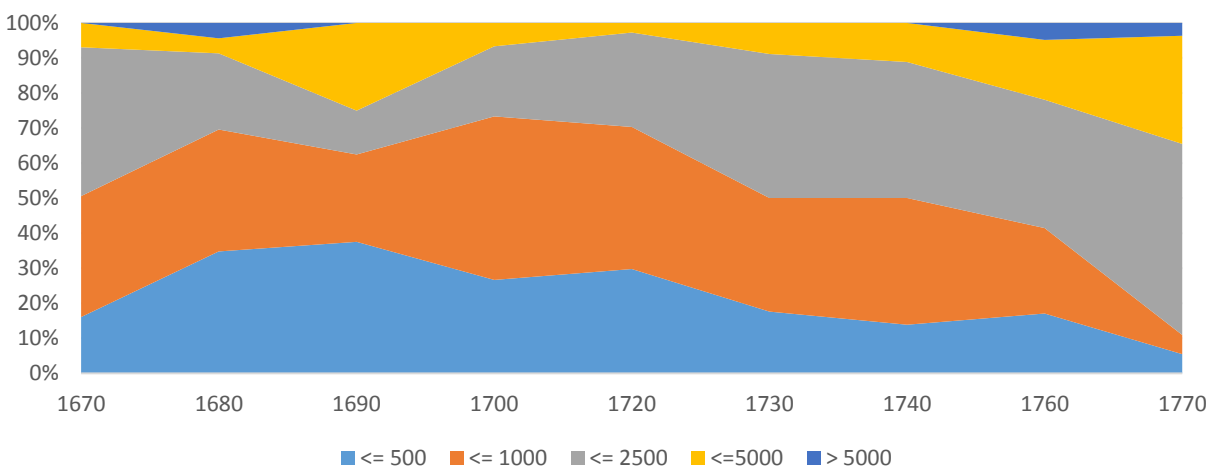
Class	Amounts	Mortgage		Real-estate	
		%	Cum. %	%	Cum. %
I	<= 500	18.0%	18.0%	14.1%	14.1%
II	<= 1000	29.8%	47.8%	14.7%	28.8%

⁷⁰ A detailed analysis of a farmer's balance sheet and income statement would give deeper insight in the relationship between farm operations and farm financing. Van Cruyningen and Baars have performed these kinds of analysis. In the Bodegraven archives researched for this thesis no archival documents for particular farmers have been found.

		Mortgage		Real-estate	
III	<= 2500	37.8%	85.6%	31.3%	60.1%
IV	<= 5000	13.0%	98.6%	28.1%	88.2%
V	> 5000	1.4%	100.0%	11.8%	100.0%

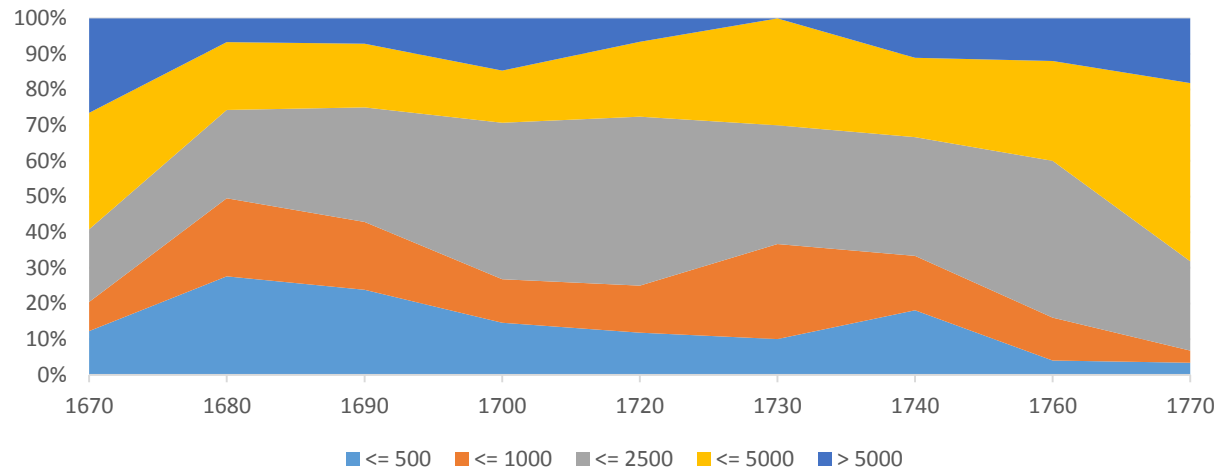
The amounts and prices are also analyzed over the time dimension, in order to discern patterns of change. For the mortgage amounts over time the following graph clearly shows the changes that happened in the 1760's and 1770's. Whereas in the early decades the mortgages were small, with a 69.6% majority below fl. 1,000 in the 1680's, in the last decade the mortgage amounts were for 85.5% between fl. 1,000 and fl. 5,000. Thus there is a significant change in amount of mortgage over the decades. Given that the number of borrowers as percentage of the population decreased as well, it indicates higher indebtedness for a smaller group of property owners.

Figure 8 Changes in mortgage amounts per price class, over time



The question is if this development in the mortgage market is related to a similar development in the real-estate market. The corresponding graph for the development of the real-estate amounts over time is shown next.

Figure 9 Changes in real-estate amounts per price class, over time

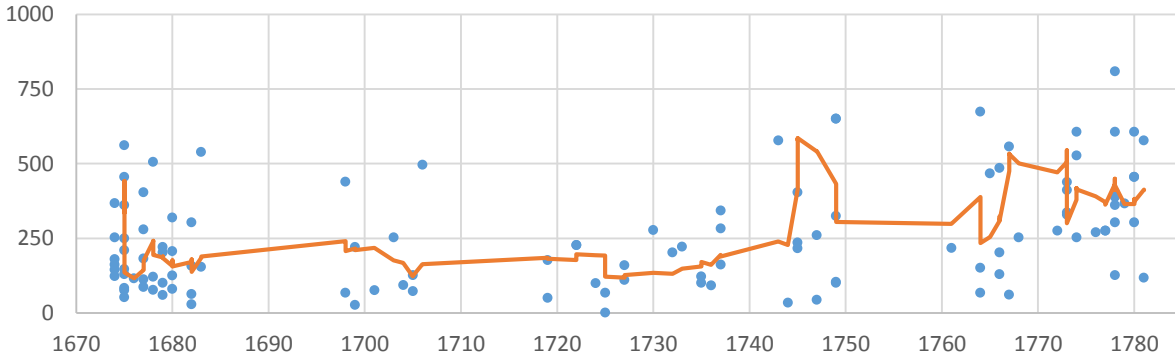


The distribution of the amounts from 1740 onwards does indeed show an increase in the amounts that were paid for real-estate, which were at least partly financed through mortgage loans. However the change in the early decades needs more explanation. The nobility and urban patriciate were quite active as buyers in those early decades. They were able to finance their purchases through other means, most probably through retained revenue from other sources, such as trade. Therefore they made less use of the mortgage market.

Another interesting analysis concerns the development of land prices, which has been explored extensively in other studies.⁷¹ The following graph shows the price per hectare, calculated for the mortgages with only land as collateral. The trend line is a 7-year moving average. Note that the upper bound is set to fl. 1.000, which caused 5 values to drop off the chart.

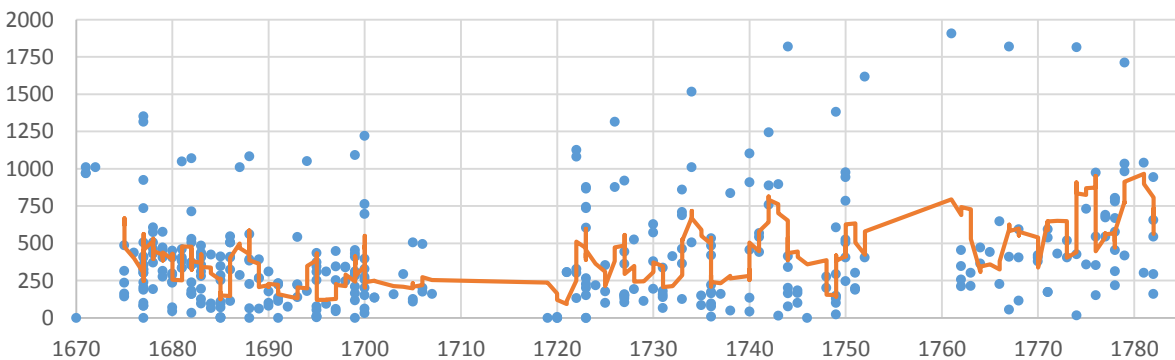
⁷¹ In fact, studies often pay more attention to the development of the prices of land than to the financing of land purchases. Examples are found in Baars *Beijerlanden*, Van Cruyningen *Behoudend*, Brusse *Over-Betuwe* and Priester *Zeeland*.

Figure 10 Scatterplot with prices per ha for mortgages with land as collateral, over time



The price trend starts high in the 1670's, moves then to a relatively constant price of fl. 200, until 1745. Then the prices start to rise and a new price level around fl. 400 is reached. A similar graph is constructed for the real-estate transactions, again including only land, shown below. The fl. 2.000 upper bound caused 2 values to drop off.

Figure 11 Scatterplot with prices per ha for land sales, over time



Again the price trend for real estate starts high in the 1670's, moves down to around fl. 350 until 1750. Then the prices move up to fl. 500, with an apparent upward trend after 1780. When this price development is compared to the land prices in the Beijerlanden, the trends are similar, although the prices in Bodegraven are increasing more rapidly in the 1760's and 1770's than in the Beijerlanden region.⁷²

4.3 Summary

The relationship between land purchase and financing through mortgage loans seems obvious for people in the twenty-first century, where many real-estate transactions are financed through

⁷² Baars, *De geschiedenis van de landbouw in de Beijerlanden*, 112.

mortgaging. In early modern Bodegraven the mortgage market and real-estate market were also closely related. Many landowners, active on the real-estate market, used the mortgage market to finance parts of their land purchases. The data shows that between 37% and 50% of the land purchases may have been financed with mortgage loans. The amounts of the mortgage loans increased over the period, following the increase on the real-estate market albeit on a lower level. The price development on the land market and on the mortgage market shows that the high price points in the 1670's were followed by a period of lower prices until the 1760's when the prices started to rise again.

5 Warfare, cattle plague and mortgage market

Early modern Bodegraven farmers were confronted with several external crises during the period between 1670 and 1780, two of them being warfare and cattle plague. They were particularly hit during the Dutch war (1672-1678), when the retreating French army pillaged and burned the village in December 1672. Warfare has been a strongly negative factor for agrarian development. In the studies about the Zeelandic farmers both van Cruyningen en Priester discuss the severe consequences of the prolonged wars that were fought in the seventeenth and eighteenth centuries.⁷³ The population suffered from the Dutch War (1672-1678), the Nine Years' war (1688-697), the war of the Spanish Succession (1702-1713) and the war of the Austrian Succession (1740-1748), which caused considerable damage, high taxes and high uncertainty for the agrarian population. The impact of war on the financial position of farmers, and their reliance on mortgages for continuation of their farming business is a relevant research topic.⁷⁴

Another external event with possibly serious consequences for the farming population in Bodegraven was the *cattle plague*, which happened three times (1713-1720, 1744-1765, 1768-1786) in the eighteenth century. These epidemics caused extensive loss of cattle in the Dutch Republic, sometimes up to 80% of the livestock. Agrarian historian J.A. Faber composed a table in which he listed some 400,000 beasts that perished in the province of Holland, between 1769 and 1784. Many farmers became so desolate that they abandoned their farms and became smallholding peasants or urban dwellers. It has been estimated for some regions that 30% of the farmers discontinued their business. However this number also implies that 70% of the farmers were capable of sustaining their farming business and replenish their livestock. Faber described how Frisian farmers were negatively influenced by the plague, although some farmers with a stronger financial position may have benefited from the higher prices for agricultural produce as they were able to replenish their livestock and continue the farming business with less competition from other farmers. Van Cruyningen assumes that the impact of the plague on the Zeelandic farmers was limited, since these farmers were primarily crop farmers, and their livestock farming was mostly used for private dairy consumption and production of manure. At the end of a section that Baars wrote about the cattle plague in the Beijerlanden, he concluded that the impact of the plague on the size of the livestock was very limited and that the plague did not affect the ratio

⁷³ van Cruyningen, *Behoudend maar buigzaam*; Priester, *Geschiedenis van de Zeeuwse landbouw circa 1600-1910*.

⁷⁴ The archival sources show that many farm houses in Bodegraven were destroyed by the French army. The studies about the wars of the Republic indicate that the high cost of warfare caused a very high tax pressure on the population.

between crop farming and livestock farming and the related land usage.⁷⁵ If Bodegraven farmers were hit by these epidemics, they may have used external capital to finance the replenishment of their livestock. The financial consequences, including the amounts required, are further investigated in this chapter.⁷⁷

The evidence for a relationship between the developments in the mortgage market and external events is examined in the following way. First the years in which the external event happened are determined. The details of mortgaging in those years are compared to other years. In particular the frequency of mortgages, the amounts of the loans and the quantity of lands are compared, together with ratios per borrower and per loan. The average mortgage amount per ha and the average real-estate price per ha give insight in the development of the land prices, with the expectation of lower amounts and lower prices in the years of external events due to the mechanisms of supply and demand. The likelihood of the relationship mentioned above increases when significant difference between the years of the events and the other years is detected. The general trend of the mortgage market, with high frequencies at the beginning and end of the 110-year period and low frequencies in the middle decades must be taken into account as well, for determining the direction of the market.

5.1 Warfare

In the year 1672, the *Year of Disaster*, the Dutch Republic entered into war with France, one of the series of wars that were fought over power in Europe. In this so-called Dutch war (1672-1678) the French armies invaded the Republic, and were only blocked by the inundation of the *Hollandse Water Linie*. Bodegraven was an important link in that line of defense, but that position was not without risk. In December 1672 the retreating French army caused massive pillage and destruction of buildings in Bodegraven and the polders and the nearby village of Zwammerdam; residents who had not fled to Gouda or other places were murdered. According to the *Introduction to the archives of the Council of Bodegraven*, the Bodegraven population had to spend significant amounts of money to repair the damage caused by the pillaging and the flooding. It is assumed that the quality of the lands and the yields of the lands suffered from the flooding, at least for a couple of years. The destruction of the farm lands and buildings of Bodegraven was certainly not unique in the early modern period. In the study of Van Cruyningen is mentioned that the Zeelandic farmers were also experiencing damage by marauding

⁷⁵ Johannes Alle Faber, *Drie eeuwen Friesland: economische en sociale ontwikkelingen van 1500 tot 1800* (Wageningen 1972) 156, 165; van Cruyningen, *Behoudend maar buigzaam*, 152–156; Baars, *De geschiedenis van de landbouw in de Beijerlanden*, 171–176.

⁷⁷ Johannes A. Faber, *Cattle-plague in the Netherlands during the eighteenth century* (Wageningen 1962).

armies, which was one of the factors of the economic depression in that region. In other regions the impact of the war upon the local or regional economy was felt as well, causing farmers to find means to deal with the risks and uncertainties. In this section the financial impact of this calamitous event on the farming population is investigated, to find answers for: what traces did this event leave, how many transactions were related, what was the impact on the farmers, seen from a financial perspective?⁷⁸

The 1670's and 1680's were the decades in which quite a number of mortgage transactions were carried out and a lot of real-estate changed hands. In that period the Bodegraven population had to deal with the aftermath of the Dutch war, in which extensive destruction of property had occurred. The mortgage data indicates that property owners had to turn to external financing to obtain sufficient financial resources for reconstruction. The data set with transactions is filtered by the first two decades of the period, the 1670's and 1680's. In the transactions direct evidence was found in those deeds that refer to burnt houses and farm buildings: 14 real-estate transactions for a value of fl. 65,855 and an acreage of 160 ha contained a reference of a burnt building, and 24 mortgage deeds with a value of fl. 38,050 and an acreage of 267 ha referred to a burnt building. The sellers and borrowers in that period came primarily from the local farmer class; 84% of the borrowers lived in Bodegraven or its polders, and 80% of the sellers were farmers who lived in the vicinity of Bodegraven. Some indirect evidence is found in the statistics of the transactions: in the two decades 29% of the total real-estate amount was exchanged and 27% of the total amount was mortgaged, indicating higher activity in both the real-estate market and the mortgage market. The high amount of capital issued by foreign lenders (62%) and the large quantities of lands purchased by foreign buyers (71%) provide another indication of the dire financial situation of the Bodegraven population and the willingness of foreign investors to support them with external capital.⁷⁹

In the following table three periods are compared. The first period is the one in which the aftermath of the destruction of 1672 was clearly felt, while the other periods are in the middle and end of the total period respectively, with all three periods approximately covering the same number of years (although the years with mortgages are different).

⁷⁸ Alkemade, *Inventaris van het archief van het dorpsbestuur van Bodegraven (1530) 1560-1813*. van Cruyningen, *Behoudend maar buigzaam*, 86–88.

⁷⁹ The motives of the investors are not known. They may have seen a business opportunity for investment in the region, or they may have shown some compassion with fellow Dutchmen. However the example shows that the markets functioned quite well.

Table 10 Comparison of the 1670's with two other periods

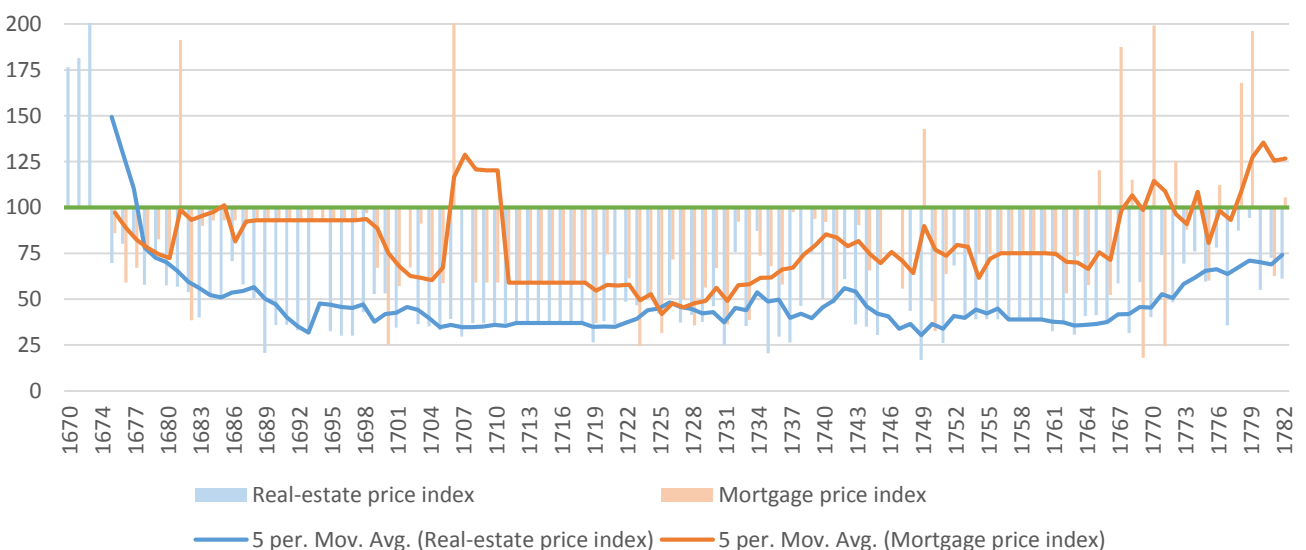
	1670		1730		1770	
Mortgage loans						
# Years with mortgages	6		9		10	
# Loans	87	24%	34	9%	55	15%
# Borrowers	61	26%	24	10%	29	13%
Total amount	fl. 118,826	21%	fl. 46,830	8%	fl. 130,325	23%
Total acreage	906 ha	21%	443 ha	10%	701 ha	16%
Avg. Amount / deed	fl. 1,366		fl. 1,377		fl. 2,370	
Avg. Amount / borrower	fl. 1,948		fl. 1,951		fl. 4,494	
Avg. Amount / ha	fl. 131		fl. 106		fl. 186	
Avg. ha / deed	10.4		13.6		12.7	
Avg. ha / borrower	14.9		19.3		24.2	
Real-estate transactions						
# Years with transactions	9		10		10	
# Transactions	98	14%	60	8%	88	12%
# Sellers	89	17%	44	8%	54	10%
Total amount	fl. 324,443	18%	fl. 100,184	6%	fl. 327,249	18%
Total acreage	759 ha	12%	464 ha	7%	934 ha	15%
Avg. Amount / deed	fl. 3,311		fl. 1,669		fl. 3,718	
Avg. Amount / seller	fl. 3,645		fl. 2,276		fl. 6,060	
Avg. Price / ha	fl. 427		fl. 216		fl. 350	
Avg. ha / deed	7.7		7.7		10.6	
Avg. ha / seller	8.5		10.5		17.3	

The clear indicators for the impact of warfare are the houses burnt in the 1670's. The high number of borrowers and sellers, the low average amounts borrowed and the low average quantities of lands per borrower suggest that many people with relatively smaller properties required external financing to continue their farming business or sold their properties out of necessity. Compared to 1730 the activities in 1670 were much more extensive. In the 1770's the level of activities was closer to that of 1670, but the number of active persons was much smaller and the averages per person were much higher. Thus the reasons for market participation in 1670 were probably different from the reasons a hundred years later; in 1670 people needed foreign capital for reconstruction after damages in warfare, in 1770 they used foreign capital for landed property. The inflow of mortgage loans in the 1674-1683

period was fl. 152,946 for 1120 ha (35% of the total acreage) in landed property. In 1684 the stock of mortgage loans in the village was at least 834 ha (26% of the total acreage).

The longer term trend in mortgage and real-estate is traced by the calculation of the trend lines and slopes thereof. The 30-year trend line of the mortgage frequencies from 1670 till 1690 was downward with a slope of -4.0. For 1720 to 1740 the trend line was almost flat, with a slope of -0.1. For the 1760 to 1780 the trend was slightly upward, with a slope of 1.0. The same calculation for the real-estate frequencies yields slopes of -0.7, -0.2 and 0.2 for the three 30-year periods.⁸⁰ The trend line for the mortgage loans per ha, calculated with 1674 = 100 and a 5-year moving average, shows that the high loan value of 1674 was only surpassed in 1767. The trend line for the land price, calculated with the same parameters, even shows that the 1670's was the decade with overall highest land price.

Figure 12 Development of land prices and mortgage amounts per ha, based on index numbers (1674 = 100)



The occasional peaks in the mortgage price index are caused by exceptional high amounts per hectare found in some of the deeds. If for example the 1706 outlier would be normalized to the average of the surrounding years, the peak would be smoothed away and show no significant development in that timeframe. Nevertheless the general trend of high values in the 1670's and low values for the remainder of the period are clear. The development of land prices does not provide additional evidence for the

⁸⁰ The 1780 number is extrapolated from the 3 years in the 1780's, in which on average 6 deeds per year were registered. The slope is calculated with the formula $(\text{frequency}(\text{year2}) - \text{frequency}(\text{year1})) / (\text{year2} - \text{year1})$.

impact of warfare; the increased demand of mortgage loans did not create downward pressure on the loan amount per ha, nor did the increased supply of lands for sale reduce land prices.⁸¹

5.2 Cattle plague

Another external event with possibly serious consequences for the farming population in Bodegraven was the *cattle plague*, which happened three times in the eighteenth century. These epidemics caused extensive loss of cattle in the Dutch Republic, sometimes up to 80% of the livestock. Faber included a table in which he listed some 400,000 beasts that perished in the province of Holland, between 1769 and 1784! Many farmers became so desolate that they abandoned their farms and became smallholding peasants or urban dwellers. It has been estimated for some regions that 30% of the farmers discontinued their business. However this number also implies that 70% of the farmers were capable of sustaining their farming business and replenish their livestock; Faber indicated that several farmers may have profited nicely from the significantly higher prices for dairy products.⁸³ In this section the impact of the cattle plague on the Bodegraven farming population is assessed, again using the information from the real-estate transactions and mortgage transactions. The periods under consideration, during which the cattle plague raged, are: I) 1713-1720, II) 1744-1765 and III) 1768-1786. This amounts to almost 50 years out of a period of about 110 years, which on one hand indicates the severity of this calamity, but on the other hand makes it harder to analyze the impact on the economy.

The research question seeks to determine the impact of the cattle plague on the credit requirements of farmers. The relationship between the mortgage data and the epidemics of cattle plague is not direct for a number of reasons. There is little information in the sources about the purpose of the mortgage transactions, which makes it hard to link transactions to cattle purchase after death by the plague. The mortgage information of the periods 1713 – 1719 and 1753 – 1760, in which two of the epidemics occurred, is unfortunately not available. Therefore the transaction data for the 5 years after the first plague are taken into account. The data is filtered for distances less than 10 km and for deeds without relationship to real-estate transactions. For period I the figures are as follows. There were 14 mortgage transactions totaling fl. 15,565, with 50% below fl. 1,000. When all transactions for the same period are analyzed, 20% of the amounts was below fl. 1,000. For period II 27% of the 26 filtered transactions totaling fl. 40,228 was below fl. 1,000, while for all transactions in that period the percentage below fl. 1,000 was 30%. Period III transactions filtered for distance were 45 for fl. 96,650, with 13% below fl.

⁸¹ There seems no easy explanation for the fact that the land prices were that high. It seems counter-intuitive that the prices stayed high when the productivity of the land due to the flooding decreased.

⁸³ Faber, *Cattle-plague in the Netherlands during the eighteenth century*, 2,4.

1,000, compared to 15% for all transactions in period III. No conclusions can be drawn from the comparisons of the low mortgage amounts in the three periods. The relatively large number of small loans (below fl. 1000) in the five years after the first plague (1720-1725) may provide some indication that farmers required those loans for livestock. It is possible that the money obtained by mortgage loans was used for livestock replacement, but there is no conclusive evidence as the reasons for mortgaging were not stated.

The municipal archive of Bodegraven contained a document with livestock (cows, heifers) data for 34 farmers in the *Meijepolder*, *Noordzijderpolder* and *Weijpoort*. The document indicates averages of 7, 10 and 14 cattle for farmers in these polders.⁸⁴ A 1725 inventory found in the archives of the *Weeskamer* of *Bodegraven* listed 17 livestock (15 cows, 6 heifers, 84 calves) with an average price of fl. 1,25 per calf, fl. 10,- per heifer and fl. 43,- per cow.⁸⁵ Post has calculated a long series of livestock prices for the Frisian situation. Although there is quite a lot of variation, the average cow price in Friesland was about fl. 42.50 in 1700 and about fl. 85 in 1750, which is used to calculate an average price of fl. 63.75 in 1725.⁸⁶ According to Faber the average mortality percentage during the 1760 cattle plague was 71%, while other literature mentions death rates of up to 80%.⁸⁸ When these elements are combined, the 34 farmers in *Meijepolder*, *Noordzijderpolder* and *Weijpoort* required an average capital of fl. 449, fl. 650 and fl. 905 to replenish their cattle. There are a number of assumptions in the above calculation, but it seems safe to assume that farmers required such amounts of capital to replenish their livestock after the losses due to the cattle plague.

Table 11 Livestock data of farmers in 1727

Location	#Farmers	#Cows	#Heifers	Total livestock	Average livestock	Average loss	Cost per farmer
Meijepolder	16	130	29	159	10	7	449.80
Noordzijderpolder	16	195	35	230	14	10	650.65
Weijpoort	2	35	5	40	20	14	905.25

The calculation of the total capital requirement for livestock replenishment by all farmers in the three periods mentioned above requires extrapolation of the number of farmers, the livestock per farmer, the

⁸⁴ Archives of the Village Council Bodegraven, nr. B001, invnr. 123.

⁸⁵ Archives of the Orphanage Council Bodegraven, nr. B003, invnr. 3 (1722-1781).

⁸⁶ Jan Post, *De waarde van een koe: prijsgeschiedenis van melkvee* (Leeuwarden 2002) 380.

⁸⁸ Faber, *Cattle-plague in the Netherlands during the eighteenth century*, 2; Nijs and Beukers, *Geschiedenis van Holland, Deel II, 1572 tot 1795*, 201.

loss per farmer and the price of livestock. A tentative calculation has been performed, resulting in capital required between fl. 115,000 and fl. 165,000. These amounts may have been financed with mortgage loans. The financial data from the Bodegraven real-estate transactions and mortgage deeds does not show any significant relationship with the plagues. One of the reasons for this lack of correlation may be the long period in which the epidemics raged, about 50 years. Another reason may be that the impact of the wars in the last decade of the seventeenth century was much higher than the impact of the plague, hiding the financial consequences of that epidemic.

5.3 Summary

The Bodegraven population experienced several episodes of warfare and cattle during the 1670-1780 period. The impact of the Dutch war on the financial situation of the farmers was profound. About 80% of them obtained loans by mortgaging their landed property, increasing the percentage of lands mortgaged with 35%. The high activity of that many landowners on the mortgage market was exceptional; the volume of mortgages in terms of amounts and acreage would only be achieved again a hundred years later, but with a much lower participation of the population.

The cattle plague epidemics did not leave a recognizable impression on the financial situation of the farmers. There are no clear indicators for increases in loans or real-estate transactions, except for somewhat higher number of loans in the 1720-1725 period. The impact may be obscured by several factors: the consequences of warfare were much higher, the amount required for livestock replenishment could be acquired by other means or the livestock losses were lower than estimated. No detailed farmer bookkeeping records, which might have contained those details, have been found during the archival research.

6 Conclusions

The subject of this thesis is the phenomenon of the rural mortgage market as an emerging financial institution in the early modern period. In a credit-based society it was imperative that farmers could obtain credit for continuation of their farming business and enlargement of their landed property. One of the instruments they were able to use was the mortgage market, which was governed by legal policies regarding property rights and transaction registration. The composition of the mortgage market in terms of volume and participation, its relationship to the real-estate market and to influential events in the life of the farmers were studied for the village and polders of Bodegraven, for the period of 1670 till 1780.

6.1 Case study

The base data about the mortgage market of Bodegraven shows that it was relatively well developed. Taking the registered transactions at the real-estate market as reference, the size of the mortgage market in transactions was 50%, the size in transaction amounts was 31% and the size in lands used as collateral was 67% of the real-estate market. Many people participated in the market; about 485 unique parties were found in the mortgage deeds, which is 48% of the 1013 parties on the real-estate market. The mortgage market activity fluctuated markedly during the 110-year period, with high volume during the 1670's and the 1770's. The participation was highest in the early decades and decreased to about 20% of the landowning population, with approximately 20% of the lands being mortgaged. Compared to other regions the high level of market participation in Bodegraven was remarkable; the most probable explanation being the high demand for reconstruction funds after the destruction of the village by the French army in 1672. Next to other forms of financing, such as retained revenue and informal loans, the mortgage loans were an important financial instrument for Bodegraven farmers.

The mortgage loans were presumably put to use for various purposes, as the transaction documents do not contain information about the reasons for borrowing on the mortgage market. Farmers purchased landed property on the land market and financed significant parts, possibly up to 50%, of their purchases with loans secured with these properties. The mortgage market and the real-estate market in Bodegraven were closely related as is indicated by parallel development in frequency, quantity and price. The development of the mortgage amounts followed the development of the prices on the land market. Both markets showed concentration in number of actors and increase of the quantity of lands involved, with local actors increasing their share over time. However the evidence for the emergence of a wealthy farmer elite is not conclusive; some farmers did indeed acquire larger quantities of landed

property, as the transaction record of Maarten van de Bos demonstrated, but the market share of non-local actors was still about 40% in the 1770's. In this respect the Bodegraven situation differed from the development in other regions in the Republic, for which concentration of land ownership in a farmer elite was reported.

Farmers in the Bodegraven area were subjected to several crises in the late seventeenth and eighteenth century. Next to the agrarian depression between 1675 and 1775 which affected the agrarian communities in the Republic at large and the long epidemics of cattle plague in the eighteenth century, Bodegraven was hit particularly by warfare in the 1670's. The impact of the cattle plague epidemics was hard to discern, as the details of the farmer's expenditures for livestock replenishment were not available. However the impact of the 1672 destruction of Bodegraven was clearly visible in the mortgage market activities. The high frequency of mortgage deeds with relatively low amounts and the high level of market participation by local farmers provides sufficient evidence that the mortgage market was an important instrument for financing the reconstruction of the village. More evidence of the warfare crisis was found in the parallel activities on the real-estate market: the 1670's and 1680's showed higher than usual levels of land sales by local landowners to non-local investors, presumably for reasons of insolvency or capital needs.

In the research project the method of comparative history was used to briefly compare the Bodegraven case to other regional studies in the Dutch Republic covering the same early-modern period. These regional studies were often agricultural-history studies, and addressed a variety of aspects about the region. Most studies addressed the agrarian development, the transition of landed property and the development of land prices and land rents. A few studies included a detailed analysis of real-estate transactions, inheritance of landed property and aspects of the financial situation of farmers. The comparisons showed that the broader pattern of change in the agricultural society and economy was visible in all regions; however the details of landed property, timing of the transition and the impact on the societies involved differ for each region. The importance of landed property as security for loans and informal financial institutions were shown in many studies, although detailed studies of the mortgage market were scarce. Formalized institutions were in an early phase, and their development occurred at varying pace in the Western European countries. Bodegraven farmers, as well as their national and international colleagues, were presumably capable of financing both the normal farming business and investments in landed property by means of internal financial resources gathered through farm operations and external capital acquired by a combination of trade credit, loans, mortgages and bonds.

A number of observations were made during the long research project. The definition of a broad research theme with a number of specific research questions was crucial in guiding the gathering and analysis of the archival data, because it forced the specification of specific queries into the data set and matched the actual outcome with the expected results. The risk of indiscriminating use of all details of the data set was mitigated by aggregation into manageable classes of information which could be used in the analysis. The careful selection of data to be displayed in tables and graphs conveyed the essence of the source information in response to the research question being considered. A pitfall in the project was trying to force the desired answers upon the data retrieved from the sources; a number of pivots and graphs were used to get a deeper understanding of the information in the sources, to assess the research questions and to formulate an answer. Certainly not all aspects of the financial situation of farmers in the eighteenth century could be investigated, but the available data sources provided deep insight in this problem domain.⁸⁹

6.2 Suggestions for further research

The thesis addresses the developments in the rural mortgage market for a small village in Holland, based on a data set of mortgage and real-estate transactions. The data set was related to two other relevant elements in the Bodegraven socio-economic development, namely the parallel development of the real-estate market and the resilience of the population in face of external events. Other aspects that may be investigated in relationship to mortgages include the economic development in the area, the water management issues and the relationship with national governmental policies regarding property rights and taxation. A broader research domain covers the relationship between the emergence of formal financial institutions and long-term economic development of rural areas. Several authors have postulated that the economic development in the eighteenth and nineteenth century depended on the development of financial institutions, such as merchant banks, credit facilities, capital markets and financial intermediaries. These institutions were required to solve a number of problems in the interaction between suppliers of financial resources and consumers of these resources. In the urban areas of the Dutch Republic these institutions developed in the course of the seventeenth century, but in the rural regions formalized financial institutions such as commercial or cooperative banks for agrarians appeared in the nineteenth century. The rural mortgage market with its rules of engagement

⁸⁹ The author is indebted to Joost Jonker and Oscar Gelderblom for their detailed advice regarding the use of *descriptive statistics* and proper use of tables and graphs for getting insight in complex data sets.

between lenders and borrower, and the governmental ordinances that regulated it, was a predecessor of these banks.

The thesis has focused on the financial affairs of farmers in the Bodegraven region, using the real-estate and mortgage transactions between 1670 and 1780, the register of landed property in two of the polders for a number of leap years and a few other sources. The data was primarily treated in a quantitative manner. However the data set also provided a large collection of names of persons, their occupation and their residence. This qualitative data can be analyzed more extensively to acquire knowledge about the societal structures, family relationships and business relationships, as the studies of Baars, Brusse and Van Cruyningen have shown. To achieve that insight an extensive genealogical research project needs to be performed, possibly combined with deeper analysis of notarial deeds in notarial archives in the vicinity of Bodegraven. The result might be a detailed historical study, covering political, social and economic aspect of the Bodegraven region, similar to other regional studies.

During the research project some time has been spent on analyzing the landed property registers of the Zuidzijderpolder and the Weijpoort polder in the *morgenboeken* of the Water Board of Rijnland. Other sources for obtaining information about landed property are the various tax registers or *kohieren*, as used in the several studies, such as the study of Baars about the Beijerlanden and Van Zanden's study of Overijssel. It is possible that property registers in the archives of the Water Board of Woerden contain information about landed property in the Noordzijderpolder, Meijepolder and Weijland polder, as these polders belonged to the Woerden region. However these archives have not been checked. It is quite certain that tax registers existed for several taxes in the Bodegraven region; in fact some of these registers were identified in the archives. These sources about landed property could provide in-depth insight in the property structure of the whole region and allow for more specific analysis of the transition of landed property that occurred in the 1730s.

It is probable that local archives in other rural regions in the Republic contain data sets with land sales deeds and mortgage deeds, as the registration of those deeds was mandatory under national laws. The analysis of such data sets in the same way as has been performed for the Bodegraven area will provide materials for comparative history and for detailed analysis of the development of the financial markets in those regions. The study of the emergence and development of financial institutions offers another building block in the institutional framework that influenced and guided societal development in the early modern period.

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