Religion, competition and liability

Dutch cooperative banking in crisis, 1919-1927

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What accounts for the differences in the performance of cooperatively-owned banks in the Dutch financial crisis of the early 1920s? This thesis measures and explains the (relative) performance of *boerenleenbanken* (rural Raiffeisen banks) and *middenstandsbanken* (urban Schulze-Delitzsch banks) during the Netherlands' interwar banking crisis by applying various economic methods to new historical evidence. The thesis asks: (1) what were the effects on risk-taking behaviour of differences in the religious attitudes of bankers and their customers? (2) what was the relationship between interbank competition and financial stability? and (3) what was the consequence of the liability choices made by shareholders for their banks' continued survival? Using a combination of economic theory, quantitative financial analysis and qualitative business histories, this thesis finds that: (1) banks serving small religious groups were less willing, despite being more able, to take on risks than those serving majority denominations; (2) those banks that were subject to the lowest competitive pressures enjoyed the most liquid investment portfolios; and (3) the choice of liability limitation available to bankers influenced their balance sheet risks, for the worse. Together, these findings lead to the conclusion that social, organisational and institutional factors each explain part of the heterogeneity in the fate of the Netherlands' cooperative banks during a period which includes unprecedented debt-deflationary financial turmoil: hence, (1) strict membership criteria and the use of personal guarantors in loan agreements acted as strong devices to allow banks for minorities, regardless of their denomination, to screen and monitor their customers; (2) the switching costs associated with religious affiliation resulted in a competition-stability tradeoff during periods of extreme distress; and (3) the stakeholders of the banks which failed were probably less risk-averse than those of banks which did not, the consequence of endogenous group formation by risk type.

Keywords: cooperative banking, historical microfinance, financial crises, religious business and risk-taking, competition and financial stability, liability and bank survival, the Netherlands, interwar financial history

JEL classification: G01, G21, G33, K22, L22, N24, N84, P13, Z12

The study of dis-equilibrium may proceed in either of two ways. We may take as our unit for study an actual historical case of great dis-equilibrium, such as, say, the panic of 1873; or we may take as our unit for study any constituent tendency, such as, say, deflation, and discover its general laws, relations to, and combinations with, other tendencies. The former study revolves around events, or facts; the latter, around tendencies. The former is primarily economic history; the latter is primarily economic science. Both sorts of studies are proper and important. Each helps the other. The panic of 1873 can only be understood in light of the various tendencies involved – deflation and other; and deflation can only be understood in the light of various historical manifestations – 1873 and other.

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Irving Fisher (1933), 'The debt-deflation theory of great depressions',
Econometrica **1**(4), pp. 337-338.

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Then he which had received the one talent came and said, Lord, I knew thee that thou art an hard man, reaping where thou hast not sown, and gathering where thou hast not strawed: And I was afraid, and went and hid thy talent in the earth: lo, [there] thou hast [that is] thine. His lord answered and said unto him, [Thou] wicked and slothful servant, thou knewest that I reap where I sowed not, and gather where I have not strawed: Thou oughtest therefore to have put my money to the exchangers, and [then] at my coming I should have received mine own with usury.

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'The parable of the talents', Matthew 25:14-30
Authorised King James Version

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Preface

Whilst concurrent banking and sovereign debt crises are not news to historians of the financial market, the long perspective taken in Reinhart & Rogoff (2009) can be credited with bringing them to the attention of a wider audience of journalists, economists and policymakers. They show that whilst the proximate causes of financial crises are unique to a specific historical context, their ultimate causes, as well as their general time-lines and knock-on effects, are merely a repetition of the past, and run something like this: (1) a period of over-confidence in a particular asset class; (2) a correction in the expectations of future performance following some (unexpected) event; (3) a downward revision in the fortunes of banks exposed to the bubble and perhaps a knock-on effect on other financial institutions due to their interconnectedness; (4) widespread banking failures, or failures narrowly avoided thanks to timely state intervention; (5) a contraction in economic activity due to a credit crunch, combined with changes in consumer confidence; (6) an increase in state spending at the same time as a decrease in the tax revenue necessary to finance it; and, finally, (7) sovereign debt crises, or ones which are narrowly avoided thanks to international bailouts.

This thesis focuses on one particular part of this financial crisis "timetable of events", for one particular country, and one specific crisis some ninety years ago. Indeed, it is more specific still; it looks at differences in the performance of one type of financial institution within this crisis, namely cooperatively-owned banks. Why so specific? How does this specificity help us to understand the proximate causes of the financial crisis in question – the Dutch banking crisis of the early 1920s – let alone the ultimate causes of financial crises more generally? The short answer is that adopting a limited, narrow, scope permits an analysis of the way in which crises play out "from the ground up", from a microeconomic business-level perspective, and even from looking within the firm. It is this approach, of exploring the micro-foundations and micro-consequences

of macroeconomic shocks, which has the most untapped potential for generating new insights, also into the current crisis which at the time of writing, most European countries have yet to fully recover from.

Learning anything from the past is considered by many academic historians to be a controversial activity; perhaps a better description of what can be done with history is to try to understand what is happening today by analysing related historical events with the benefit of hindsight. The 2010 special issue of the *Oxford Review of Economic Policy* (Vol. 26, No. 3)[1] attests to a wider trend in the recently-revived "lessons of past crises" literature of comparing the current crisis solely with that of the Great Depression.[2] But as the Great Depression remains no more than one "data point" in history, drawing lessons from this crisis out of context seems risky. This thesis attempts to inform economic policy by analysing the causes and consequences of a different crisis, one which in some respects may provide for a more appropriate comparison.

Aldous Huxley (1971) famously opined: 'That men do not learn very much from the lessons of history is the most important of all the lessons that history has to teach'. This PhD thesis is my effort to prove him wrong, to provide lessons which men of the future can easily grasp. However, any policy designed to remove financial crises from our "future history" is normative by definition, requiring (intertemporal) trade-offs between different groups in society; a PhD cannot be normative in this way and so no policy prescriptions are offered *per se.* And so, at no point does this thesis claim to offer a panacea for financial policymakers; it is hoped only that it will contribute by investigating possible relationships between financial stability and social, organisational and institutional factors which observers of the current crisis have not noticed, or have been unwilling or unable to analyse.

Why the choice of cooperatively-owned banks? Why, for instance, not the larger, politically more influential, universal banking corporations? Apart from the fact that the fate of cooperatives remains largely unexamined in this period of Dutch history, the fate of this type of institution during crises more generally is still a relatively new area of economic enquiry, one in which economic history and historical economics can make a significant contribution. Few works specifically address the impact which cooperatives' non-conventional relationship with the societies they serve may have on

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[1]This issue includes an analysis of the solvency-liquidity debate in Bordo & Landon-Lane (2010) and of banking regulation and structural reform in Calomiris (2010).

[2]Grossman (2010) and Cassis (2011) are a notable exceptions to this trend.

crisis-period performance. Branch- or unit-level data for this type of institution for the modern era are largely unavailable, at least not publicly. Internal records regarding e.g. bankers' decision-making processes are especially rare. The study of related institutions in history for which such data are available is therefore one way of trying to understand the present. The Dutch case in particular is interesting in this regard because the early 1920s provided cooperatives with their last ever taste of total disaster in the Netherlands; up until the current crisis, these banks suffered no further upset.

The most significant conceptual contribution that this thesis makes is its approach to financial history. Existing histories of finance tend to privilege the supply of financial services over their demand. This has resulted in historians' scouring the past for institutions which look and feel like particular types of modern bank. Although the economic and social identities of the customers of financial intermediaries have changed quite radically, histories which look at the way in which a society itself shapes the strategy and structure of such intermediaries are rare. This thesis is one such history. It looks at the impact of peculiar aspects of Dutch society – in particular its socioreligious confessionalisation – on a class of business widely recognised to be an important facilitator of growth and prosperity and a type of financial institution which has been widely heralded as making a comeback following the conclusion of our current financial mess.

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Florence
September 2011

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London
November 2011

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Figure 1: The Netherlands and Europe following the Great War

Figure 2: The Netherlands before the Zuiderzee Works
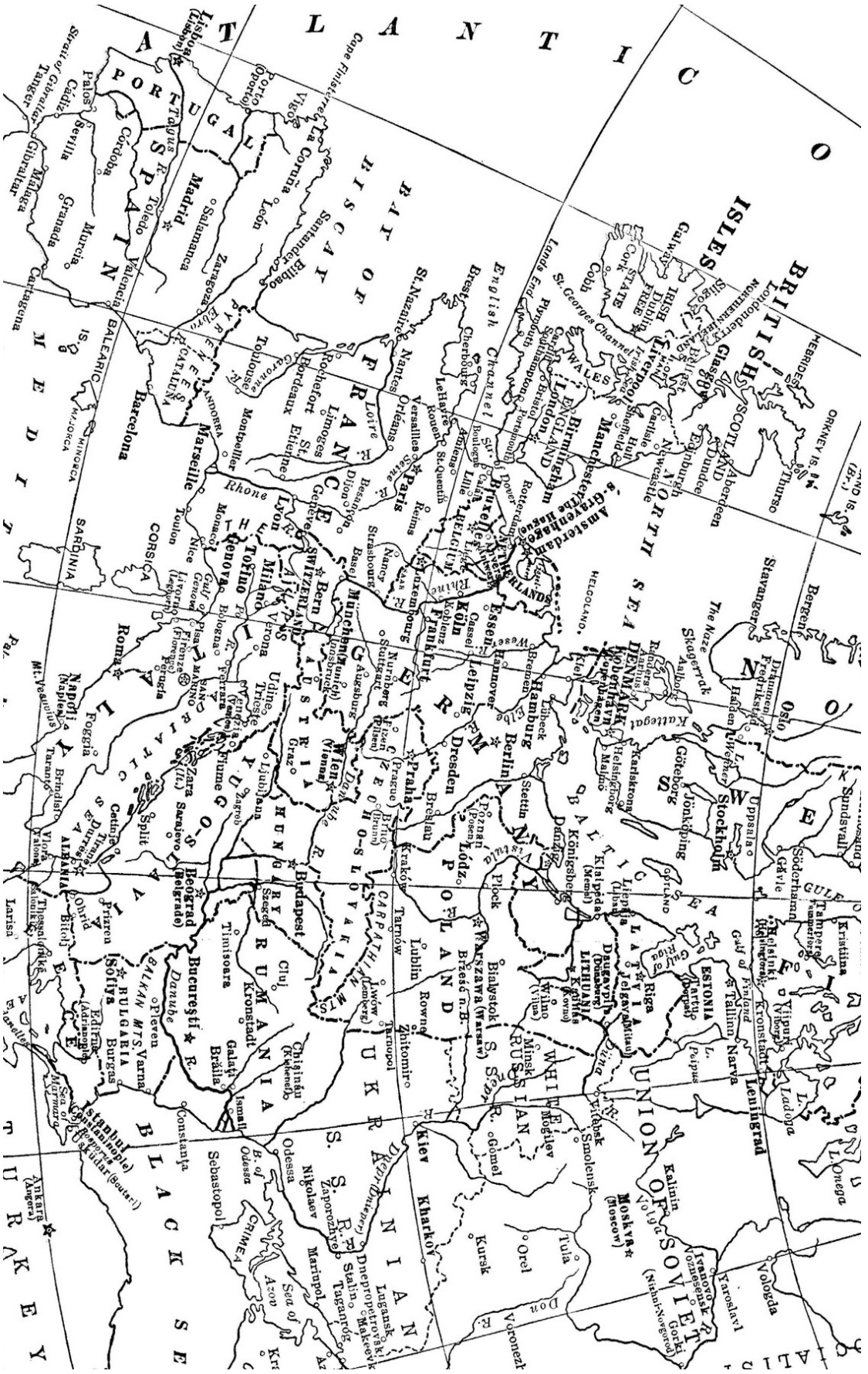
Note: Political boundaries indicate provincial borders, and are correct for the entire interwar period.
Source: London Geographical Institute (1888?), George Philip & Sons Ltd, London & Liverpool.

Chapter 1

Introduction

1.1 Religion, competition and liability

In 1919, two years before the start of a severe financial crisis, the Kingdom of the Netherlands boasted some 1,300 cooperatively-owned banks. Most were based in small rural communities and specialised in the provision of deposit and credit services to agriculturalists. A smaller number was based in towns and cities and served small- and medium-sized enterprises, predominantly in retail. The former were called *boerenleenbanken*; the latter were known as *middenstandsbanken*. The sector enjoyed little government support, operating largely outside the scrutiny of such little regulatory oversight as existed. None had yet experienced financial turmoil on any significant scale; the sector was no more than twenty years old and its only serious taste of disaster hitherto had followed the initial outbreak of the Great War, but with only limited impact, thanks to the Kingdom's political neutrality and the timely intervention of its government.

The Dutch financial crisis of the early 1920s occurred at a time of great economic change across Europe. Having just endured four years and four months of trench warfare, much of the continent still lay in ruins. The Netherlands, despite having escaped the Great War largely unscathed, was too small and too open for the economic problems of its ex-belligerent neighbours not to affect them. The Kingdom benefited greatly from a post-war boom; foreign demand for its agricultural and manufacturing produce and service sector was strong. However, as the post-war boom turned to bust, and combined with the policy of De Nederlandsche Bank (DNB) – the Netherlands' *de facto* central bank which favoured returning to pre-war gold parity over financial

stability – a deflationary banking crisis ensued which affected financial institutions of all types with varying degrees of severity.

This crisis marks probably the most serious period of financial instability experienced in the entire history of the Kingdom, that is, until the world financial crisis which started in 2007. Bank runs, stock crashes and financial scandals ravaged parts of the financial services sector. Scores of banks failed, or were rescued only after the reluctant intervention of the state. Those that survived changed their business model entirely, moving away from universal service provision and towards functional separation. In many respects, the sector as a whole emerged from the crisis both structurally and institutionally different.

The history of cooperative banks in this period is still relatively unexplored. A few business histories of (failed) banks aside, this part of the financial services sector has largely been ignored by economic historians of the Dutch economy. Bernanke & James (1991) argue that the Dutch crisis of the 1920s resulted in fundamental changes to the country's banking sector; they suggest that its new post-crisis organisation helped it avoid any further trouble during the Great Depression. It was beyond the scope of their contribution to precisely identify what these changes were, but it is implied in the text that they must have moved away from either a US-style unit banking system or a German universal one. To a degree, both are true. Van Zanden (1997), in a chapter which covers the 1920s from what can be considered the most comprehensive volume on Dutch financial history to date, largely agrees with the Bernanke & James analysis; it suggests that the large commercial banking houses did indeed move away from an extreme organisation, a universal one. But Van Zanden does not extend his analysis to look in any depth at changes at the other end of the spectrum, to small-scale banking: cooperatively-owned financial houses, the Netherlands' unit banks.

It might be surmised from the absence of analysis of rural and urban cooperatives in existing economic histories of the period that they are perceived to have been of little importance to the Dutch economy, or of little consequence in the unfolding of the crisis. This thesis, on the contrary, argues that the writing of a focused history of these small institutions is not only a useful endeavour in itself, as few studies of cooperative banks in crises exist, but also a necessary one for building an understanding of the causes of the Dutch crisis in particular. The abundance of bank-level data for cooperatives and the paucity of similar data for conventional ones make a study of the Netherlands' cooperative banking system the only way in which a microeconomic analysis of the

1920s crisis can proceed. Besides, the cooperative sector was not even particularly unimportant; by 1919, some 18 percent of the Dutch population had a savings account with a *boerenleenbank*, a considerable portion of the country, considering that these banks almost exclusively serviced more sparsely populated rural areas. The significant cross-sectional heterogeneity observed in their crisis-period performance alone warrants a study of their function. Broadly put, the rural part of the sector survived the crisis relatively unscathed, whilst much of the urban part teetered on the brink of collapse. But there was also significant heterogeneity in the performance of each half of the sector. The reasons for these differences – between and within rural and urban cooperatives – has simply not been addressed so far.

In addition to its relevance for the history-writing of the interwar years in the Netherlands, this research is important from a wider perspective regarding business history; it explores the origins of two of the world's most successful banks. The Rabobank Groep – today the largest banking group operating in the Netherlands and reputedly the safest bank in the world not owned by a government[3] – is the direct descendant of the early twentieth century rural cooperative banking movement and remains quasi-cooperatively owned. The ING Groep N.V. – a Dutch bancassurance group which owns the successful international on-line savings brand ING Direct and is by some measures the twelfth largest corporation in the world today[4] – is the direct descendant of the parts of the urban cooperative movement which survived the 1920s crisis. Both these banks have very humble origins; they are the result of a succession of mergers between hundreds of small microfinance institutions established in the first decades of the twentieth century for non-traditional customers and under non-traditional ownership. Explaining how they survived the 1920s is an important step towards chronicling their evolution to the financial powerhouses they are today.

This research is also important from an economics perspective. Few studies exist of the plight of cooperatively-owned banks in any financial crisis. This is equally true for microfinance institutions more generally. The research of Guinnane (2001, 2002 in

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[3]'World's 50 safest banks 2009', *Global Finance Magazine*, http://www.gfmag.com/tools/best-banks/10533-worlds-50-safest-banks-2010.html (last accessed August 2010).

[4]'Global 500: Our annual ranking of the world's largest corporations', *Fortune Magazine*, http://money.cnn.com/magazines/fortune/global500/2009/snapshots/7700.html (last accessed August 2010). Note that the group has not performed well in the current crisis and received emergency capital injections from the Dutch state in 2009. It is currently considering options for demerging its insurance business and will therefore be unlikely to feature so highly in world rankings of this kind in future.

particular) is probably the most complete body of work on cooperative banking in any country to date, yet it does not include analysis of cooperatives during financial crises, largely because the history under analysis – Germany in the mid- to late-nineteenth century – did not contain any. Studies of cooperatives in crises do exist; Van Molle (2002) analyses the reasons for the failure of Belgian cooperatives during the Great Depression and, in the Dutch case, Jacobs & Van Erp (2006) look at the reasons why one cooperative institution failed during the 1920s. But these are traditional (business) history case studies which are largely void of economic analysis. The relationship between cooperative structure and financial stability considered more broadly has been explored for banking systems in non-crisis periods, for example in Cihak & Hesse (2007), who use cross-country comparisons of cooperatives at work in various OECD countries today to argue that cooperative banks are more stable than their commercial competitors. But a microeconomic or business-level comparison of different cooperative banks within a single regulatory environment during a period of extreme financial distress, be it the Netherlands or elsewhere, has yet to be the subject of academic enquiry. The reasons why cooperatives are more stable during crises are still little understood.

Explanations for the Dutch financial crisis put forward in, e.g., Jonker & Van Zanden (1995) take a debt-deflation view of the crisis *à la* Fisher (1933) and Bernanke (1983). How far this view explains the differences observed between small cooperatively-owned unit-independent banks is unclear. In his analysis of the rural economy in the long run, Federico (2005*a*) lists six reasons why cooperatives have failed in the past (pp.135-136): (1) competition with other sorts of business organisation; (2) the nature of the business activities that they engage in, in particular, such factors as the required speed of processing and market delivery; (3) the occurrence of correlated shocks which affect all members simultaneously, such as a fall in prices; (4) unprofessional cooperative management; (5) political reasons; and (6) cultural factors. The relative importance of each of these reasons is unexplored in the literature on cooperatives and thus remains poorly understood. Although the solution probably changes on a case-by-case basis, the general dynamics of the relationship between these factors, for any historical or modern case, has simply not been examined.

The typology of failure used in this thesis is slightly more general than that of Federico; it adopts a categorisation into four groups of factors: (1) macroeconomic factors, primarily exogenous in nature; and three microeconomic ones, all more

endogenous to the cooperative system, namely: (2) social; (3) organisational; and (3) institutional ones. How these factors, and specifically how the last three, work together, how much each contributed to the causes and consequences of the Dutch cooperative crisis, is the subject of this thesis. Its approach to answering this question is to ask three sub-questions, each informed by the history of the Dutch case: (1) what were the effects of differences in the religious attitudes of bankers and their customers on banks' risk-taking behaviour; (2) what was the relationship between interbank competition and financial stability; and (3) what was the consequence of banks' shareholder liability choices for their continued survival? The answers to these questions together help to address the main research question of this thesis: what explains the heterogeneity in the performance of cooperatively-owned banks during the Dutch financial crisis of the early 1920s?

In answering the three research questions, this thesis finds that: (1) banks serving small religious groups were less willing, despite being more able, to take on risks than those serving majority denominations; (2) those banks that were subject to lowest competitive pressures enjoyed the most liquid investment portfolios; and (3) the choice of liability regime affected some banks' survival probabilities by adversely influencing the structure of their balance sheets. Together, these findings lead to the conclusion that social, organisational and institutional factors each explain part of the heterogeneity in the fate of the Netherlands' cooperative banks during a period which includes unprecedented debt-deflationary financial turmoil: hence, (1) strict membership criteria and the use of personal guarantors in loan agreements acted as strong devices to allow banks for minorities, regardless of their denomination, to screen and monitor their customers; (2) the switching costs associated with religious affiliation resulted in a competition-stability tradeoff during periods of extreme distress; and (3) the stakeholders of the banks which failed were probably less risk-averse than those of banks which did not, the consequence of endogenous group formation by risk type.

This thesis concludes that the heterogeneous fate of rural versus urban cooperatives was explained by three things: religion, competition and liability. Rural cooperatives outperformed urban ones because they were likely to have been more effective at making use of the benefits of religious group cohesion in terms of improved information and shared objectives. A market for lemons was avoided in the countryside but not by city-dwellers, partly because of the presence or absence of barriers to competition. And giving bankers a choice over their liability arrangements resulted in their choosing

one which intensified rather than tempered their attitudes towards risk.

1.2   Methods and sources

This thesis combines quantitative data for over 1,300 cooperative banks with micro-business histories of a small selection of these banks. The quantitative data pertain to the institutional attributes of individual banks and their performance in terms of, e.g., liquidity, combined with census and survey data on the markets in which they operated. The collection of this dataset is in itself a contribution to the financial history literature, as its scale and scope mean that this thesis can only form a first effort to fully exploit its potential; the dataset is a resource for further economic study. The micro-business histories use primarily qualitative sources on the day-to-day decision-making process of cooperatives before, during and after the crisis period. Material from the archives of their modern-day successor institutions provide an internal perspective on the crisis whilst contemporary published materials reveal what the public understood about the crisis as it unfolded. Each chapter discusses the sources it uses in some detail.[5]

The principal methodology employed in this thesis is quantitative analysis of a panel of performance indicators of nearly the whole population of Dutch cooperatively-owned banks and their structural-institutional attributes. This extensive dataset is collected for the years 1919 to 1927 and thus encapsulates the entire period of the sector's financial turbulence and its immediate prelude and aftermath. Wherever possible, it is linked to low-level geographic data from contemporary censuses and surveys in order to take account of any wider patterns in different regions' experience of the crisis. Various historical and economic relationships between structural-institutional factors and bank-level stability are derived from the economics and history literatures. The dataset is then used to test the strength of these relationships *vis-à-vis* other factors.

Using statistics, financial or otherwise, as historical sources does not come without problems. Tooze (2008) reminds the profession that a history of the construction and original purpose of particular numbers is necessary before any historian can use them as a central source. The balance sheet data at the centre of this thesis were produced by central cooperative clearinghouses for two reasons: (1) as part of their

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[5]All sources are listed in a section starting on page 267.

annual audits of member institutions; and (2) for the purpose of fulfilling corporate governance legislative requirements. The question is whether these clearinghouses had any incentives to misreport their numbers, systematically or otherwise.

The liability structure of these cooperative networks was such that the failure of an individual member bank (a network node) did not affect the continued survival of other members. As each member was sufficiently small in relation to the rest of their network, its fate did not drastically affect that of their central clearinghouse (a network centre), an institution which it co-owned, even if this clearinghouse was ultimately forced to bail it out. Whilst these incentives might have changed when facing a systemic crisis, it is not a heroic assumption that the data are an accurate representation of goings-on at the local cooperative level, at least not when combined with other, qualitative, sources. Where a systemic crisis does occur, such as the one in the middle of the period investigated here, the possible incentive that clearinghouses have is to systematically inflate numbers, to make their members seem healthier then they really were. As such, a bias works in favour of any cliometric relationship found in this research in that the "problem banks" identified merely represent a lower-bound estimate; the "true effect" could have been larger still.

Micro-business histories of individual banks operating in different parts of the country and segments of the market are included throughout this thesis and are used to highlight how structural and institutional differences worked "on the ground", at a local level. They are intended to complement the quantitative methodology in order to show how banks did or did not succumb to bank runs and/or other signs of financial distress. These case studies are a necessary addition to the evidential base because they describe the decision-making process present inside banks, something which cannot be gleaned from the quantitative methodologies used; they help to establish causation.

Controlled replicable laboratory experiments are, of course, impossible to carry out in historical research. The alternative, used throughout this thesis, is the comparative method, or "natural experimentation". This approach consists of comparing 'different systems that are similar in many aspects but that differ with respect to the factors whose influence one wishes to study' (Diamond & Robinson 2010, p.2; cf. King et al. 1994). Both the quantitative and qualitative analyses make use of the comparative method. The factors which are endogenous and exogenous to the systems studied are identified *ex ante* in each chapter and treated accordingly. Difference-in-differences-style analysis – quantitative and qualitative, formal and informal – is used wherever

possible. Business history cases are expressly chosen to replicate natural experimental settings, to make social science comparisons possible and meaningful and to reduce the chance that the findings are atypical, or idiosyncratic.

1.3   Chapter outline

This thesis is a collection of three thematically linked but otherwise self-contained research papers (Chapters 3, 4 and 5). An initial contextual chapter (Chapter 2) and a concluding one (Chapter 6) are included to show how these three papers together address the bigger question of the causes and consequences of the cooperative crisis of the early 1920s. Abstracts of the content and argument of each of the five remaining chapters of this thesis are given below.

Chapter 2. The cooperative crisis in context

What is known about the causes and consequences of the Dutch financial crisis of the early 1920s? What happened to cooperatively-owned banks in this period of financial turmoil? Chapter 2 provides the necessary background for readers unfamiliar with the historical, historiographical and economics context of the Dutch cooperative crisis of the early 1920s. It tracks the overall course of the crisis, and especially what is currently known about cooperative banks in this crisis. It then reviews the existing financial history scholarship on the period, also in an international comparative context. Finally, it discusses the theoretical background of this thesis, including the implications of the approaches taken for the wider economic scholarship of financial crises. It finds that the history of cooperative banks in this period remains largely unexplored. The toolkit of the economist – and in particular that of the applied industrial economist – has never before been used to help understand this important period in Dutch history. Moreover, whilst this crisis has entered macroeconomic models of financial turmoil, it has not yet entered microeconomic ones.

Chapter 3. Religion and risk

What is the relationship between religion and risk-taking in banking? The Netherlands' new cooperative movement of the turn of the twentieth century was instigated by religious groups – Roman Catholics, orthodox Calvinists and liberal Protestants. Using

quantitative analysis combined with archival business histories, Chapter 3 investigates the part played by religion as regards the banks' risks in the build-up to, during and immediately following the 1920s financial crisis. Financial analysis suggests that the *boerenleenbanken* serving small religious groups were less willing, despite being more able, to take on risks than those serving majority denominations. Evidence from comparative case studies is consistent with the use of a theory of club goods as an explanation for this finding. Strict membership criteria and the use of personal guarantors in loan agreements acted as strong screening and monitoring devices at banks established for religious minorities, regardless of their denomination.

Chapter 4. Competition versus stability

Traditional measures of competition are inappropriate for banking markets and there is no consensus about an alternative measure. The simple binary indicators of bank stability used in most empirical works do not capture the full spectrum of stability possibilities. As a direct consequence, the empirical relationship between interbank competition and financial stability remains unclear. Chapter 4 adopts ideas from the new industrial organisation literature to measure interbank switching costs to small-scale depositors in the Dutch rural market for savings in a historical period which encompasses a severe financial crisis. Bank stability is gauged by balance sheet liquidity, a measure which reduces the incidence of false negatives. The cooperatively-owned banks studied are found to have engaged in some spatial competition. The switching costs associated with religious affiliation were probably an important source of their market power, but only during periods of financial distress. The *boerenleenbanken* which were subject to the least competitive pressures were found to have the most liquid portfolios. It concludes, therefore, that there was in the Dutch case a tradeoff between competition and stability.

Chapter 5. Liability choice and bank survival

How does shareholder liability affect the performance of banks during financial crises? Dutch legislation permitted *middenstandsbanken* – banks for urban small- and medium-sized enterprises – to adopt a wide spectrum of different arrangements for shareholder liability. Some chose unlimited liability regimes, whilst others strictly limited the personal liability of their shareholders. Most also adopted systems of

uncalled contingent share capital. There was significant variation in the survival chances of *middenstandsbanken* following a deflation-induced financial crisis in the early 1920s. However, no extant work analyses the relationship between their performance and their choice of liability regime. Chapter 5 applies standard hypotheses from the literature on shareholder liability in banking to this novel natural experiment in history in which the choice of liability regime is endogenous, whilst the cause of the financial shock is exogenous. It finds that the choice of liability regime has an impact on balance sheet structure, which in turn affects the probability of survival; banks with more limited liability have riskier-looking balance sheets in the years leading up to the crisis, and a higher probability of failure during it.

Chapter 6. Conclusion

The performance of Dutch cooperative banks during the 1920s crisis period was determined by a mixture of social, organisational and institutional factors. Whilst the *boerenleenbanken* performed well overall, crisis-period heterogeneity in their business results is partly explained by their relative ability to screen and monitor the activities of their members, which in turn was influenced by their social position within their local communities. The switching costs associated with religious affiliation also help to explain any divergence in the performance of these rural banks, with a competition-stability tradeoff appearing to intensify at the hight of the crisis period. The *middenstandsbanken* performed quite poorly overall in the crisis, and one of the reasons for their failure was their customers' ability to choose to bank with institutions which closely matched their risk characteristics; as a consequence of the choice in liability regime available under Dutch law, banks for urban small- and medium-sized enterprises became highly undiversified and crisis-prone.

Chapter 2

The cooperative crisis in context

2.1   Introduction

The Dutch financial crisis of the early 1920s was the result of the concurrence of widespread over-indebtedness and acute and prolonged price deflation. The role played by the cooperatively-owned banks in this crisis is not fully understood. Rural banks on the whole survived the crisis intact, whilst urban ones suffered severely. But there was also significant within-type variation in performance, with some rural banks remaining in business only thanks to within-network transfers between different regions of the country. To date, explaining this heterogeneity in performance – both between and within urban and rural cooperative banks – has not been the subject of any academic study. This thesis is the first attempt to write one.

   This chapter seeks to provide the necessary background for readers unfamiliar with the Dutch financial crisis of the early 1920s for understanding the questions and arguments of the present thesis. It is divided into three sections. Section 2.2 provides the historical context of the cooperative crisis, including a brief overview of the structure of the Dutch financial services sector before and after the crisis struck. Section 2.3 summarises the historiographical context of the cooperative crisis, reviewing the approaches of both macroeconomic history and micro-business history to explaining what happened. Finally, Section 2.4 provides the economics context of the cooperative crisis, introducing and motivating the theoretical and empirical economic approaches adopted in this thesis. A short concluding section ties the history, historiography and economics contexts together to outline how they all play a part in understanding the main research questions of this thesis.

2.2   Historical context

This section provides the macro-historical context to this thesis which is necessary for understanding the economy and society in which the cooperative banks under review operated. It is divided into two subsections, the first of which provides a transwar perspective on the evolution of the Dutch economy, focusing on the evolution of Dutch national income. It justifies viewing the 1920s depression as an exogenously-caused phenomenon and then argues that the effects of this depression were felt differently by different groups within Dutch society. The second subsection is an overview of the structure and performance of the Dutch financial services sector in the early twentieth century. It takes an international perspective, comparing a thematic narrative of the events of the crisis with an account of what was happening in neighbouring countries at the time.

2.2.1   The Dutch economy from a transwar perspective

The Netherlands found itself in a very precarious geographical position during the Great War: sandwiched right between the belligerent nations. To maintain its neutrality and to remain successful, its political leaders had to perform a fine balancing act between the wishes of Germany on the one hand and Britain and the United States on the other. Despite this unique situation, the Netherlands has received only scant attention in the vast literature on the Great War (Frey 1997). And historians who have examined the period have treated the war as the beginning or end point of their discourse, forgetting to place it in a wider transwar context (Van Ark & De Jong 1996).

More recently, a new literature has sought to analyse the economic impact of the war (see review in De Jong 2005). This literature has found that it varies greatly depending on which aspect of the economy is examined, but that, in general, the war had a net positive effect. New estimates of real Dutch GDP show growth by 2.10 percent over the period 1913-1921, and by 0.64 percent in per capita terms (Van Ark & De Jong 1996, p.201). When compared to the US – which grew by 1.44 percent over the same period, and by only 0.05 percent in per capita terms – or to north-west Europe as a whole – which suffered a contraction of GDP by 0.43 percent, and by 1.04 percent in per capita terms – the Dutch figures look even more impressive (ibid.).

This section describes the performance of the Dutch economy across the transwar period – from about the turn of the century to the eve of the Great Depression –

in broad terms. It uses the results of recent macroeconomic histories of the period to present the dynamics of the Dutch business cycle. It then tracks and explains the effects of the 1920s deflationary crisis which was the backdrop of the financial crisis at the heart of this thesis.

Business cycle dynamics

Much of the Netherlands' apparent prosperity during the Great War can be explained by its political neutrality, which prevented the destruction to the Kingdom's industry, agriculture and labour force and largely enabled it to continue to prosper from trade with nations on both sides of the conflict. The Netherlands were rather an object than a subject in international relations in this period and their room for manoeuvre declined over time, culminating in the confiscation of its merchant shipping fleet (Frey 1998). The Kingdom owed its neutrality not to its own doings, but rather to the interests of the great powers; the warring countries kept the country for their own benefit. The Netherlands emerged from the conflict politically weak, but economically strong; De Jong & Albers (1994) and De Jong (2005) argue that the conflict period saw higher rates of industrialisation and productivity growth, and that this improvement was over and above its long-term path, i.e. that the war acted as a trend break.

Immediately following the end of hostilities, the Dutch economy experienced a rapid upswing. Indeed, the economic outlook appeared so positive that the government could afford to concede to trade union demands for shorter working hours and introduced a new 45-hour work week in 1919 (Heerma van Voss 1994). Bar a brief period of political instability, Griffiths (1989) argues that the Netherlands remained an 'oasis of stability in a continent of social unrest, unstable government and economic chaos' (p.109). But by 1923, it was the common consensus among contemporary observers that the country was in the midst of a crisis; writing in 1923, the London correspondent of the Dutch daily newspaper *De Telegraaf* wrote in *The Economist* that: 'on all hands it is admitted that the situation in the Netherlands is worse than the present generation has ever known' (J. C. van der Veer, 'The Dutch economic situation', *The Economist*, 22 September 1923, p.3). However, whilst contemporaries repeatedly referred to the early 1920s as being a period of crisis, recent accounts have put the decade in a much more favourable light, especially when compared with the rest of Europe (Feinstein et al. 2008). To what degree was the contemporary sentiment justified?

Figure 2.1: Net National Product of the Netherlands for the transwar period, guilders per capita, 1913-1929
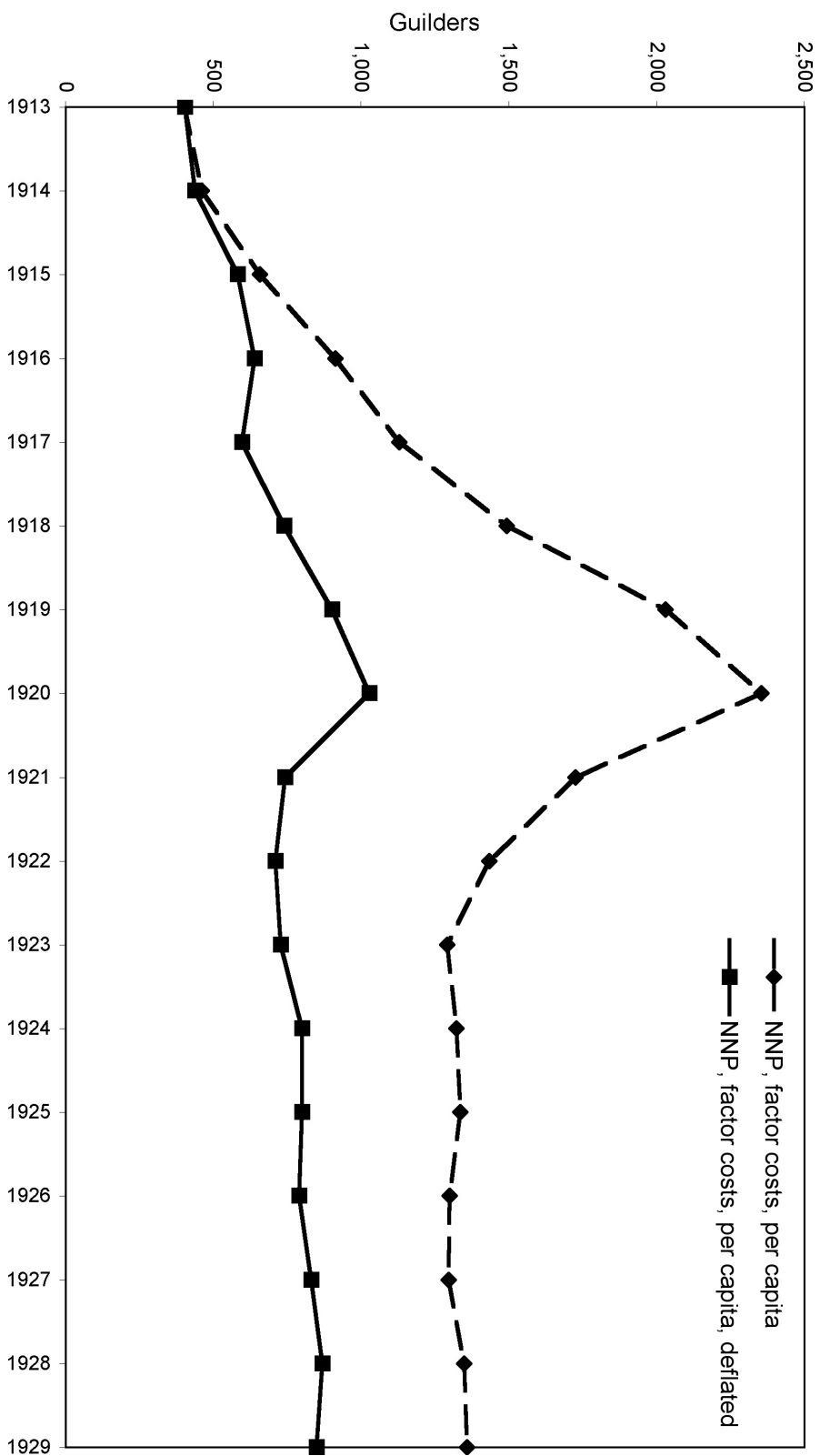
Notes: Net National Product (NNP) is the sum of employees, proprietors, rental, corporate, interest, and government income less the subsidies which government pays to any of those groups, plus or minus the aggregation discrepancy. 1913 is base and reference year (1913 = 100). Deflator spliced at 1920-1921.

Sources: NNI and population from Van der Bie & Smits (2001). Deflator from Van der Bie (1995) for 1913-1920, and Den Bakker et al. (1990) for 1921-1929.

Figure 2.1 gives some credence to contemporaries' view that the crisis was serious in nature. It plots Net National Product (NNP) per capita over the entire transwar period, as estimated by Van der Bie & Smits (2001). It depicts two series: (1) using market prices; and (2) deflated using a GDP deflator series constructed by splicing those of Van der Bie (1995) and Den Bakker et al. (1990). In 1913, NNP was 2,333 million guilders, or 380 guilders per capita, approximately 3,650 euros in today's money. NNP rapidly increased until it reached a peak in 1920, at 15,195 million 1913-guilders, or 2,250 1913-guilders per capita, 21,800 euros today. The Dutch economy then suffered a slump, with NNP in 1923 returning to levels last seen in 1917: 8,675 million 1913-guilders, or 1,225 1913-guilders per capita, 11,850 euros today. NNP remained constant at this level until the end of the decade. An alternative exercise, where NNP is deflated using the Consumer Price Index (CPI), yields a similar result, although the post-war boom is not quite as pronounced. In short, despite the slump, the Netherlands never returned to per capita income levels as low as those before the war; a significant amount of the war growth was permanent.

Van der Bie & Smits (2001) report the contribution of various sectors to Dutch national income. Assuming for a moment that the price histories of all sectors are comparable, then the data show a relative increase in importance of agriculture during the Great War, and a decline in the immediate post-war years, followed by a "levelling out" in the 1920s. The construction sector, which also provides a significant contribution to national income, expanded slightly over the sample. Changes in the relative significance of each sector may prove to be an important way of understanding differences in the plight of the banks which served them.

Between 1920 and 1923, deflation reduced the cost of living by up to 25 per cent, according to municipal indices shown in Figure 2.2. By 1925, consumer prices fell to 70 percent of their 1920 level (Van der Bie & Smits 2001). The Dutch were experiencing a deflation, from which prices did not fully recover until the Second World War. The consequence for Dutch businesses was that they found it hard to sell their goods at a profit, the result of: (1) their having purchased their inputs during the inflationary upswing; and (2) their reduced international demand. Over the period 1920 to 1923, unemployment rose from 1.75 percent to 3.30 percent (Griffiths 1989). Business bankruptcies rose from below 1,500 a year to nearly 4,000 a year in the same period (Keesing 1947, p.32).

Germany moved from being the Netherlands' second largest to being their largest

export market across the transwar period. Whilst neutrality legally prevented them from supplying the Reich with war-sensitive goods and services, the Dutch found found ways around these rules by re-classifying the end-use of their exports. The Netherlands' agricultural sector benefited significantly from the war: the Dutch population temporarily switched away from consuming domestic foodstuff and to cheaper American produce instead, leaving domestic farming output for the German market, where it was sold at a significant premium (Frey 1997). But this trend did not continue post-war. In 1920, the German market accounted for 24.4 percent of Dutch exports, but by 1922 this had been reduced to just 13.7 percent and failed to improve in the following year (Griffiths 1989, pp.112-113). And by the time Weimar hyperinflation began in earnest, German demand for Dutch goods and services had completely collapsed.

The performance of the Dutch economy is in many respects similar to that of the UK in the same period. Their business cycles appear to coincide, as do their price histories. Economic policy was also similar, for instance in respect to the gold standard. However, the Dutch depression was not as severe as the British one. And by international standards, the plight of the Dutch economy was arguably wholly unremarkable; looking at the decade as a whole, the Netherlands fared very well (Feinstein et al. 2008). Indeed, Griffiths (1989) describes the period 1923 to 1929 as 'golden years' (p.115). What marks the Dutch experience out as different was what happened to the country's banks.

Explaining the Dutch deflation

Was there a general economic depression, or was it confined to certain parts of the economy? And what were its causes? Despite the Kingdom's small size, Dutch agriculture and industry was region-specialised and clustered, with areas focusing on types of agriculture which best suited their soil type and labour costs, and on industries which best suited their location relative to their factor inputs and markets. Knibbe (1993) and Knippenberg & De Pater (2002) show significant regional specialisation in agriculture and industry; for instance, in agriculture, coastal Noord- and Zuid-Holland were predominantly horticultural, whilst Groningen and Drenthe specialised in growing rye and oats, and Friesland saw intensive cattle farming. In industry, textiles were concentrated around Tilburg and in east Overijssel, near the German border, whilst

Figure 2.2: Cost of living indices for urban areas of the Netherlands

(a) Cost of living in Amsterdam, quarterly data, 1917-1925

(b) Cost of living in The Hague, quarterly data, 1904-1926
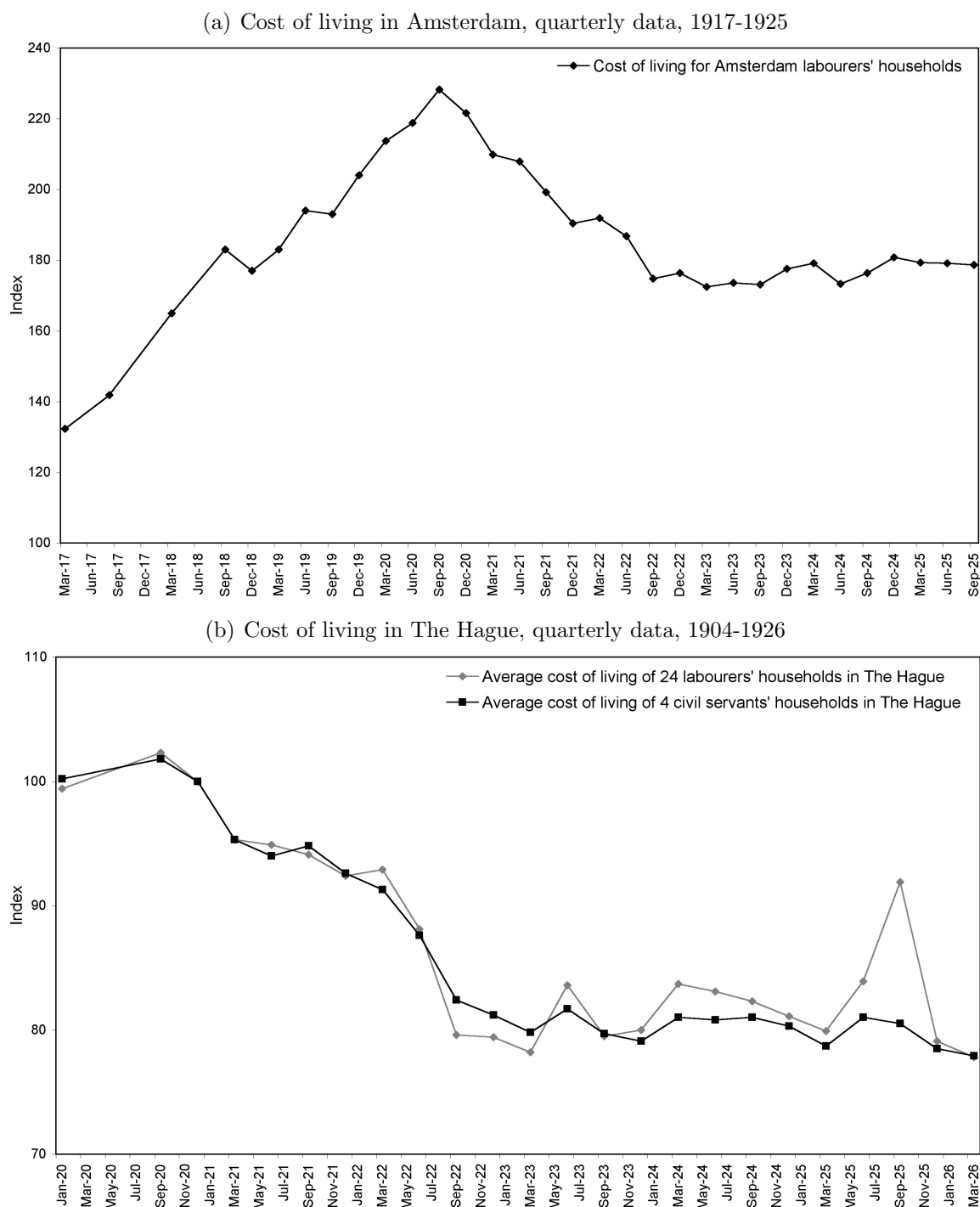
Notes: Based on quarterly observations by the municipal statistical offices of Amsterdam and The Hague. There is a change in base year for the case of Amsterdam, in 1920, from 1911-1913 = 100, to 1920 = 100. Re-referenced to have continuous series.

Source: CBS, *Maandstatistiek*, 1920-1926

Figure 2.3: Prices of selected agricultural commodities produced in the Netherlands, monthly indices, 1920-1925
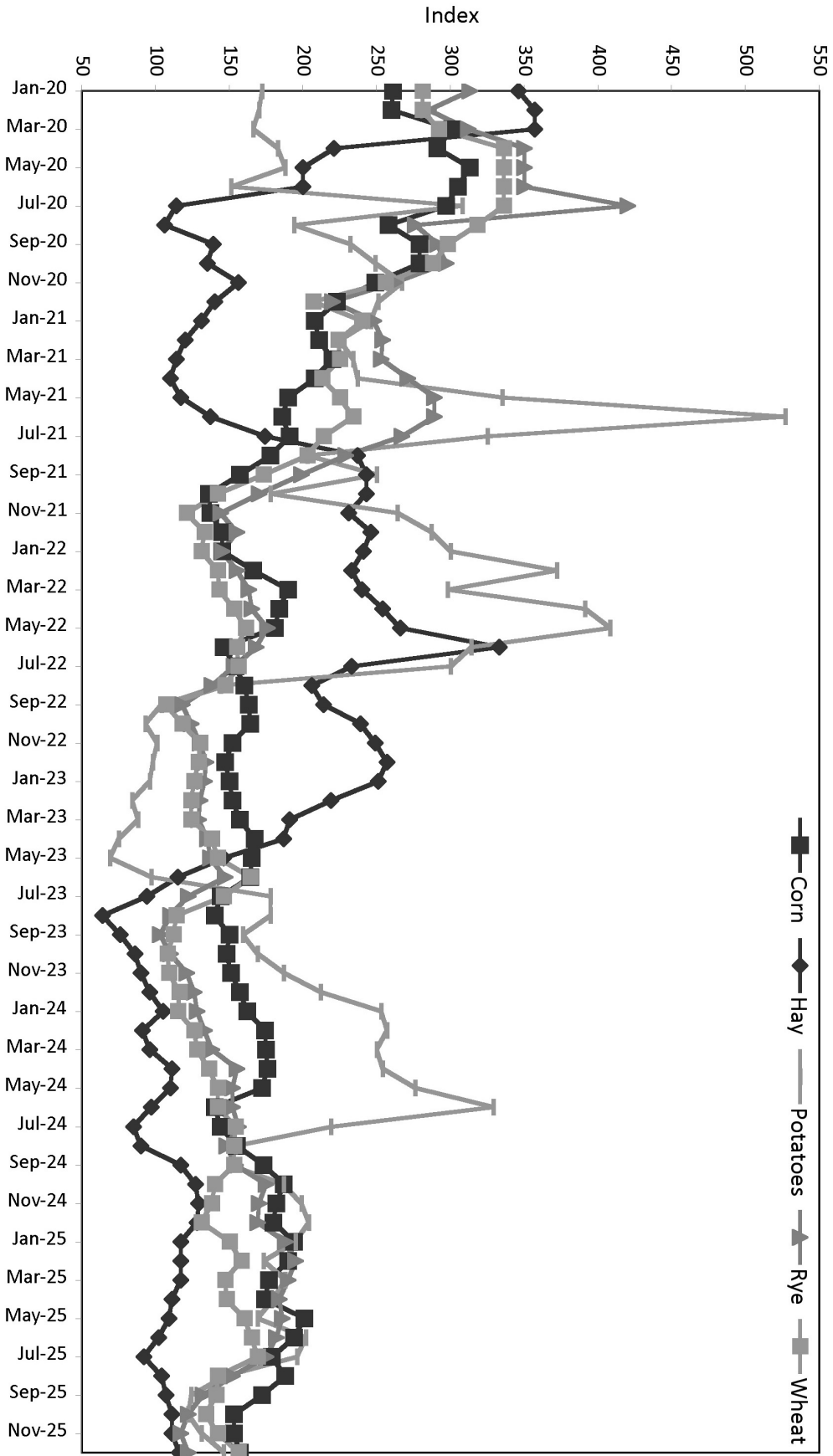
Note: Reference period (index=100) is 1900-1910.

Source: CBS, *Maandstatistiek*, 1920-1925.

Figure 2.4: The evolution of share prices quoted on the Amsterdam Exchange

(a) Index of share prices, yearly averages, 1901-1929

(b) Indices of share prices, monthly averages, by sector, 1919-1924
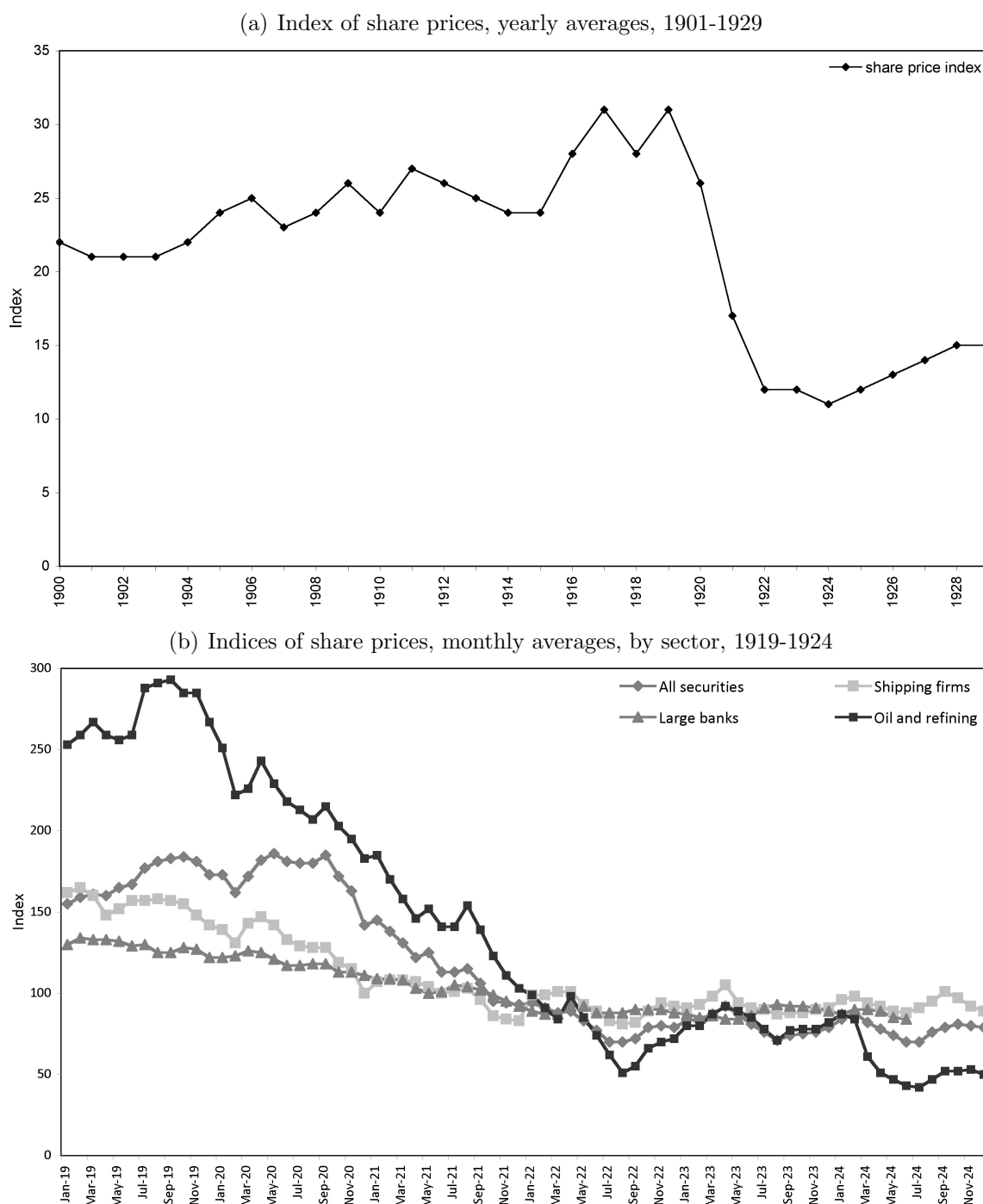
Notes: (a) For the yearly index, 1990 = 100. Share price index composed of the average path of 100 largest companies. (b) For the monthly index, 1920-1924 = 100.

Sources: (a) Van der Bie & Smits (2001); and (b) CBS, *Maandstatistiek*, 1920-1925.

leather works were all in west Noord-Brabant.

Figure 2.3 shows how key rural commodity prices fell over the first half of the decade. As a result of the diversity in agricultural specialisation, the deflation was felt differently in different parts of the country, depending on which commodity was their focus. This may help explain why different parts of the banking sector performed differently during the crisis – a possibility that has thus far not been recognised in the literature on the Dutch crisis, but has been shown in Alston et al. (1994) to be an important explanation for differences in the performance of rural banks in the US in the 1920s. The effect of the deflation was also felt by industry in different ways. Figure 2.4 depicts the evolution of share prices quoted in Amsterdam: aggregated, for the entire transwar period, in (a); and by sector, for the 1920s deflationary sub-period, in (b). Taking share prices as a proxy for performance, prices fell to one third of their peak by 1922; they never returned to their pre-war level at any point in the 1920s. Oil extraction and refining was hit far worse than shipping. De Jong (2003, pp.123-124) argues that there is some evidence that the industries which grew the most rapidly during the Great War also faced the largest falls in their prices in the 1920s deflation. He observes a similar relationship between labour productivity increases and price decreases.

A major source of the decline was reduced international demand following the global post-war slump; consumption statistics suggest that domestic demand remained quite stable, or even increased (Barro & Ursúa 2008), and so much of the blame can be put on German and British markets. A reason why this could have been felt so sharply by banks in particular was the Dutch interest rate structure, depicted in Figure 2.5 (d): during the Great War, firms may have been driven towards borrowing using short-term rather than long-term debt instruments, as the former became relatively cheaper. The suggested consequence is that the type of project which had traditionally found long-term financing was now being paid for with short-term instruments, which then had to be rolled over. However, this came with a risk: they could be more easily called in. Indeed, in the early 1920s, when this was the exact course of action which banks took, many firms simultaneously had trouble repaying them, thus increasing bankers' problems further.

But the deflation also had domestic policy causes, which can be better understood by viewing them in a British mirror. The blame for the deflation there has been put squarely at the door of monetary policy (Solomou 1996). The UK's large trade deficit

and small gold reserves resulted in the formal abandonment of gold in March 1919. However, this abandonment was always viewed by contemporaries as a temporary measure, with an expectation persisting that policymakers' ultimate aim was to restore pre-war parity as soon as feasible. The domestic policy implication of this contractionary monetary policy was price deflation: prices had to fall in order for domestically produced goods and services to stay competitive. Although sterling was only officially re-linked to gold in 1925, the damage had already been done in the preparation for this return: expectations did all the work (Solomou 1996, pp.39-40).[6]

The Dutch case differs from Britain's in that large balance of payments surpluses had been built up during the war, which had led to a significant increase in the gold reserves of De Nederlandsche Bank (DNB), depicted in Figure 2.5 (a), and in the money supply, in (b). The guilder's return to gold was coordinated with that of sterling, but the Kingdom could probably have afforded to return much earlier still. As depicted in Figure 2.5 (c), the guilder-sterling exchange rate remained almost fixed throughout the first three decades of the twentieth century, a conscious policy choice to facilitate trade with its largest, and then second largest, trading partner. And hence policies had to be coordinated with the hegemon; the decision-making process which led to the deflation was determined in London, not Amsterdam.

De Vries (1989, pp.318-338) describes Dutch monetary policy as having been quite controversial among economists and business leaders at the time. In May 1920, a group of fourteen academics wrote publicly that a return to pre-war gold parity should be a policy priority for central bankers. A response by a group of seventeen academics and business leaders – including the Rotterdamsche Bankvereeniging's (RBV) president Willem Westerman – argued that any deflation resulting from such a policy would be at least as serious as the hypothetical effects of inflation that the fourteen were worried about, if not more. Gerard Vissering, DNB's president, chose to tackle inflation rather than deflation. With hindsight, this arguably proved to be the wrong decision. The Dutch commitment to the gold standard was not unusual and must be seen

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[6]Keynes (1925) famously argued that sterling was overvalued by at least 10 percent in 1925 as a result of this policy choice. Using more sophisticated techniques, Redmond (1984) calculates a level of overvaluation between 5 and 20 percent. At peak, in September 1923, Jack (1927, p.82) calculates that the guilder was overvalued by about 2 percent using consumer prices and 15 percent using producer prices. Jack uses a very primitive methodology, however, and whether and to what degree the Netherlands' monetary policymakers had overvalued the guilder by taking their lead from the Bank of England therefore remains an open question, one which is beyond the scope of the present exposition.

in the context of the Bordo & Rockoff (1996) argument of the gold standard as a "good housekeeping seal of approval", and the Netherlands' desire to align itself with the region's geopolitical power for economic reasons. However, Eichengreen (1992) views the whole interwar gold standard affair as an exercise of blind faith, a yearning for the era of pre-war prosperity. The true reason lies somewhere between these two possibilities.

2.2.2   Dutch financial services from an international perspective

The Dutch banking sector underwent some substantial changes in the first decades of the twentieth century.[7] At the turn of the century, commercial banks were playing second fiddle to a sophisticated capital market. But on the eve of the 1920s crisis many had developed into large multi-branch networks with a wide portfolio of clients. Meanwhile, new types of financial institution had emerged and were loudly making their presence felt, notably in the market for savings deposits. Table 2.1 shows the evolution of the constituent parts of the Dutch banking sector across the transwar period. The principal changes to note are: the expansion and contraction of commercial banks, in particular the concentration of power in the five largest of them; the emergence of Raiffeisen credit cooperatives and commercial banks at the expense of specialist savings banks and the Rijkspostspaarbank (RPS), the post office savings bank; and the relative demise of mortgage banks. By way of background, this section presents a thematic overview of arguably the most important developments in the financial services sector in the three decades leading up to the Great Depression, changes which resulted in the pattern identified above.[8] It adopts an international comparative approach throughout.

The prolongatie market

By the dawn of the twentieth century, the Netherlands had an advanced financial system with a sophisticated capital market and a funded and consolidated system of national debt. The Kingdom had a centralised unitary state and a (quasi-) central bank which suffered little government interference. But, despite this, the country's banking

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[7]This section expands on material discussed in Colvin (2007).

[8]Mortgage banks are not discussed because the academic literature on these institutions is very sparse.

Figure 2.5: Dutch monetary policy across the transwar period, 1900-1929

(a) Dutch gold reserves, millions of guilders, year end

(b) Composition of the Dutch money supply (M1), millions of guilders
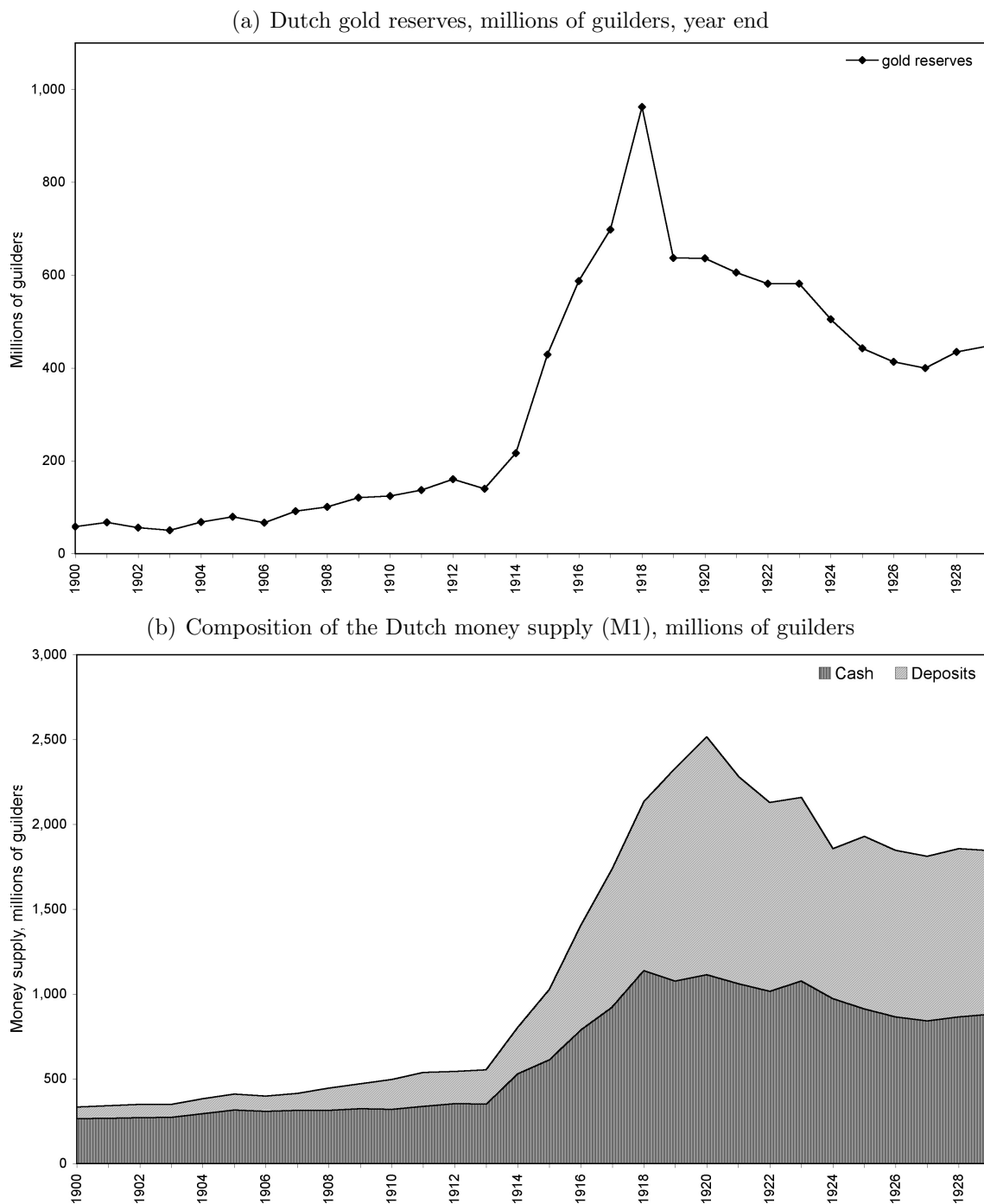
(c) Exchange rate of the Dutch guilder, percentage of par
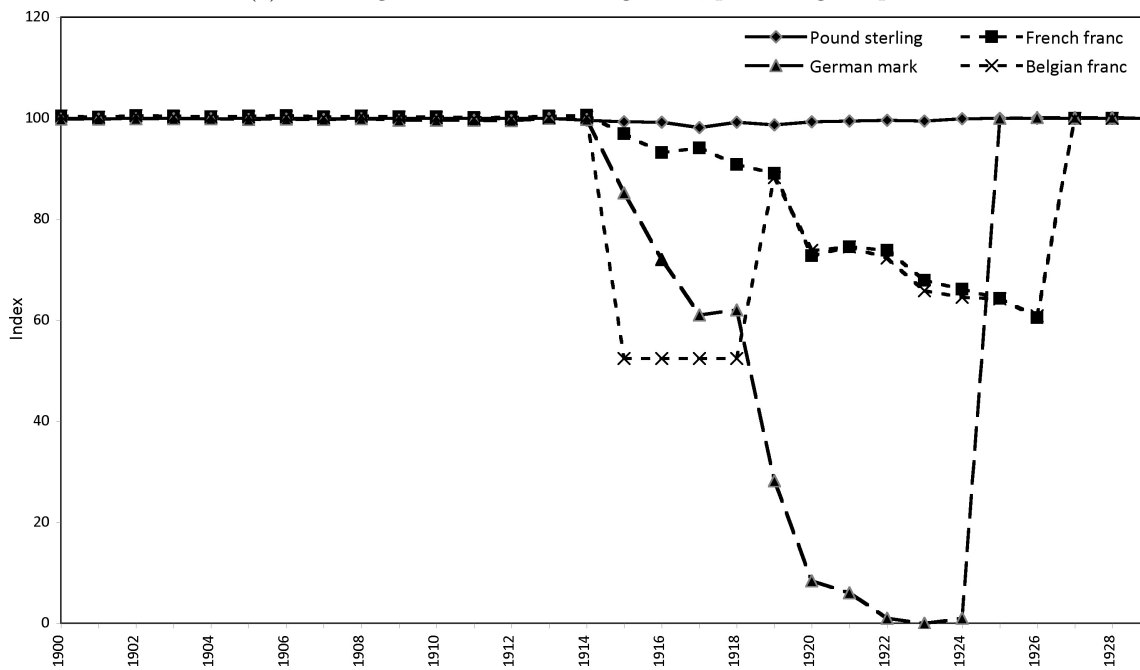
(d) Dutch interest rate structure, annual percentages
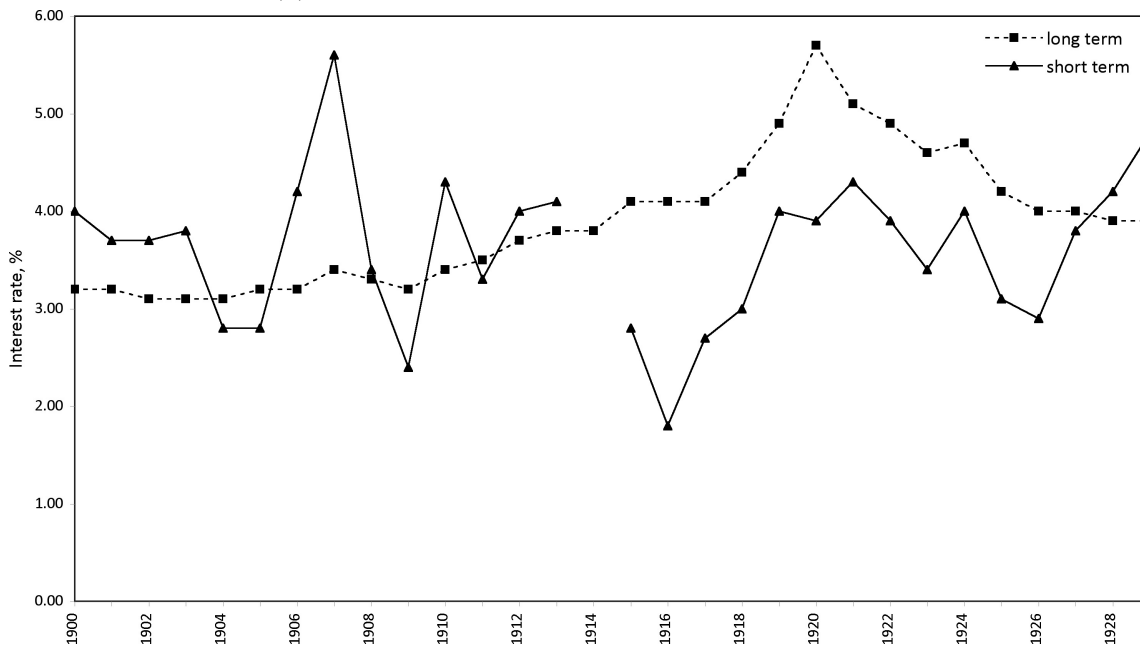
Notes: At pre-war parity, 1,653.44 guilders bought one kg of gold.

Sources: (a) DNB (2000); (b) Boeschoten (1992); (c) and (d) Van der Bie & Smits (2001).

Table 2.1: Assets of banks and giro organisations, as a percentage of the total assets of the banking sector, and with total assets in guilders and euros, 1900-1933

Type	1900	1913	1918	1923	1928	1933
Nederlandsche Bank	25.4	15.7	22.3	17.9	13.0	17.8
Commercial banks	36.2	44.9	52.4	48.5	53.8	36.6
Big Five	*17.4*	*22.7*	*26.6*	*23.3*	*22.2*	*18.0*
Colonial banks	*2.6*	*4.6*	*4.7*	*6.2*	*6.0*	*3.3*
Savings banks	16.0	15.2	8.4	10.1	11.2	17.3
Rijkspostspaarbank	*7.8*	*8.8*	*5.0*	*5.4*	*5.8*	*9.6*
Raiffeisen cooperatives	0.1	2.3	4.2	5.6	6.9	7.7
Mortgage bank	22.3	21.9	10.9	10.7	12.5	16.2
Giro services	-	-	1.8	7.3	2.7	4.4
Total assets (nominal, guilders)	1,091	2,315	5,472	6,441	7,384	6,651
Total assets (real, euros)	13,260	22,465	32,780	43,405	51,550	56,120

Notes: Total assets are in millions. Real value refers to 2010 euros, where 1 euro = 2.20371 guilders as of 31 December 1998. Big Five and Colonial banks are constituents of the category of commercial banks. The *middenstandsbanken*, which come on line from the early 1910s, are not listed separately but are instead included in the category of commercial banks. The Rijkspostspaarbank is the state-owned savings bank and is part of the savings banks category. Mortgage banks include only the three largest such banks.

Sources: DNB (2000); Van Zanden 1997, p.127; and the International Institute for Social History's 'value of the guilder' calculator (http://www.iisg.nl/calculate.php).

sector was relatively small and focused almost solely on the finance of international trade (Jonker 2002). Commercial banks were nothing like their German cousins, where universal banks had long emerged as a significant force of the Reich's financial machine (Fohlin 1999, 2007). In fact, comparatively little banking activity went on in the Netherlands at all: in 1919, 64 percent of the Netherlands' money supply was in the form of paper money, versus 29 percent in Belgium, 37 percent in Germany and just four percent in Britain (Van Zanden 1997, p.125); Table 2.1 is therefore a poor indicator of the whereabouts of all money in Dutch circulation in any of the years quoted, least of all for the purpose of making international comparisons.

Jonker (2002) argues that the Kingdom ended up without banks because its sophisticated financial system, inherited from earlier times, simply left no room for them. Amsterdam's merchants had developed a flexible credit source called *prolongatie*,

Table 2.2: Entry and exit from the Dutch commercial banking sector, 1900-1930

Period	Total	Change	Entry	Exit	of which: merged	bought	liqui- dated	bank- rupted
1901-1905	279	+37	52	15	0	2	6	7
1906-1910	305	+26	47	21	1	1	12	7
1911-1915	356	+51	79	26	1	9	7	11
1916-1920	330	−26	76	102	5	83	12	2
1921-1925	375	+45	93	48	1	23	13	11
1926-1930	385	+10	67	57	2	20	28	6

Notes: Data refer to all commercial banks known to DNB which were operating in the Netherlands.

Source: DNB (2000)

a short-term credit instrument which used financial securities – primarily exchange-listed shares – as collateral. This system, which can be understood best as an on-call money market, operated in a similar way to modern repurchase agreements (repos). They were at the time almost entirely unique to Amsterdam's money markets, and attracted much foreign interest as a consequence of being highly liquid and easy to roll over. The system outcompeted commercial banks because their implicit borrowing rates were much lower than those offered by bankers.

The outbreak of war in July 1914 changed the situation dramatically and arguably sparked a revolution in Dutch banking. The Amsterdam stock exchange was temporarily closed for fear of a crash, and the *prolongatie* system, which relied on a functioning exchange, was consequently frozen. Although the *prolongatie* system continued to be used after the war (Euwe 2010), it is evident from the fact that *prolongatie* rates were no longer published in newspapers that the market never fully recovered (Jonker 1995). During the war, the commercial banking sector largely filled the void left by the defunct *prolongatie* market and mopped up some of the increased liquidity as a result of new war business: as a proportion of total money supply, bank deposits increased from 23 percent in 1906 to almost 56 percent in 1920 (DNB, 2000). As a result, commercial banks became increasingly involved in the direct financing

of new sectors – such as the electrical industries, artificial textiles, food processing and aeroplane construction – and in helping to bring new conglomerates – such as steel producer Koninklijke Nederlandsche Hoogovens en Staalfabrieken NV in 1918 – to market. The end result: banks which operated more like Germany's universal *hausbanken* than Britain's functionally specialised ones.

Jonker (1995) argues that the reason for the *prolongatie* market's downfall lies with the change in the structure of Dutch interest rates. From the late 1890s, banks could not compete for deposits because short-term interest rates were significantly above the yield on government bonds. But because of the increased risks associated with the outbreak of war, the yield on government bonds rose to a level higher than the short-term interest rates on *prolongaties*, which therefore became an expensive form of credit for any period longer than a month. This made room for banks, an opportunity many appear to have capitalised on. Following the war, the attractiveness of banks over money markets became even more pronounced, when the interest rate offered by banks became significantly better than that offered by the *prolongatie* market (see Figure 2.6).

Concentration and universalism

In addition to the market entry of new types of bank to the Dutch banking sector, discussed below, the first decades of the twentieth century saw a growth in the size and scope of incumbent financial service providers and a wave of mergers between some of them. Whilst the number of independent banks increased from 242 in 1900 to 275 by 1921-1925 (see Table 2.2), as a proportion of total bank assets, that of the Big Five banks[9] increased from 17.4 percent in 1900 to 23.3 percent in 1923 (see Table 2.1). The merger wave which caused this concentration started in earnest in 1911, the year in which the Rotterdamsche Bank merged with the Deposito- en Administratiebank to form the Rotterdamsche Bankvereeniging (RBV). The concentration process continued as banks in the big cities of Amsterdam, Rotterdam and The Hague bought up provincial banks and converted them to branch networks (De Vries 1989, p.205).

Running parallel to the concentration wave was a move towards universal service provision; Dutch banks graduated from being merely specialist trade financiers to

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[9]The Big Five constituted: Amsterdamsche Bank, Incasso-Bank, Nederlandsche Handel-Maatschappij, Rotterdamsche Bankvereeniging and Twentsche Bank. Following a series of mergers after the Second World War, all became constituents of ABN AMRO, before this was broken up in 2007.

Figure 2.6: The evolution of the *prolongatie* rate, monthly averages, 1915-1922

(a) The the private discount rate versus the *prolongatie* rate, annual percentages

(b) Percentage point difference between the private discount and the *prolongatie* rates
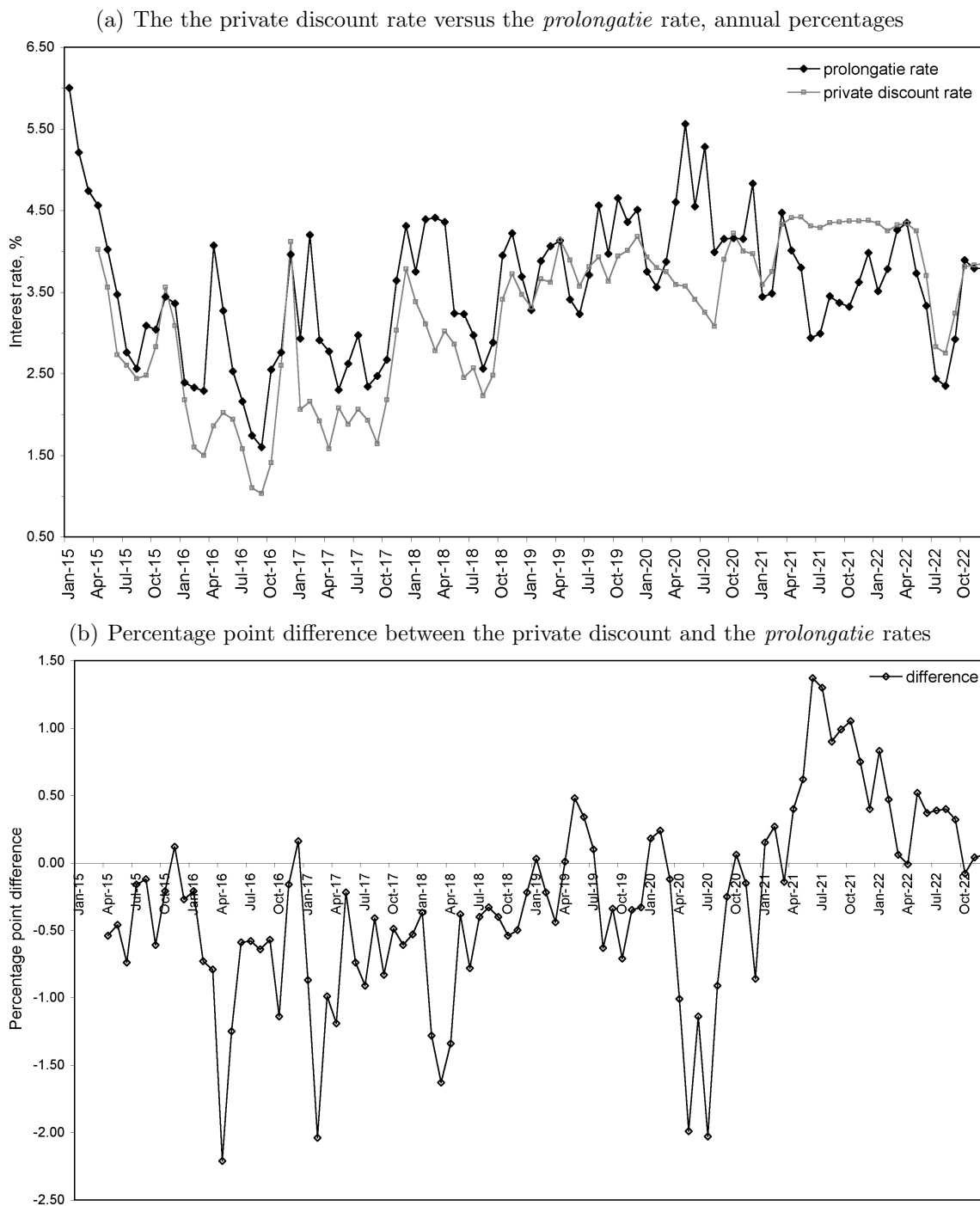
Notes: (b) depicts the private discount rate subtracted from the *prolongatie* rate. The latter is more attractive to savers versus *prolongatie* if it is above zero.

Source: Vissering & Westerman Holstijn (1928)

being fully-fledged *algemene banken* (general banks), offering a more complete range of services to their customers (Jonker 1995). Jonker (1991) argues that the scale of this experiment in German-style universal banking can be seen in the increase in banks' representation on the supervisory boards of companies: 200 interlocks in 1920 and 431 in 1923. A large part of this was due to changes at the RBV: from 20 interlocks in 1910 to 127 in 1923. De Jong and Röell (2005) find that, in 1923, the proportion of non-financial exchange-listed firms with no bank interlocks was 40 percent, whilst 22 percent had one interlock, 12 percent had two, 8 percent had three and 18 percent had more than three. Interlocks remain difficult to interpret, however; for one thing, there is a lag between changes to the structure of a bank's balance sheet and the appointment of directors.

Colvin (2007) uses Verdier's (1997, 2002) equity-deposit ratio measure – a ratio of banks' least liquid resources (capital plus reserves) to their most liquid ones (deposits plus savings) – to build a picture of the Dutch banking sector's move to universalism which does not depend on interlocks. The idea is that commercial banks which specialise in short-term lending have little need for short-term equity. Instead they finance their activities with short-term deposits and savings, without the risk of illiquidity in the event of a bank run. By contrast, universal banks have long-term positions in industry, and must therefore maintain long-term resources in case they turn illiquid during an economic downturn. For 1913, Verdier calculates an equity to deposit ratio of 0.73 for Germany (the example of a universal banking system *par excellence*), 0.10 for the UK (where banking is traditionally seen as having remained functionally separated), 0.72 for Belgium and 1.58 for the Netherlands. Whilst there are problems with Verdier's choice of data,[10] it is nevertheless a useful measure, if used consistently, to apply separately to each of the Big Five in order to compare their balance sheet histories. Just such an exercise (Colvin 2007, p.40) reveals a move towards universalism up until 1923 and then a dramatic retreat from it after the crisis. The RBV in particular embraced universal banking according to this measure, a result which is largely consistent with Jonker's (1991) findings on bank-industry directorship interlocks.

Despite the increased concentration and move to universalism, the sector remained

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[10]The Dutch result in particular seems problematic: Verdier's exclusion of bank-held *prolongaties* means that the ratio is likely to be considerably lower than the one quoted. This omission makes cross-country comparisons difficult.

segmented. Although the Big Five had increased in size relative to the rest of the sector, they by no means dominated; a host of smaller, and often specialised, banks operated in the Kingdom throughout the transwar period. These included smaller *algemene banken*, such as the Rotterdam-based Marx & Co.'s Bank and the Amsterdam banks Bank-Associatie and Algemeene Spaar- en Depositobank. Large numbers of unit-independent provincial banks were offering services such as bill discounting to local businesses and there was also a group of overseas banks which operated as free-standing companies, servicing firms in the colonies which were managed from the Netherlands.

De Vries (1989) accounts the core crisis period of 1920 to 1924, seeing the (near-) failure of at least four *algemene banken*, including one of the Big Five, 26 provincial banks and two overseas ones. He estimates that the 1920 to 1922 period saw losses of at least 200 million guilders. The history of Marx & Co. and the RBV are particularly enlightening: the former for the (lack of) involvement by the Dutch central bank; the latter for the poisonous relationship between the bank and some of the non-financial firms which it helped to finance and manage. Both are discussed in a little more detail below, following an introduction to the new entrants to the Dutch financial sector in the first decades of the twentieth century, the financial institutions which are the principal subject of this thesis.

Before proceeding, the comparison with Belgium in this period is a particularly enlightening one, given their close proximity and history. Belgium experienced its banking crisis in the 1930s, narrowly avoiding the mass failures experienced by its northern neighbour in the 1920s. Vanthemsche (1991) notes that two features dominated the Belgian banking system following the Great War: (1) further concentration between banks, centred around the Société Générale de Belgique and the Banque de Bruxelles; and (2) a further reinforcement of these banks' involvement in traditional industry. Hogg (1986) finds that Belgium's banks maintained, or even intensified, their focus on heavy industry at the expense of more innovative sectors, such as the consumer goods industry, the type of industry which had been the focus of investment by Dutch banks. In a network analysis of Belgian business leaders, Ghita (2011) tracks the concentration of the country's political and economic power to a small elite, and argues that this led banks to employ safe, path-dependent, investment strategies in the half-century before the Great War. The link between politics and high-finance continued after the war (Kurgan-van Hentenryk 2003), at least up to Belgium's Glass-Steagall-like reforms of the 1930s, and so the explanation for the

pattern of investment found by Hogg is probably the same as that of Ghita for pre-war Belgium. It is unlikely, therefore, that Belgium's banks could have suffered from the same problems as their Dutch counterparts in the 1920s; they had not invested in new sectors in the way that Dutch bankers had.

New entrants

At the other end of the spectrum, new types of financial institution began to enter the Dutch market for small-scale rural and urban deposits and loans towards the turn of the century. They were called *boerenleenbanken* and *middenstandsbanken*, and are the chief subject of this thesis. Both were inspired by Germany's already successful cooperative banks: the former by municipal politician Friedrich Wilhelm Raiffeisen's (1818-1888) rural cooperatives; the latter by Preußische Nationalversammlung-member Franz Hermann Schulze-Delitzsch's (1808-1883) urban ones.[11]

Target market aside, the most significant difference between these types of cooperative in both the German case and, in theory at least, the Dutch adaptation of it, was their credit policy: whilst Raiffeisen banks allowed long-term loans, even up to ten years, for Schulze-Delitzsh the maximum maturity was much shorter, usually a matter of months.[12] A second difference in the German case was that Raiffeisen's banks maintained unlimited liability structures for their members, whilst Schulze-Delitzsh cooperatives switched *en masse* to limited liability for members with valuable shares and to paying non-trivial dividends from 1889, when they were legally permitted to do so. The Dutch adaptation of this was more complicated, with *middenstandsbanken* adopting the whole range of liability arrangements permitted under Dutch law. A final feature of the German system which also transferred to the Netherlands, albeit in a more complicated way, concerns organisational structure: whilst Raiffeisen cooperatives developed tight regional networks with central banks and audit societies, Schulze-Delitzsh ones were unit-independent, or, at most, loosely connected. The peculiarities of *boerenleenbanken* and *middenstandsbanken* are discussed separately below.

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[11]A third type of German cooperative institution, which was instigated by Wilhelm Haas (1839-1913), also a politician, later took over much of Germany's rural cooperative sector. These are widely considered to be offshoots of Raiffeisen banks. As these institutions were not copied in the Netherlands, they are not discussed here; see instead Prinz (2002).

[12]This discussion draws freely from the work of Guinnane (in particular 2001, 2003) to make the comparison with Germany. Details on the Dutch adaptation are from Sluyterman et al. (1998), combined with the primary research conducted for Chapters 3, 4 and 5 of this thesis.

Whilst the type of cooperative financial institution introduced to the Dutch countryside from the late 1890s was in principle inspired by the German Raiffeisen model, in practice, however, there were some significant differences between these cooperative cousins. Probably most importantly, the Dutch implementation was influenced by: (1) the choice of legal form available to cooperators; and (2) the socioreligious fragmentation of Dutch society. This thesis examines the effects of each in some detail; both these points are merely introduced below.

(1) Two different Acts of Parliament could be used by Dutch farmers to set up their cooperatives. The main differences between these two acts were: (1) the cost of establishing a cooperative; and (2) the implications for corporate governance. The first of these acts was the *Wet can 1855*; the second was the *Wet van 1876*. The former was a general law governing associations (or meetings) of any type and was widely adopted by early cooperators in agriculture and other sectors, especially in the south. The latter, which was specifically designed to govern organisations under cooperative ownership, was more costly and stringent in terms of corporate reporting and transparency. It was a more popular choice among rural cooperators in the north of the country, but was also used elsewhere. The liability of the members was arranged separately for these institutions, and was chosen to be unlimited in all cases.

(2) The Netherlands had a very mixed religious make-up. This is evident from Figure 3.1, which shows the proportions of people who identified themselves as either Protestant or Catholic in 1920. The figure shows that the south of the country was more homogeneously Catholic whilst the north was split, but predominantly Protestant.[13] The effect of this religious heterogeneity on Dutch society was profound: followers of each religion strongly identified themselves as part of a group, and most social and economic interactions were carried out within this group. Political parties, trade unions and newspapers to both the left and right of the spectrum were split along these religious lines. In parts of the country which were religiously split, members of each group would even have their own separate butchers, bakers and candlestick-makers. This confessionalisation process, known in Dutch as the *verzuiling* (pillarisation), also affected Raiffeisen cooperatives: many areas would see multiple banks, one for each denomination.

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[13]The distribution of income and socioeconomic status among these religious groups was roughly comparable; it was not true, for instance, that Protestants belonged mainly to the middle classes and Catholics to the working classes (Lijphart 1975, pp.89-90).

Dutch Raiffeisen cooperatives soon found themselves organised into three different networks, the central banks of which functioned as combined clearinghouses and audit authorities. The differences between the centrals mixed the polity's legal and religious split: (1) the Coöperatieve Centrale Boerenleenbank (CCB-Eindhoven), headquartered in Eindhoven and operating nationally, was Catholic and enabled its members to adopt either *wet*; (2) the Coöperatieve Christelijke Centrale Boerenleenbank (CCCB-Alkmaar), headquartered in Alkmaar and operating in the west of the country, was also Catholic and prescribed the *Wet van 1876* for its members; and (3) the Coöperatieve Centrale Raifeissen-Bank (CCRB-Utrecht), headquartered in Utrecht and operating nationally, was officially neutral, but *de facto* Protestant and also precribed the *Wet van 1876*. Whilst CCB-Eindhoven and CCRB-Utrecht were long-lived institutions which eventually merged in the 1972 to form Rabobank, CCCB-Alkmaar disappeared in the 1920s financial crisis (Sluyterman et al. 1998)..[14]

Table 2.1 shows that, in 1900, the *boerenleenbanken* had just 0.1 percent of all bank-held assets in the Kingdom; by 1923, they had 5.6 percent, some 3,600 million guilders, or 24,260 million euros in today's money. The 1,200-odd banks operating throughout the Kingdom by 1923 were unit-independent in that they functioned as autonomous banks with limited day-to-day involvement from their central bank and no cross-liability for other banks in their networks. However, the centrals had some influence over their member banks: they set out the rules of the game with respect to the type of business which local banks could and could not engage in, they were the sole source of local banks' outside funding, and they could force through changes in the process of conducting an audit. Table 2.3 outlines the method of doing business for local cooperatives *vis-à-vis* conventionally-owned commercial banks in nine categories, according to a CCB-Eindhoven internal report. The descriptions in this table are quite typical of this type of bank and not specific to CCB-Eindhoven members. In summary, they were more circumspect than commercial banks, offering most of their services to members only, all of whom were signed up for unlimited liability.

The genus *middenstandsbank* refers to a multitude of different types of *de facto* cooperatively-owned banks geared to servicing urban small- and medium-sized

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[14]Whilst none of the centrals officially proclaimed allegiance to a particular faith, the term Christelijke (Christian) in (2) describes Catholic in the Dutch context and (1) was Catholic by virtue of whom established it, where it operated, and the religious background of its customers and leaders. (3) was officially neutral, but as Catholics joined their own grouping, those left were Protestant by definition; the Netherlands' rural society had few "denominationless" inhabitants. Exceptions did exist, but these were extremely rare.

enterprises (SMEs). This Dutch adaptation of the Schulze-Delitzsch banks was more complicated with respect to (1) legal form and (2) socioreligious fragmentation. (1) Like their rural cooperative cousins, *middenstandsbanken* could adopt a variety of legal forms. In addition to the two described above, some chose to be fully-fledged public companies, or Naamloze Vennootschappen (NVs). Liability was arranged separately, however, and the sector looked very heterogeneous with respect to the liability of member-shareholders; the regimes chosen included unlimited, double, additional and limited liability, with systems of paid and pledged capital often operating side-by-side with liability choice. (2) Whilst *boerenleenbanken* were unit-independent but connected to religiously-defined cooperative central banks, *middenstandsbanken* were sometimes unit-independent and sometimes had regional branch networks, and they were not always connected to a central bank. In addition to the explicitly Catholic-leaning independent Hanzebanken (established in Den Bosch, Delft and Utrecht, each with regional branches), there was a national network of explicitly neutral unit-independent banks connected to the Algemeene Centrale Bankvereeniging voor den Middenstand (ACBM) central bank, and a group of overtly Protestant unit-independent banks connected into a loose federation, called Boazbanken. There was also a number of banks completely outside these groups.

The different fates of the Netherlands' rural and urban cooperative banks during the 1920s crisis period are striking: although *boerenleenbanken* remained intact, *middenstandsbanken* were decimated. This thesis finds that individual *boerenleenbanken* during the 1920s faced difficulties which were possibly even systemic, but they nevertheless avoided having to close anything but the CCCB-Alkmaar central bank; its members merely joined one of the two surviving networks and largely continued to conduct their business as before. Meanwhile, 33 *middenstandsbanken* were bankrupted, liquidated or forced into mergers during the crisis period (De Vries 1989), with much of the remainder of the sector forced into a government-instigated mega-merger in 1927. The reasons for this urban-rural difference have yet to be explored in the current literature on these financial institutions. This thesis forms part of a first attempt to do so.

Table 2.3: Differences between the Netherlands' commercial and Raiffeisen banks, according to CCB-Eindhoven

	Commercial banks	Raiffeisen banks
A	Accepts deposits from anyone against general conditions, which can be negotiable in certain circumstances	Takes deposits from everyone against general conditions, which are uniform for all members. If there are certain conditions for non-members, then these are uniform for all non-members
B	Grants loans to anyone against general conditions, which can be negotiable in certain circumstances	Grants loans to members only, against conditions which are uniform for all members
C	Opens current (overdraft) accounts for anyone against general conditions, which can be negotiable in certain circumstances	Opens current (overdraft) accounts for members only, against conditions which are uniform for all members
D	Collects, buys and discounts domestic and foreign bills of exchange and promissory notes	Can engage in limited collection business, and is not permitted to discount bills of exchange or promissory notes, even to members
E	Sells cheques and bills of exchange from well known institutions, both domestic and foreign	Can sell cheques to members only, but only through the central bank
F	Buys and sells foreign currency in coin and paper money	Can buy and sell foreign currency to members only, but only through the central bank
G	Engages in the security business, including underwriting new securities	Can also engage in the security business, but only through the central bank
H	Buys and collects coupons and other bonds	Cannot trust such business to local banks. And doing such business through the central bank is too costly

Source: CCB-Eindhoven, 'Rapport over "Bankconcentratie"', written for the *directie* (management) meeting of 12 November 1917 (RaboNed: E105)

Bank supervision

By the interwar period, De Nederlandsche Bank (DNB) was in many ways a modern central bank. Like the Bank of England, it was a privately-run joint-stock company, designed to be the Dutch state's bank of issue and the national circulation bank. Unlike the Bank of England, it was never involved with the issue of national debt. In return for its monopolies, the government received a share of its profits, and had non-executive representation on its governing board (Kymmell 1996). The Bank's president, Gerard Vissering, was highly influential in the decision-making for the Kingdom's monetary policy – and also on the international stage in the build-up to the guilder's return to pre-war parity in 1925. Moreover, the bank had an extensive national branch network, where local financial institutions could gain access to the *disconto* (bills of exchange discount window), the instrument which made DNB *de facto* a lender-of-last-resort.

But this is not the full picture. The Bank's branches effectively acted as competition for provincial banks. DNB had very little regulatory oversight on the sector, exerting (informal) influence only through its decision whether or not to grant institutions access to the *disconto*. No oversight existed on the Big Five, who flatly refused to use the *disconto*, viewing its use as a sign of weakness (Colvin 2007). In summary, DNB had a dual status as *de facto* regulator of, and competitor with, the commercial banking sector. And despite its new role as national financial coordinator during the Great War, its status in both these fields was in relative decline (Jonker 1996*b*). Whilst the banking sector was experiencing rapid change, DNB failed to adapt. It refused to monitor goings-on in the banking sector, something which greatly irked contemporary observers (e.g. Hirschfeld 1925). The 1920s crisis caught DNB off-guard. De Vries (1989, p.232) argues that DNB was central to the structural crisis in the banking sector, that it was 'sucked into the abyss of lack of experience', in particular with respect to the new universal banking element which had emerged on Vissering's watch; the bank shared the sector's naïve optimism and may have remained oblivious to the sector's problems.

Three episodes of DNB's involvement with *algemene banken* in this 1920s reveal much about its attitudes in the field of banking supervision: (1) the instigation of a consortium to help the Bank-Associatie; (2) the decision to wind up Marx & Co.'s Bank in 1922; and (3) the participation in a secret syndicate to buy up equity in the RBV following this bank's troubles in 1924. All three are described

in De Vries (1989), and the last one is dealt with in detail in Colvin (2007). The principal conclusion to be drawn from these studies is that DNB was never particularly enthusiastic about rescuing banks during the crisis. It carried out some lender-of-last-resort responsibilities, but only on a case-by-case basis, and in some very exotic ways. For a modern central bank, its actions would probably be considered to be inadequate and far too late; the bank failed to stop bank runs at both large multi-branch banks and small unit-independent ones, and sought government support as soon as it could.

The involvement of DNB in the cooperative sector during the crisis period reveals its deep mistrust of the *boerenleenbanken* and misguided confidence in the *middenstandsbanken*. DNB repeatedly complained about the liability structure chosen by the former, denying them access to the *disconto*. Later, only *Wet van 1876* banks were permitted access, on the grounds that this act provided superior protection in the event of failure. This meant that CCCB-Alkmaar, by far the weakest of the three cooperative central banks, was permitted to borrow from DNB, whilst the far stronger CCB-Eindhoven was not. Meanwhile, DNB appears to have initially ignored the *middenstandsbanken*, and then, with the writing on the wall, bent over backwards to help rescue them from themselves, coordinating a forced merger in 1927 from the remnants of the sector. The involvement of DNB in the rural cooperative sector has not been the subject of much research, and is discussed using primary evidence in this thesis. The Bank's involvement in the urban sector, which is briefly described in De Vries (1989), is also analysed below.

2.3 Historiographical context

The previous section provides a historical overview of the Dutch economy in general, and its financial services sector in particular, before, during and after the Dutch financial crisis of the early 1920s. The current section reviews the explanations for this crisis put forward in the existing literature on the topic. This literature is small, and, a few related works aside, is silent on the reasons for the heterogeneous crisis-period performance of cooperatively-owned banks. There is a natural division between explanations which take an economic history approach, and those which use methods and sources from business history. Both strands are addressed separately, for the sake of clarity. A final section puts the Dutch case in a wider comparative context by examining the recent historiography on the contemporaneous performance

of institutionally similar credit cooperatives elsewhere in Europe.

2.3.1 Economic histories of the Dutch crisis

The existing literature on the causes of the 1920s financial crisis is dominated by the work of Jonker (1989, 1991, 1995, 1996a), the definitive restatement of which is found in Jonker & Van Zanden (1995) and Van Zanden (1997). It holds that the 1920s crisis was a result of banks' over-exuberance during the Great War and immediate post-war period. Large and sustained declines in aggregate demand and prices in the early 1920s – declines which were largely due to international factors, but arguably aggravated by (expectations of) the Dutch guilder's return to pre-war gold parity – put pressure on business and thus the banking system which it used. In short, Dutch banks were over-exposed to the sectors of the economy which had suffered most at the hands of debt-deflation *à la* Fisher (1933) – although at the time when the investments were made this exposure made rational business sense, given the available information and lack of alternative opportunities.

Fisher's theory of debt-deflation is analysed separately and in some depth in Section 2.4. Meanwhile, this current subsection is a historiography of existing explanations of the 1920s crisis, practically all of which are macroeconomic in nature. The work of Jonker in particular is highlighted, as it offers the most comprehensive analysis of the crisis to date, and is the starting point for much of this thesis. While not addressing the causes for the 1920s crisis directly, Jonker's early work on the period (1989, 1991) implies that its root cause was an over-enthusiasm dating from the Great War for financing sectors of the economy with which bankers had little or no prior experience. He argues that the relationship between the Dutch banking sector and the industry which it serviced experienced the full range of possibilities between 1910 and 1940, from a distant, uninvolved, style of banking, to close bank-industry relationships in the German universal mould, and back again. Until the early 1920s, Dutch commercial banks involved themselves more and more closely with business finance, demonstrated by the increase in bank-industry management interlocks. But this pattern was almost completely reversed following the 1920s crisis period. De Jong & Röell (2005) broaden Jonker's analysis and largely confirm his findings.

Jonker argues that the Netherlands' late adoption of universal-style banking – and subsequent reversal and shift away from such banking practices – is symptomatic of the

weak position traditionally held by banks in the Dutch economy versus neighbouring Belgium and Germany. Before the Great War, industrial finance was unnecessary, as good substitutes in the form of *prolongatie* were available. Banks took on the role of the *prolongatie* market following the closure of Amsterdam's stock exchange at the start of hostilities and continued their universal practices during and immediately after the war. But the post-war economic crisis exposed their positions as too risky, with bank managers taking on business ventures with which they were inexperienced and over which they had poor oversight. The change in banking model, from functional separation to universalism and back, was always a response to industrialisation, and not the cause of it; this is the polar opposite of the classic Gerschenkron thesis (1962). To this was added an agency problem: Colvin (2007), in a case study of RBV, a Big Five bank which had to be rescued in the crisis, shows that some industrialists started to "manage" the bank they were customers of, rather than the other way around, as is usual in universal banking systems. Jonker argues that, instead of adapting to new business realities, large commercial banking houses chose to withdraw from business finance altogether, at least until after the Second World War.

Jonker (1995) explores in more detail the changing structure of big finance in the Netherlands in the early twentieth century. His earlier conclusions on the move to and from universalism are somewhat nuanced; he argues that banking concentration in the Netherlands meant an expansion of the existing type of banking, rather than a change in direction; banks continued as passive intermediaries and never fully embraced universal banking. During the Great War, they started to finance industry more out of desperation to keep up, as a defence against decline, to share in the apparent spoils of war. Their decision is argued to have made good business sense, at least at the time. But the wave of mergers between large commercial banks which led to the increasing dominance of a Big Five – and the expansion in bank capital which came with this – occurred at the time when company growth hit bottom. Banks used inappropriate ways to finance industries which they knew little about; for instance, banks lent to industry using *kredietpapier*, finance bills which were rather illiquid and required few sureties. Jonker concludes that the 1920s crisis caused a loss in business confidence which inevitably led to a reversal in bank policy, a retreat from the universalism for those banks which had adopted this German business model.

Analysis of the role of DNB in the 1920s crisis forms a focus of many extant studies of the phenomenon. Crucially, DNB was not a central bank in the modern sense

of the word. Jonker (1996*a*) shows that it functioned as a lender-of-last-resort only intermittently during the crisis, and for some banks but not others, without apparent economic logic. Whilst being the *de facto* regulator of the Dutch banking system, with some influence through its *disconto* facility, it also competed with commercial banks through its branch network. De Vries (1989) argues that DNB was central to the structural crisis in the banking sector, but, crucially, that it was not the cause of the crisis. The bank is instead argued to have shared the naïve optimism of the sector which it oversaw; it ignored the signs that the postwar boom was temporary and remained oblivious to the sector's structural problems for too long.

Two international comparisons made in the literature on the causes of the Dutch crisis are with Belgium and with other Great War neutral states. Vanthemsche (1991) argues that the Netherlands' Industrial Revolution occurred only after 1895, and that this explains why banks in the Kingdom started the business of industrial finance only in the first decades of the twentieth century. This view must be revised somewhat in the light of new research, which dates Dutch industrialisation to a much earlier period (Van Zanden & Van Riel 2000). While Vanthemsche's reasoning for the absence of banks from the Dutch financial sector is therefore not as consistent with the evidence as that of Jonker, his account of the crisis largely follows the history described in the previous section. He notes that Belgium's banks became heavily regulated in the interwar period, whilst the Netherlands remained in the group of countries which had no special legislative framework for banks. However, it may be doubted whether Belgium's emerging bank regulations were responsible for preventing a crisis in the country's banks in the 1920s, given that the same regulations did not prevent them going under a decade later, and the fact that Dutch banks did not go under in the 1930s, despite not having bank-specific regulations.

Vanthemsche argues that Dutch banks never succeeded in playing as great a role in industrial finance as did their Belgian counterparts. And so, whilst Belgian banks were accused by contemporary observers of having too much influence over Belgian society, Dutch ones by the end of the 1920s were being accused of having too little. The 1930s, however, saw a reversal in opinion: the Netherlands kept out of the banking troubles of the Great Depression because its banks were no longer involved in industry, whilst Belgium's banks were greatly affected because they still were. Vanthemsche's conclusions are strengthened by the analysis of Ghita (2011). The logical extension of her argument says that it was Belgium's political elites who created its structural

rigidities, by imposing strong barriers to competition: refusing to finance anyone other than politically-connected incumbent firms. One implication of this argument could be that, with little (speculative) industrial investment to speak of, a Belgian banking crisis was never realistically on the cards for the 1920s; whilst Dutch banks had gone all out on new industry across the transwar period, their Belgian counterparts did not face such risks because they had laid solely safer, more boring, bets.

Jonker & Van Zanden (1995) compare the plight of Dutch banks with the experience of those in twelve other developed economies in the interwar period. They find that all interwar banking crises occurred during years of deflation, but that not every deflationary shock led to a run on banks. They argue that countries which experienced the greatest inflation in the transwar period – the Great War neutral states – suffered the greatest instability in the immediate post-war years, as they had most re-adjustment to do in order to return to the gold standard. Scandinavian banks in particular were hit in the 1920s deflation (Hansen 1994). Spain narrowly avoided a crisis, perhaps thanks to Miguel Primo de Rivera's *coup d'état*. Switzerland avoided a crisis because it had already restructured its banks before the war. The authors conclude that the neutrals' move to bank-financed industry during the war was the result of a rational policy: hence, there was great demand for industrial goods, yet industry was starved of funds; as a result, there was great investment potential for banks.

2.3.2   Micro-business histories of Dutch cooperation

Van der Lugt (1999) is a historiographical review of the business history literature on banks and banking in the Netherlands in the twentieth century. The author classifies the literature into studies by type of bank and discusses studies of cooperative banks on pp.412-416. Taking these works in the order in which they appear in the review, he notes that Stoffer (1985), whilst being a pleasant read and providing good background on the *verzuiling* of the *middenstandsbanken* and the political discussions which led to the foundation of the NMB, is less useful for academic research because its source material is not referenced.

On *boerenleenbanken*, Van der Lugt notes three commissioned business histories of the sector, which cover the early twentieth century: (1) Van Campen et al. (1948), a history of the CCB-Eindhoven central bank; (2) Weststrate (1948), a history of

the CCRB-Utrecht central bank; and (3) Sluyterman et al. (1998), a history of the whole sector, from the perspective of both central banks. The first two are official histories of the first fifty years of the two central banks' networks. Unfortunately, blinkered perhaps by the *verzuiling*, they do not analyse the relationship between the banks and the societies which they serviced, sticking mostly to an analysis of the balance sheets of the central organisations. The third, while being academic in scope, is written for a popular audience. Its analysis of the second fifty years of the sector is much more detailed than of the first fifty. All three fail to look at the workings of local *boerenleenbanken*, focusing solely on their central banks. In addition to the criticism of Van der Lugt, it is clear following the research of this thesis that they also fail to appreciate fully the effects of the 1920s crisis on the sector, largely ignoring the failure of the CCCB-Alkmaar central bank. They also fail to notice that many local banks belonging to the surviving networks were extremely leveraged, and therefore fail to appreciate that these banks were therefore effectively rescued covertly by their centrals. Furthermore, they do not make a comparison with *middenstandsbanken* and fail to provide an economic explanation why the sector did so well overall in the long run.

Van der Lugt (1999) in his review misses out a number of articles written about 1920s cooperation; these are Jonker (1988*b*) in the case of *boerenleenbanken*, and Dekkers (1992) in the case of *middenstandsbanken*. A number of works on the subject have written since his review was published: Jacobs & Van Erp (2006) for the case of failed Catholic *middenstandsbanken*; books by rural historian Brusse (e.g. 2008) discussing the origins and workings of *boerenleenbanken* in the context of rural histories of communities along the Rhine delta; and Borst (2004), an unpublished Master's dissertation which looks at the demise of the CCCB-Alkmaar network in 1924. Also relevant are Rouwenhorst et al. (1998) and Vercauteren et al. (2004), two well-written amateur business histories of the origins and early histories of *boerenleenbanken* located in religiously segregated regions of the Netherlands, both of which reference the source material used. These contributions are briefly discussed in turn.

Jonker (1988*b*) and Brusse (2008) examine the histories of *boerenleenbanken* in two particular localities in the province of Noord-Brabant, in the majority-Catholic south of the Netherlands. They find that they were established there principally as a result of the actions of the local clergy; good alternative sources of credit were available to farmers at the time and *boerenleenbanken* were not vitally needed. Their studies, whilst

providing deep knowledge of the particular banks they write about – knowledge which, when the studies are viewed together, points to a wider pattern – are nevertheless individually unable to comment explicitly on the wider Raiffeisen phenomenon, due to the limitations regarding the geographic scope of their studies. A similar critique can be made of Rouwenhorst et al. (1998) and Vercauteren et al. (2004), two straightforward descriptive histories of the constituent banks of modern-day Rabobank branches in De Ronde Venen (Utrecht) and Midden-Langstraat (Noord-Brabant); their simplicity is an asset in this case, as the descriptions in them provide much material for comparative historical analysis.

Dekkers (1992) and Jacobs & Van Erp (2006) are two business histories of the Hanzebank Den Bosch. The first provides a grand narrative of the origins, rise and fall of this financial institution, recounting its relationship with the public, DNB and the government. The second takes a more legal history approach, analysing in some detail the court cases surrounding the bank's bankruptcy. Together, they provide the definitive history of this bank and its failure during the 1920s crisis. However, this was only one of three Hanzebanken operating in the Kingdom, and there were many other *middenstandsbanken* still which are beyond the scope of its analysis. Consequently, whether the Hanzebank Den Bosch's history is unique to its particular market, or symptomatic of a larger pattern, is little understood.

Whilst Borst (2004) no doubt requires further work before it is publishable, it is the only extant history of the failed CCCB-Alkmaar *boerenleenbank* network. Using published sources dug up from municipal archives and complemented with some internal material found at the Rabobank's central archives in Utrecht, Borst attempts to piece together what happened to this network's central bank. The picture he builds is quite complex, with a mismanaged subsidiary of the bank apparently the principal cause of the fall. The study should be made more widely available to scholars of the Dutch cooperative sector.

Finally, any new findings in Dutch financial history of the early twentieth century must be compared with De Vries (1989), the official history of DNB; this volume can be considered the *standardwerk* on the period. De Vries (1989) largely bases his analysis on pp.259-262 on Stoffer (1985). Given this work's shortcommings, already mentioned above, there is much that is unclear in this part of De Vries's story; what was the relationship between DNB, the *boerenleenbanken* and the *middenstandsbanken* in the crisis?

2.3.3   Histories of credit cooperation across Europe

The introduction of German-style credit cooperatives to the Netherlands did not happen in isolation; similar efforts were made in a number of other European countries. The recent historiography of credit cooperation in Europe focuses primarily on Raiffeisen institutions; emulations of Schulze-Delitzsch cooperatives in countries other than the Netherlands were either rare, or have been ignored. The key recent works in the literature on "Raiffeisenism abroad" are: Guinnane (1994) and McLaughlin (2009) for the case of Ireland; Galassi (1996) for Italy; Guinnane & Henriksen (1998) for Denmark; Van Molle (2002) for Belgium; Garrido (2007) for Spain; and Rommes (forthcoming, 2011) for the Netherlands. Together, these contributions, which are discussed in turn below, reveal a methodological shortcoming: they are insufficiently comparative and therefore unable to distinguish between factors which are idiosyncratic to a particular institutional permutation, and those which are universal explanations of cooperative success. Further cross-country comparative research is needed to fill this gap in the literature.

Guinnane (1994) finds three reasons for the failure of Raiffeisenism in Ireland: (1) competition in savings markets; (2) lack of strong union federations; and (3) norms of rural Irish behaviour. Each of his arguments is discussed in turn using McLaughlin (2009), a recent PhD thesis on nineteenth century microfinance institutions in Ireland. (1) Guinnane concludes: 'if Raiffeisen had been an Irishman, or if the Post Office Savings Banks [POSB] had not been established until the 20th century, the situation in Ireland might have been different' (p.59). Elsewhere in his paper, however, Guinnane states that arguing that Raiffeisenism was successful in Germany because it did not have a POSB is oversimplifying the story, as Germany also had good alternatives in the form of municipal savings banks. Furthermore, it could be argued that Guinnane himself oversimplifies the story: Ireland too had its municipal savings banks, which dramatically declined in number and scale over the late nineteenth century as the POSB took away their market share. Therefore the question which should be asked is why the POSB, established in 1863, was able to enter a market and overturn an incumbent, and hence why Raiffeisen banks were able to outcompete similar incumbents in Germany. This aside, Guinnane's account of the function of the POSB is somewhat mistaken as he states that 'deposits and withdrawals could be made in any amount' (p.52). Actually, there were strict limits imposed: 30 pounds per annum

between 1863 and 1892, rising to 50 pounds per annum from 1893, and 200 pounds in total. It was not until 1915, as a means to obtain cheaper war finance, that these savings limits were eliminated (McLaughlin 2009).

(2) Guinnane argues that the Irish example lacked institutional equivalents to German cooperative apex institutions, audit unions and central clearinghouses (centrals); of these two he deemed that the lack of audit unions was the more detrimental as they provided external management and support, a point elaborated in Guinnane (2003). Guinnane fails to consider complication brought on by the political economy of Irish cooperation. The Irish Agricultural Organisation Society (IAOS), a cooperative propagator group and the unfederated apex institution of the island's cooperative movement, had threatened to establish its own central clearinghouse in 1902 (McLaughlin 2009). It did so in order to force the existing joint stock banks, which served the function of cooperatives' centrals in the Irish case, to lend to the wider cooperative movement at concessional rates of interest. A favourable agreement was reached in return for cooperative banks channelling all their deposits through joint stock banks. In this regard it is dubious whether this is an example of the IAOS's own failings, or, as McLaughlin argues, is a case or cooperative realpolitik.

(3) Guinnane asserts that one of the reasons why Raiffeisen cooperatives failed in Ireland was that 'norms of Irish society' made it difficult to work a cooperative system (p.39). Using a statement from a parliamentary banking commission convened in 1926, he suggests that 'rural Irish people did not give "full recognition of the justice of the debt so incurred," and thus resisted efforts to force repayment of loans' (p.57). Guinnane's interpretation has implications for the wider history of Irish banking: if Irish people resisted efforts to repay loans, then how could any banking work in rural Ireland? Blaming Raiffeisen's failure on societal norms is therefore empirically weak.

Unlike the Irish case, Italy's attempt to introduce Raiffeisen cooperatives was highly successful. Galassi (1996) puts this down to three factors: (1) effective *ex ante* screening of members' type; (2) internal monitoring of customers in order to reduce moral hazard problems; and (3) the ability to operate with lower overheads than their competitors. Galassi speculates that the most important of these three was the first, which he posits was achieved through cultural and social variables; *casse rurali* (rural banks) had stringent membership selection criteria which resulted in a customer base with many common features, possibly including their attitudes towards risk. Galassi (2001) adds to this picture by modelling the decision to join a cooperative in northern versus

southern Italy and finds that it was differences in farmers' choice sets rather than some innate cultural attribute which explains the differences in their propensity to cooperate; given their pre-existing differences in their levels of development, southern farmers would have had to trust a higher proportion of their neighbours than their northern compatriots in order for cooperation to work there.

In an examination of the failed introduction of Raiffeisen banks to the Danish countryside, Guinnane & Henriksen (1998) demonstrate that incumbent institutions known as *sognesparekasser* (parish savings banks) left little room for the market entry of new cooperatively-owned rural banks. They show that these banks provided financial services to local markets on much the same terms as Raiffeisen banks did in Germany: loans with personal guarantors who acted as insider monitors. Guinnane & Henriksen make the point that the success of *sognesparekasser* did not mean that there was no demand for cooperatives in Denmark and that the success of cooperatively-owned creameries there is proof of this. The authors appear to view Raiffeisen banks in a normative fashion, as a "gold standard" in rural finance which all societies should strive to adopt. However, it could be argued that, in their functioning, *sognesparekasser* were *de facto* equivalent to Raiffeisen banks, and that the rural financial services sector of Denmark was from a much earlier date more sophisticated than countries which did eventually emulate Raiffeisen cooperatives, such as the Netherlands.

Established at the turn of the twentieth century, at around the same time as those in the Netherlands, its neighbour, Belgium's Raiffeisen imitations, known as *spaar-en leengilden* (savings and loans guilds), were forced out of business by the mid-1930s. Van Molle (2002) explains that these banks had strong regional clearinghouses which wielded significant influence over independent local units, investing any of the excess savings entrusted to them in large-scale ventures within the Catholic community which was instrumental in their foundation. She recounts how Belgium's Raiffeisen banks took far more deposits in the 1920s than they could usefully lend out, and that their central apex clearinghouse instead participated in risky non-agricultural business ventures, ultimately with disastrous consequences. Belgium's cooperatives did not go down because of bad loans to the type of members which Raiffeisen had intended his banks to attract; instead they failed because they could not find a safe outlet for the excess savings which their members had.

Rural cooperation in Spain, of any kind, is considered by Garrido (2007) to have been a total disaster. Spanish Raiffeisen societies in particular performed very badly,

having failed to mobilise depositors, failed to attract asset-rich members, failed to secure government support and failed to escape the trappings of Church involvement. Ironically, *cajas rurales* (rural savings banks) did not attract many savers. A market for lemons existed, where asset-rich farmers refused to fully cooperate, leaving only asset-poor ones behind. Meanwhile, successive governments were weary of subsidising cooperatives, as they were seen as a potential political threat. Finally, involvement by the Catholic Church, while playing a crucial role in most cooperatives' foundation, led to a concentration of power among a small Catholic elite, or at least discouraged suffrage among the wider rural community and failed to keep fraudulent behaviour in check.

In a new book on the origins of cooperation in the Netherlands, Rommes (forthcoming, 2011) argues that the country's market for rural financial services was already satiated by the time cooperatives entered it in the late 1890s. He argues that good alternative sources of funds were available from *kassiers*, small private cashiers, who were especially active in the north of the country, exactly the region in which Raiffeisen banks arrived last. But given that the Netherlands' Raiffeisen imitation survived a severe national financial crisis in the 1920s, a world crisis in the 1930s and are today, in the form of Rabobank Groep, some of the most successful financial institutions in Europe, the conclusion that there was no demand for their services appears a little strong. Rommes appears to be pre-occupied with the arguments about incumbents' (lack of) provision of credit as a justification for the origins of Raiffeisenism. In contrast, this thesis argues that Dutch cooperatives emerged to take advantage of an untapped market for savings, and loans to members were only possible because of the rural savings they were able to attract. Whilst Rommes's focus on the socioreligious organisation of the Dutch countryside is a vital part of the explanation for Raiffeisen's success there, other factors proposed by and explained in this thesis were probably also necessary as well.

2.4 Economics context

The subject of this thesis informs and is informed by a number of different studies in economics. The four principal ones are reviewed, in brief, in this section. They are: (1) the theory of debt-deflation; (2) explanations for the causes of banking crises; (3) the optimal design of microfinance institutions; and (4) the economics of trust and social

capital. Together, these help to explain the theoretical causes of the Dutch crisis, and highlight how the historical study of Dutch cooperatives can help improve the economic study of financial institutions in general, and of microfinance institutions in particular.

2.4.1   Debt-deflation from Fisher to Bernanke

Fisher (1933) presents a chronology of events in ten stages which together constitute a 'great depression', stage ten of this comprises: (a) runs on banks; (b) banks curtailing loans for self protection; (c) banks selling investments; and (d) bank failures. He explains that of the many different contributory factors to depressions, all play a subordinate role compared with 'two dominant factors, namely over-indebtedness to start with and deflation following soon after' (p.341). He continues: 'the two diseases act and react to each other', and 'the very effort of individuals to lessen their burden of debts increases it, because of the mass effect of the stampede to liquidate in swelling each dollar owed', or, in other words, 'the more the debtors pay, the more they owe' (p.344). Fisher argues that the policy implication of his theory is that 'the question of controlling the price level assumes a new importance', and that 'the infectiousness of depressions internationally is chiefly due to a common gold (or other) monetary standard and there should be found little tendency for a depression to pass from a deflating to an inflating, or stabilizing, country' (p.349).

Until the early 1980s and the work of Bernanke, Fisher's debt-deflation hypothesis was almost ignored by economists and economic historians of financial crises (Di Martino 1999). Schumpeter (1939) is a notable exception, although this work is more concerned with the role of debt in business cycles in general, not financial crises in particular. King (1997) argues that the reason why the economics profession paid such little attention to Fisher's ideas was a combination of his personality clashes with his contemporaries, the pre-eminence of the Keynesian approach and the differences between the economic history of the US and the UK in the 1930s. King argues that Fisher's approach can be considered a precursor to the real business cycle model, one in which the initial shocks to the economy are magnified by a debt-deflation transmission mechanism. This was unlike the Keynesian approach, which instead tries to incorporate monetary factors into the theory of business cycles. Furthermore, the higher importance of consumer debt in the US than in the UK meant that the UK-centric Keynesians did not see debt as a significant factor in their explanations.

The work of Bernanke (starting with Bernanke 1983) was arguably a trend break in the literature. Neither monetarist nor Keynesian, Bernanke instead implicitly (and later explicitly) incorporated concepts from the new asymmetric information literature to explain the unusual length and depth of the Depression 'without assuming markedly irrational behaviour by private economic agents' (p.258). Unlike the few existing studies to previously notice Fisher's debt-deflation view, Bernanke instead focuses in the first place on the banking crisis aspects of the theory and subsequently shows how these can be transmitted to the rest of the economy. He argues that the two components to the 1930s financial crisis in the US were: (1) the loss of confidence in financial institutions; and (2) the widespread insolvency of debtors. The first, he argues, was due to the fact that banks' liabilities were predominantly in the form of fixed-price callable debt, whilst their assets were on the whole highly illiquid (p.259). The demand for cash as a result of a run on the banking system, whatever factor caused it, would then be difficult to meet. Assets would have to be sold hastily, at discounts, causing otherwise healthy banks to fail. He argues that the reason why banks' balance sheets were skewed towards the long-term at the time of the Depression was that they had not adapted to institutional change: the new Federal Reserve had not taken up the tasks which the clearing houses had done before the Great War, when they disappeared, i.e. it did not provide easy liquidity in time of need.

Bernanke's second component of financial crises – the widespread insolvency of debtors – is a factor which he argues has been neglected in the work of most economic historians. He notes that debt contracts were written in nominal terms and not indexed to price movements. Hence the protracted fall in prices and nominal incomes in the 1930s 'greatly increased debt burdens' (ibid.). He argues that the US debt crisis was widespread, touching residential property mortgage holders and the business sector, but most of all farmers. He notes that 'at the beginning of 1933, owners of 45 percent of all U.S. farms, holding 52 percent of the value of farm mortgage debt, were delinquent in payments' (ibid.). He argues that although the deflation of the 1930s was unusually steep and protracted, it was not unprecedented; 1920-1922 saw similar price movements in the US, but this period was not accompanied by mass insolvency because the US had not yet experienced the 'broad-based expansion of inside debt' of the roaring 1920s (p.261).

Reversing Fisher's repeating ten stage depression model, Bernanke posits that it is the financial crisis stage that affects the macroeconomy; the US Great Depression was

propagated by the 1930-1933 banking crisis. The reason for this is that the banking panics resulted in the rise of the cost of credit intermediation, or the cost of 'channelling funds from the ultimate savers/lenders into the hands of good borrowers' (p.263). It is here that Bernanke invokes an asymmetric information framework: he argues that these costs are associated with screening, monitoring and accounting. These costs are minimised through developing expertise, engaging in long-term relationships with customers and providing the right incentives through loan contracts for customers to self-select according to risk type. According to Bernanke, 'The bank crisis of 1930-33 disrupted the credit allocation process by creating large, unplanned changes in the channels of credit flow. Fear of runs led to large withdrawals of deposits, precautionary increases in reserve-deposit ratios, and an increased desire by banks for very liquid or rediscountable assets' (p.264).

Bernanke & James (1991) expand this financial accelerator model to incorporate the gold standard explicitly into the explanation of the cause of the Great Depression. They argue that the gold standard-based explanation developed by Temin (1976, 1989) and Eichengreen (1984, 1992) is 'in most respects compelling' (Bernanke & James 1991, p.33), with the countries adhering to the interwar exchange standard being most at risk of contractionary monetary shocks. The 1991 paper uses a larger sample of countries than the US alone to note that there is close correlation between adherence to the gold standard and deflation, and between deflation and depression. In common with many other works, this argues that the deflation of the early 1930s was the result of monetary contraction transmitted through the international gold standard. The authors explain that debt-deflation works by 'increasing the real value of nominal debts and promoting insolvency of borrowers, [...] [thus] creat[ing] an environment of financial distress in which the incentives of borrowers are distorted and in which it is difficult to extend new credit' (ibid.).

The authors propose three mechanisms through which deflation can affect the real economy: (1) real input costs; (2) real interest rates; and (3) financial crisis (pp.46-50). Real input costs – mechanism (1) – are very much New Keynesian: they posit that input costs (wages in particular) may possess some degree of rigidity, or downwards stickiness. Real interest rates – mechanism (2) – are best explained using a standard IS-LM model, in which a monetary contraction causes the LM (Liquidity preference-Money supply) curve to shift leftwards, raising real interest rates and investment, and reducing spending. Financial crisis – mechanism (3) – is then the debt-deflation

relationship. Although this last one is very much the focus of this thesis in that it is the macro-cause of the Dutch crisis, all three are related and are arguably difficult to separate: banks' clients may be affected by real input costs and real interest rates, which may cause them to fail, and in turn may cause banks themselves to fail, hence causing a financial crisis.

Specifically on the financial crisis mechanism – mechanism (3) – Bernanke & James posit that in addition to the deflationary shock, several other factors were necessary in the 1930s in order to translate deflation into a crisis: (a) banking structure; (b) the reliance of banks on short-term foreign liabilities; and (c) their financial and economic experience of the 1920s (pp.54-57). On point (a), they argue that it was extreme structures that appeared most vulnerable during the Great Depression, namely unit banking systems (large numbers of small relatively undiversified banks) or universal banking systems (where banks took long-term and sometimes dominant positions in client firms). On point (b), they argue that the most serious banking problems occurred in countries where a substantial proportion of deposits was foreign owned. They maintain that this so-called "hot money" is more sensitive to adverse macroeconomic news, and that the resulting runs are more serious because they also mean a loss in reserves. On point (c), Bernanke & James note that if countries experienced their banking problems during the earlier 1920s, and if these were met with fundamental reform, then the performance of the banking sector during the Great Depression was better. They isolate the Netherlands as an example *par excellence*: they argue that the Dutch crisis of the 1920s resulted in 'fundamental restructuring and assistance to place banks on a sound footing' (p.56). They propose that a particularly interesting comparison is that between the Netherlands and Belgium: 'both countries were heavily dependent on foreign trade and both remained on gold, yet the Netherlands did much better than Belgium [which did not experience a financial crisis in the 1920s] in the early part of the Depression [of the 1930s]' (ibid.).

As discussed in Section 2.3.1, the consensus macroeconomic cause of the Dutch crisis was debt-deflation. This thesis largely treats the cause of this phenomenon – debt-overhang from the Great War combined with adherence to the gold standard for reasons of path dependency – as exogenous to the crisis. Instead, the thesis is concerned with the microeconomic factors which transferred this macroeconomic shock to the banking sector, specifically the differential way in which cooperatively-owned banks were affected by debt-deflation due to heterogeneity in their structural and

institutional aspects. In keeping with Bernanke and others, then, this thesis adopts a "debt-deflation plus structural factors" view of the 1920s crisis, but focuses principally on the second part of this view, the structural factors, because these are the least understood by economists and historians.[15]

2.4.2   Information economics and the causes of crises

This section looks at the debt-deflation approach in the wider literature on the causes of financial crises. Such literature can be divided into two schools (Calomiris 2007): (1) the fundamentalist school; and (2) the contagionary school. Briefly, the fundamentalists relate non-panic-related, observable, exogenous adverse changes in the economic conditions of banks to bank failure. They argue that banks, being inherently stable, do not warrant special government policy. Meanwhile, the contagionists posit that banks may suffer distress regardless of their actual financial position. They hold that banks are inherently unstable, and therefore require some sort of special government policy, such as a lender-of-last-resort.

Whilst some authors come out strongly in favour of a specific explanation – e.g. Friedman & Schwartz (1963) could be said to favour a fundamentalist-type view – it is arguably more difficult to classify Fisher's debt-deflation explanation, or indeed Bernanke's version of it, neatly within this debate. The asymmetric information explanation of the bank run component of bank distress can be more closely associated with the contagionary school; and perhaps "Fisheresque" explanations of bank distress, which tend to use asymmetric information concepts, should therefore be associated with this. Indeed, this is probably what followers of the Bernanke view would argue.

But Fisher also works for the fundamentalists: debt-deflation could be viewed as a mechanism through which the market corrects itself from excesses, a so-called "natural exit". In the fundamentalist school, deflation should not be problematic for those banks and their clients with strong fundamentals in the form of capital and reserves. For these sound banks, from this perspective, deflation could even be viewed as beneficial: as a result of deflation, the real value of wealth increases, stimulating output and

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[15]Note that Boettke & Coyne (2011) has recently argued that Fisher and Bernanke's lessons about debt-deflation have led to an excessive fear of deflation and an inflationary bias which underestimates the cost of rising prices. This may or may not be true; it is feasibly an empirical question which could be tested with historical data. Whatever the outcome of such an exercise, however, the exposition here remains unaffected; in the 1920s and 1930s, it was excessive deflation, not inflation, that threatened the Dutch economy.

employment through increased consumption, the so-called Pigou effect. The random-withdrawal-risk, or "sun-spot", explanation of bank runs typified by Diamond & Dybvig (1983), which can be associated more closely with the fundamentalist view, exhibits some price-related location-specific factors which are implicit in modern versions of Fisher's debt-deflation explanation. Unexpected withdrawals by bank depositors are associated here primarily with location-specific economic shocks (Calomiris & Gorton 1991, p.123), such as seasonal demands for currency due to agricultural payment procedures. Such shocks may appear as general or local price deflation, for all goods and services or for specific ones alone, for all regions of the country or only in regions with certain kinds of economic specialisation.

Minsky, however, would disagree with the above comparison. In Minsky (1994), he advances a so-called Financial Instability Hypothesis, which holds that business cycles are a consequence of internal economic dynamics. He argues that his view is a compaction of Fisher with the work of John Maynard Keynes. Minsky would not associate Fisher with a fundamentalists-type explanation, which in his view sees business cycles and their associated financial crises solely as the consequence of exogenous shocks. Minsky's analysis has been particularly influential in understanding the recent subprime mortgage crisis (see e.g. Davies 2010). However, in the context of the 1920s, and much in line with Minsky's characterisation of fundamentalists, the macroeconomic causes are treated as exogenous, caused by two forces over which the Netherlands had little control: the Great War and gold standard policy path dependency. Here, it is microeconomic factors – crisis mitigating and amplifying – that are treated as endogenous.

The division into schools of thought is obviously an artificial one, but useful for expositional purposes. Random-withdrawal-risk location-specific factors and asymmetric information/contagionary explanations are interrelated; their use side-by-side in debt-deflation explanations of financial crises does not harm micro-level analysis. Indeed, the Dutch case arguably benefits from such an approach; as described in the previous subsection, the macro-causes are treated as largely exogenous, but their impact at a microeconomic level of analysis is largely assessed using principles from information economics. The asymmetric information view – and thus the associated contagionary school – of bank distress is therefore discussed below in more detail.

As with most explanations of financial crises, a definition of the purpose of the banking system is adopted up-front; the definition of a crisis follows from the definition

of a bank. As a result of this, many competing definitions of crisis abound. Monetarists have associated financial crises with bank runs. Others, such as Kindleberger & Aliber (2005), hold a much broader definition. Bordo (1986) presents a useful all-encompassing list of ingredients. The definition adopted in this thesis follows from the asymmetric information view, which focuses on the differences in information available to different parties in a financial contract (Stiglitz & Weiss 1981, Mishkin 1991). In short, borrowers are assumed to have an informational advantage over lenders, since they know more about the risks associated with their investment plans. Because of this asymmetry, lenders cannot distinguish between the quality of borrowers. Lenders will therefore provide loans at an interest rate which reflects average quality. But as in Akerlof's (1970) classic "market for lemons", high quality borrowers will have to pay higher interest rates than their level of risk warrants and will therefore drop out of the market, leaving only low quality borrowers. This adverse selection problem will recur until eventually only those borrowers with the highest risk are left in the credit market.

The situation is amplified if combined with the moral hazard problem: borrowers have an incentive to engage in risky activities, or even embezzle funds, because they know that lenders cannot easily ascertain their level of risk. This conflict of interest between borrower and lender, or the agency problem, results in suboptimal investment plans. Banks are institutions which exist in order to help correct this market failure. They are able to reduce information asymmetries by monitoring the activities of their creditors and depositors, punishing socially sub-optimal risky behaviour and thus increasing overall welfare. Their size and scope permits them to act as intermediaries between agency problem-suffering borrowers and lenders and to act as market-makers and thus create new "markets for money", or at the very least vastly expand existing ones.

In the asymmetric information explanation, bank distress occurs as a result of a sudden, but rational, revision in the perceived riskiness of bank deposits when nonbank-specific, aggregate information arrives (Mishkin 1991). In a deflationary cycle, wealth is redistributed from debtor to creditor by the increasing real value of debt, thus reducing the borrower's net worth. The value of the collateral on offer from potential borrowers to signal their risk type is also much reduced, making it very difficult for economic actors to secure new finance (Bernanke & Gertler 1990). This results in an increase in adverse selection, in turn causing a decline in investment and an economic downturn. In addition to the adverse selection between borrowers and banks, the asymmetry also

works between depositors and banks: depositors cannot distinguish between solvent and insolvent banks and therefore withdraw their deposits regardless, forcing otherwise sound banks into liquidation – a form of crisis contagion.

It is important to note here that the asymmetric information view stresses the importance of "banking structure", understood to mean the banking sector's industrial organisation (scale and scope) and the institutional attributes of constituent players. However, it is unclear from the literature what constitutes the "correct" structure to ensure that banks can expect to suffer from distress less frequently or severely. This is primarily because different authors stress different structural factors. The predominant view in the literature is perhaps best summarised in Tirole (2006, p.157), who argues that interbank financial markets and branch banking allow risk spreading and therefore reduce the impact of macroeconomic shocks such as deflation. This is demonstrated empirically in the literature on so-called "unit banking", where papers such as Calomiris (1990) and Bordo et al. (1994) conclude that branching is associated with superior performance. Calomiris (1990) is a comparison between US states which had deposit insurance and those which did not: the former encouraged small geographically undiversified unit-independent banking over branching, whilst in the latter branching became the only way to insure against crisis. Bordo et al. is a comparison between the performance and survival of banks in the US, characterised as unit banks which failed during the Great Depression, and those of Canada, characterised by nationwide branch banking networks which thrived in the same period.

A factor which has been most explored in the economic history literature relates to regional differences in exposure to macroeconomic shocks. Alston et al. (1994), who take a regional approach to analysing agricultural bank failures in the US in the 1920s, find that bank failures were highest in parts of the US where farm acreage and land values had increased the most before 1920, because these suffered greater agricultural distress in the 1920s downturn. Their structural focus is on the regional differences in bank deposit insurance schemes: banks in those areas with better, more comprehensive insurance schemes engaged in riskier activities – a moral hazard explanation.[16] Wicker (1996) also takes a regional approach to analysing the spread of these panics using a series of micro-business histories. He focuses on the role of the Federal Reserve in

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[16]Note here that Federico (2005*b*) has attacked the common assertion in the literature that agricultural distress in the 1920s was a cause of the Great Depression. He finds instead that the rural debt overhang from the 1918-1921 boom was serious, and did indeed jeopardise rural banks in the 1920s, but cannot be linked to the troubles in the rest of the economy one decade later.

the US panics and finds that there is little evidence of a causal relationship between panics and contractions in (local) economic activity, which arguably runs counter to the Bernanke view. However, this is unimportant here; what is significant is Wicker's methodology, which involves the careful reconstruction and comparison of events surrounding individual panics for a sample of different banks in different areas of the US, something that Dutch case would benefit from.

Rockoff (2004) argues that a region-specific structural-institutional perspective has been largely ignored in studies of the US in the 1930s. He identifies four important regional differences to incorporate in future explanations: (1) cultural barriers to the mobility of labour; (2) prohibitions against branching across state lines, and in some cases even within states; (3) regional policies of the Federal government, such as price support policies; and (4) policies of regional governors of the Federal Reserve System. In his investigation, Rockoff also explicitly incorporates regional differences in the impact of deflation on banks. He computes the different real price paths of various agricultural commodities and demonstrates how this may explain that there were great regional differences in the production of different commodities (pp.34-35). He examines the terms of trade of different regions and discusses how exogenously-determined demand can affect different regions in different ways. He argues that the literature has focused too much on what he terms "noisy runs", where depositors queue up to withdraw deposits. He argues that "silent runs" are just as important, if not more so, in explanations of banking crises. This type of run on the bank manifests itself as transfers between banks which depositors feel are high-risk to ones judged to be low-risk, correctly or otherwise. Such runs, he argues, can be intraregional, from a small local bank to a bigger bank in a nearby town, or interregional, from a bank in the interior to one in the financial centre (p.39).

In summary, information economics can be used to come to different conclusions on the optimal structure of banks and the wider banking system. Various successful attempts have been made to look at the consequences of structural differences resulting from geographic location in studies of the US banking crises of the Great Depression. This thesis adopts a similar approach in order to form a view on the question of how far deflation is a necessary and sufficient condition, and/or how and how far banking structure is also necessary, or whether in fact it is sufficient on its own. The next section, Section 2.4.3, is a first attempt to collate important structural-institutional factors which the literature identifies as being potentially important for cooperative

banking.

2.4.3   Microfinance in theory and practice

Modern microfinance organisations, which operate in much of the Third World, have received considerable attention over the past two decades from both policymakers and academics. An interest in the historical predecessors of microfinance institutions has been reignited in consequence, notably in the nineteenth century cooperative movement. Much like the cooperative microfinance of one hundred years ago, modern microfinance is viewed today as an important tool in eliminating poverty and creating the right conditions for sustainable economic growth and development.

The modern movement started in earnest in 1983 when Muhammad Yunus – then an economics professor at Chittagong University in Bangladesh – established the Grameen Bank (Yunus & Jolis 2003). Yunus first experimented with microfinance in the late 1970s by lending to poor households in the village of Jobra. He found that borrowers were not only profiting greatly from access to such small-scale funding, but that the repayment rate was very good despite their distinct lack of capital. It was this early experiment that encouraged him to roll his programme out across Bangladesh, and inspired similar programmes across the world, a feat for which he was awarded the Nobel Peace Prize in 2006.[17]

As with the cooperative banks of this thesis, Yunus's Grameen Bank is based on the principle of group lending with joint liability. Groups are formed voluntarily and members are expected to support each other when difficulties arise. Yunus's groups initially consist of five borrowers. If one defaults and fellow group members do not pay off the debt, then the whole group is denied any further credit (Armendáriz de Aghion & Morduch 2005). Other features of the Grameen Bank include: increasing borrower's loan size over time as their repayment histories become known; a repayment schedule with high frequency instalments; and a policy of lending almost exclusively to women. There are many structural-institutional differences between Grameen-inspired microfinance institutions, even those operating in the same country. For instance, the Association for Social Advancement – a competitor to the Grameen Bank in Bangladesh – uses groups of twenty persons for joint liability lending and even offers individual lending contracts in some parts of the country (ibid.). Some are explicitly

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[17]The prize was awarded jointly to Yunus and his bank, for 'their efforts to create economic and social development from below'. Source: http://nobelprize.org/ (last accessed 30 June 2011).

profit-making, whilst others can be considered no more than charitable trusts.

Economists have been fascinated by two aspects of microfinance and cooperative banking: (1) explaining joint liability group lending and its implications for reducing information asymmetries; and (2) the tradeoff between financial sustainability and the outreach of microfinance institutions (Hermes & Lensink 2007). Some of the important papers in this literature are discussed below. Collectively these studies provide ways in which the Dutch case can be approached and help to identify what contribution the Dutch case can make to the broader microfinance literature. These studies help reveal which structural facets may be relevant for cooperative organisations – or at least those which the economics profession has identified as most relevant – and thus help tailor the debt-deflation explanation of the previous subsections to the specifics of the Dutch case. Most importantly, however, these studies reveal two gaping holes in the microfinance literature: (1) the study of failed microfinance banks is almost completely absent; and (2) institutional arrangements other than those relating to joint liability are not analysed in any detail. One contribution made in the current study is then to try and "fill in" these two holes, using the historical case of early Dutch microfinance.

The papers discussed in the remainder of this section are Stiglitz (1990), Banerjee et al. (1994), Guinnane (1994), Besley & Coate (1995), Ghatak & Guinnane (1999), Woolcock (1999), Ahlin & Townsend (2007a,b) and Bond & Rai (2009). Although the basis of the selection was relevance to the particular issue of institutional design and bank stability, the focus of these papers is approximately representative of the economics of the wider microfinance literature.

Stiglitz (1990) emphasises the role of peer monitoring in the success of microfinance institutions. Using two models of a simple credit market – one without peer monitoring and one with – he shows how the ability of peers to monitor borrowers' behaviour, combined with the requirement that these peers are held financially responsible for these borrowers, leads to an improvement in borrowers' welfare, despite the costs associated with transferring risk to monitors. He argues that the Grameen bank is successful because making peers in some way financially responsible for one another's lending provides the right incentives to monitor behaviour and ensures that projects are not too risky. He concludes that there are in consequence strong incentives for groups to form containing economic actors with similar risk characteristics, thereby avoiding a market for lemons *à la* Akerlof (1970).

Banerjee et al. (1994) build on Stiglitz's work by constructing a model in which the

most successful credit cooperatives have the following institutional attributes: (a) joint liability; (b) part-financing of loans by non-borrowing cooperative members; and (c) the ability of these part-financiers to alter the interest rate as a sanction in response to new information. In their principal-agent model, there exists an intermediary monitoring loan supervisor in the form of the non-borrowing cooperative member. Like Stiglitz (1990), the interest of the monitor is aligned with the principal through joint liability. The difference is that the monitor – who is privileged to insider information about performance – is able to enforce the deal by having control over the interest rate on the part of the loan for which he has offered collateral. The model suggests how credit cooperatives with these attributes are able to reduce the information problems which prohibit traditional banks from entering the market for small-scale loans. The model also shows that cooperatives structured along their lines may reduce the information problems which make conventional banks more prone to (macroeconomic) shocks and financial crises.

Banerjee et al. (1994) test their model using historical data on Germany's early credit cooperative sector. They observe that German credit cooperatives enjoyed an extremely low failure rate: between 1909 and 1910, none of those with unlimited liability and only three of those with limited liability failed. In all, private credit institutions were 55 times more likely to fail than were rural credit cooperatives in the period 1895-1905. They argue that this is evidence in favour of their model. However, as the authors readily admit, there is too little variation in the German cooperative sector to test the model's predictions satisfactorily. Furthermore, there is arguably a logical problem with the empirical part of this paper, in that the authors are observing an effect (stable cooperatives), inferring a cause (ability to solve adverse selection problems) and then using this to explain the initial effect. This is known as "affirming the consequent", which is a logical fallacy along the lines "If P, then Q. Q. Therefore, P."

As discussed in a previous section, Guinnane (1994) argues that one reason for the failure of Irish credit cooperatives at the start of the twentieth century is the lack of social sanctions available in group lending: Irish peers seemed reluctant to force their neighbours to repay loans, thus undermining any theoretical advantages that cooperatives had over conventional banks regarding monitoring and informal enforcement. Ghatak & Guinnane (1999) also note the importance of social sanctions in group lending and provide a host of contemporary examples of differences in the success

of microfinance institutions for this reason. This paper broadens previous models of group lending to include the complete set of theoretical information asymmetries, namely adverse selection, moral hazard, auditing costs and enforcement problems. The model is not tested empirically, however.

Besley & Coate (1995) put group lending into a game theory jacket. They analyse the impact of joint liability on the decision of group members to repay their loans. Their "repayment game" analyses the tradeoff between group lending and individual lending in which one of the nodes in their game tree is that the entire group defaults when at least some of the members would have repaid under individual lending contracts. Like Guinnane (1994), they describe informal sanctions in peer monitoring, named here "social collateral". This social collateral is then used by group members to steer clear of the mass default equilibrium.

In one of the few papers to look at microfinance institutions in crises, Bond & Rai (2009) model the way in which microfinance institutions are exposed to borrower runs. This is a situation where borrowers fail to repay their loans because they expect that others will also default. This is then mass strategic default, a different concept from the mass default node in Besley & Coate (1995) described above; runs occur here, not because joint liability has bankrupted loan co-signers who on their own would have been sound, but instead because they believe they can get away with not repaying their loans. This type of run is an asset-side run, unlike the liability-side run of Diamond & Dybvig (1983) discussed in the previous subsection. The model uses global games to show how a microfinance project's own funds are very important in ensuring stability; without such funds there is increased probability of strategic default. The paper is purely theoretical in nature and provides only anecdotal evidence.

Ahlin & Townsend (2007b) compares the implications of a variety of different models of group lending – including Stiglitz (1990), Banerjee et al. (1994) and Besley & Coate (1995) – using a new dataset on Thai microcredit institutions. First, the authors restate each model using their own terminology to make them directly comparable. They then argue that each has very different loan repayment implications. For example, for Stiglitz (1990) the probability of repayment decreases as liability increases, whilst for Banerjee et al. (1994) the reverse is true. They conclude that no model exactly matches their own Thai data – although Besley & Coate (1995) do perform 'remarkably well' – and perhaps for this reason they construct a new model which does fit their data better in Ahlin & Townsend (2007a). They conclude that strong social ties between

members of a cooperative group can have an adverse affect on repayment performance.

In summary, this section discusses a number of recent economic studies of microfinance institutions. Each paper in some way argues that joint liability group lending is the key institutional attribute determining their level of success. They reach slightly different conclusions on the exact way that group lending works, primarily concerning the implications of peer monitoring. A reading of this literature reveals that few institutional attributes other than group lending are analysed in this literature, a point also made by Armendáriz de Aghion & Morduch (2005).

The way in which microfinance institutions interact with conventional banks is discussed only in the context of the way in which microfinance institutions create new markets for credit where traditional banks would not operate, for a variety of informational reasons. Beyond this, however, the industrial organisation of banks for the poor is not discussed. The effect of culture and social norms on financial stability has not been a focus of the economics literature to date. The general setup of these studies is instead to describe successful banks for the poor and then attempt – usually with anecdotal evidence only – to show how institutions which deviate from their model are likely to be unsuccessful.

Woolcock (1999) is a notable exception to the trend in the literature described above. First he argues that the existing literature overestimates the success rate of microfinance organisations, noting that many are covertly or even overtly saved by charity-like bodies where other types of organisation would not be.[18] Written as a series of qualitative case studies, the paper then describes the circumstances under which five microfinance projects failed. In each, Woolcock stresses what he calls sociological factors for their failure, comparing his failure cases to ones in which similar organisations with the same sociological factors worked differently to make banks successful. These sociological factors are described principally in terms of what he calls the type and strength of social relations between principals and agents, or trust. Examples include a comparison of clergymen's abilities in various Christian sects in India to monitor their congregations' use of microcredit and of the willingness and ability of peers to monitor each other in two different Indian communities living in the same town.

The next section, Section 2.4.4, specifically focuses on Woolcock's trust factor. It explores why and how trust must be incorporated into any study of the Dutch

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[18]Recently, Bareman (2010) has made a similar point in a normative study of microfinance failures.

cooperative banking sector in order to address the methodological, and, above all, the empirical shortcomings of the extant microfinance literature and identify more precisely the structural-institutional features peculiar to (Dutch) cooperative banks which made them more or less susceptible to the combination of debt and deflation.

2.4.4   Trust from Coleman to Ostrom

This section uses insights from the economics of trust to develop a new framework in which to analyse the structural-institutional facets of the Dutch cooperative banking sector just before the financial crisis of the early 1920s. It proceeds with a discussion of the work of Oliver Williamson and Elinor Ostrom and various associated authors who have applied their insights on trust and social capital to economic problems. It concludes that Ostrom's solution to the problems which economists face when trying to operationalise notions of trust and explain theoretically unpredictable empirical results may be useful for the present study.

The use of the concept of social capital remains controversial. Durlauf (2002) posits that social capital is an 'elusive concept, as reflected in the fact that its definition differs across studies'. It is even vague in the studies which treat the concept seriously, such as Coleman (1990) – and perhaps more famously in Putnam (2000). Durlauf argues that definitions of social capital are a mixture of functional (a set of norms and values to facilitate cooperation and efficiency) and causal (the cooperative behaviour of others making the cooperative behaviour of an individual agent rational). To this may be added a normative definition; the IMF promoted social capital as a socially beneficial development goal in itself and had a working paper series entirely devoted to its study (e.g. Collier 1998). The normative interpretation is probably the weakest; Glaeser et al. (2002) note how a used car salesman with "lots of" social capital may get away with selling her customers social welfare-reducing lemons. Ogilvie (e.g. 2007) makes this same point regarding pre-modern trade guilds.

Heterodox criticisms of social capital aside,[19] the criticism based on the work of Williamson (1993) is devastating. He argues that trust is a concept void of meaning and shows that tools from transaction cost economics are sufficient to describe commercial exchange. His thesis is that the terms "trust" and "social capital" are redundant at

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[19]Fine (2000) purports to be a serious academic inquiry into social capital. However, its introduction argues that the three fundamental tasks for social scientists today are 'how to sustain a commitment to socialism, to Marxism and to political economy'!

best and misleading at worst in explaining cooperative business outcomes. When specific interaction is described in detail, then the element of the transaction which is usually ascribed to trust is actually just "calculativeness". Adopting the example of the Norwegian shipowner which is used by Coleman in his book on social capital, cited above, Williamson argues that the reason for a shipowner to arrange the release of his ship docked in Amsterdam through a banker in the City of London and not directly through an Amsterdam bank has nothing to do with trust, but instead is a result of information asymmetries. The Amsterdam banker does not know whether the Norwegian is a good type or a bad type with respect to risk, whilst his colleague in London does. Before the deal can go through, the London banker has to reveal to the Amsterdam banker what type the Norwegian is. Because both bankers engage in repeated business interaction with the threat of punishment if business commitments are reneged upon, they know about one another's risk type; the Amsterdam banker knows that the London banker has to act truthfully in this case. According to Williamson, Coleman's case is not about trust but is instead about improved information concerning the Norwegian's risk type conveyed down the telephone.

Guinnane (2005) makes a very similar point to Williamson, using the example of German versus Irish credit cooperatives in the nineteenth and early twentieth centuries. He argues that the reason that Irish cooperatives fared so badly compared to German ones was not because of issues of trust within and between Catholic and Protestant communities, but was instead the consequence of business realities; Irish cooperatives could not attract the same level of deposits as their German counterparts, and sufficient deposits are a necessary condition for making loans to members. The reason, according to Guinnane, was threefold: (1) competition with first-mover-advantage from other deposit-taking organisations such as the Post Office; (2) the absence of an external auditing body; and (3) reduced willingness to enforce loan terms. The first, he argues, was by far the most important. The third, which comes closest to the notion of trust, is actually explained by the first: the source of the Irish cooperators' funds was the government, not each other's deposits, and the government was unable to credibly enforce loan terms because it lacked the ability to impose social sanctions (McLaughlin 2009).

Often considered the most famous historical application of the concepts of trust and social capital is the work of Greif (e.g. 1993). However, Guinnane (2005) argues

that Greif's work should not be considered part of the trust camp at all because Greif uses the language of Williamson to analyse his stories of pre-modern international trade. Greif's historical case studies show how repeated social interaction plays an important role in solving free rider problems and reducing opportunism. His work uses game theory models to show why cooperation becomes easier when interaction is repeated often and he shows empirically how informal punishment can substitute for legal systems where these are missing or expensive. Guinnane argues that this not an example of Coleman's social capital, but Williamson's calculativeness.

Posner (2000) unpacks Williamson's framework further in the specific context of the role of law in economic interactions. He argues that reputation is very important in economic relationships, and is achieved through repeated interaction and punishment. But in cases where interaction is not repeated, signalling is important. Spending on exuberant clothing or lodgings enabled medieval merchants to signal their risk type, he argues. Having recourse to the law following trade disputes is a costly endeavour for both plaintiff and defendant and is carried out only to signal type. Adding Posner's analysis to the framework thus far developed, any behavioural difference observed between economic actors could merely be down to signals of type, which have the purpose of enabling actors to self-select into groups with similar type characteristics.

In summary, applications of the Williamson approach to explaining (away) trust rely on game-theory concepts such as information sets, repeated interaction and punishment strategies. However, empirical work using controlled laboratory experiments has shown that game theory has its limitations; contrary to theoretical predictions, Ostrom (2003) describes how economic actors may come to cooperative solutions even in one-shot or finitely-repeated games. Ostrom concludes that neither cooperative nor non-cooperative game theory is useful on its own to describe human interactions, since they both predict extreme solutions which fly in the face of the empirical reality in which a variety of different outcomes is observed.

More specifically, Ostrom finds that, contrary to theoretical predictions of rational choice theories, the following behaviour is observed empirically in experiments on human interaction (Ostrom 2003, pp.27-28): (1) high levels of initial cooperation; (2) cooperation levels decay very slowly towards the predicted Nash equilibrium; (3) communication substantially increases cooperation; (4) Nash equilibrium strategies are not a good predictor of outcomes at the individual level; (5) models based on backward induction in finitely repeated experiments do not predict observed behaviour; and (6)

individuals introduce institutional heuristic rules which improve outcomes.

Ostrom's solution is the re-introduction of trust into the framework of information sets, repeated interaction and punishment strategies. Ostrom et al. (1999) posits that concepts such as trust and norms are necessary to understand the successful management of common-pool resources (CPRs). In the original "tragedy of the commons" problem posited by Hardin (1968) and popularised in undergraduate microeconomics textbooks, the only two solutions to resource overexploitation are socialism or privatisation. However, in reality there are many examples of successful commonly-held CPRs in different polities and geographies throughout history (Ostrom 1990). Organising business along cooperative lines can be interpreted as one possible CPR solution. The question is then, how does mutual trust achieve stable cooperative behaviour?

Ostrom notes that cooperative outcomes are achieved more frequently in kin-based societies where agents are homogenous ethnically, socially and economically. Of courses, she recognises that this can in some cases lead to socially undesirable outcomes (e.g. discrimination, corruption and cartelisation). She argues that agents use heuristics, or "rules of thumb", to arrive at decisions rather than calculating the optimal solution in each individual case; trust for Ostrom is about norms of behaviour. The net result is that there is a great number of observed strategies within any given population, from full cooperation regardless of reciprocation, to limited cooperation only in some cases, to never cooperating under any circumstances or even free riding. The proportion of the population to behave in each way, she argues, is the result of three structural variables: physical, institutional and reputational. Recently, Ostrom (2009) further unpacked these structural variables into over thirty specific variables for the case of CPRs involving environmental management. It is the goal of the present thesis to do something similar for CPRs involving small-scale loans and deposits – cooperative finance – to answer the following question: what specific variables enabled Dutch rural cooperative microfinance institutions to be so successful during the Dutch financial crisis of the early 1920s, but doomed urban ones to near total failure?

Comparing Ostrom with Williamson, apart from Ostrom's disbelief that rational choice theory works always and everywhere without any bounds, the key difference in their approaches appears to be their conceptualisations of trust. Whilst Williamson sees trust only in the revelation of an economic actor's innate risk type (good or bad) through the flow of information in repeated interaction, Ostrom adds a trust variable

which lies with the beholder and depends partly on factors such as social norms. Both conceptualisations must be seriously considered in the Dutch case, for each leads a to different explanation of cooperative success and failure; can the success of rural cooperatives in some way be attributed to social norms consequent of the Netherlands' socioreligious division?

2.5   Conclusion

This chapter presents the historical, historiographical and economics context of this thesis. Summarising each in turn; the historical context section finds that the Dutch economy went through a spectacular boom during and immediately after the Great War. Whilst overall the Dutch economy performed well in the 1920s, at least when compared to other European countries, the start of the decade saw an acute and prolonged period of decline, specifically with regard to prices. It suggests that this recession was the result of a combination of exogenously-determined international demand factors combined with a political decision to return to pre-war parity, a decision which, given the contemporary understanding of monetary policy, was a perhaps rational one. The section then shows that the first decades of the twentieth century saw a radical change in the business model of incumbent financial institutions, and the emergence of new, cooperatively-owned ones. Whilst the former suffered severely during the 1920s debt-deflation, unwound their positions and reversed their business models, the fate of the new institutions was more complex: although there was significant heterogeneity among both types of financial institution, rural cooperatives performed very well overall, whilst urban ones did not.

The historiographical context section shows that the history writing of the 1920s crisis is divided naturally into two streams: macroeconomic and microeconomic. Whilst the former is concerned with the overall performance of the Dutch banking sector, seeks particular explanations for the universal banking element within this sector and provides a grand narrative on the debt-deflation, the latter stream amounts to an eclectic mixture of business histories of (failed) banks. There is currently no work which combines insights from both approaches; the conclusions on debt-deflation from the first stream are nowhere applied to the institutional and organisational analysis of the second, nor *vice versa*. This is potentially problematic, since they offer different conclusions about the causes and consequences of the crisis for cooperatively owned

banks. Is their performance explained by factors outside their immediate control, as the macroeconomic literature would imply, or was their fate the consequence of factors – social, organisational and institutional – over which banks themselves had some influence?

The economics context section first looks in some detail at the way in which the debt-deflation explanation works and what factors are claimed to amplify and mitigate its effects. Then, it reviews different explanations for the causes of past financial crises, focusing specifically on the powerful schemas offered by debt-deflation combined with explanations rooted in information economics. It concludes that the industrial organisation of banking systems must also be carefully considered before the debt-deflation phenomenon can be considered a sufficient explanation for financial collapse. The section then shows how studies in economics have explored the world of microfinance, both present and past, and makes it clear that thus far they have focused on a particularly narrow set of institutional explanations for their success and failure. Finally, the section looks at the power of social norms to offer an additional, potentially useful, way of analysing the behaviour of Dutch cooperative banks in the crisis, one which concerns the very nature of the societies which banks serve.

And so, given the context provided by this chapter, one way of integrating the different bodies of work and applying them to the Dutch case goes something like this: The Dutch crisis was caused by factors exogenous to the cooperative banking sector – the co-occurrence of wide-scale over-indebtedness and prolonged price deflation. Its effects, however, may have been exacerbated or mitigated by a variety of different social, organisational and institutional factors – attributes of individual banks, but also of the cooperative industry as a whole. The identity, nature and importance of these structural variables in explaining cooperatives' fate, then, is the subject of this thesis.

Chapter 3

Religion and risk

3.1 Introduction

Banking textbooks traditionally define four sources for the risk which affects banks' balance sheets: (1) credit risks; (2) liquidity risks; (3) interest rate risks; and (4) market risks (Kohn 2004, Freixas & Rochet 2008, Hull 2010). The first are due to uncertainties regarding business outcomes and the value of collateral. The second are caused by differences in the marketability of claims issued and claims held. The third result from the variability of interest rates combined with differences in the maturity of banks' assets. Finally, the fourth is the risk that the value of a bank's portfolio of marketable assets or liabilities will decline due to (exogenously determined) market conditions. A bank's exposure to these four types of risk is determined by a host of different factors, including not only its customer profile, bankers' expectations of future economic performance, the level of interbank competition and banking regulations, but also bankers' willingness to take on risks – their level of risk aversion.[20]

This chapter investigates the ways in which the religion of bankers and their customers – and the sociopolitical institutions which they belong to – affect all four types of bank risk. It examines a class of religious banks which operated in a religiously mixed country during a historical period when religion played an important role in that country's economy and society. Specifically, this chapter investigates how religion affected bank managers' risk-taking behaviour in cooperatively-owned rural banks operating in the Kingdom of the Netherlands in the early twentieth century. In

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[20]Risk aversion can be defined as the reluctance of an economic actor to accept a bargain with an uncertain payoff rather than another bargain with a more certain, but possibly lower, expected payoff. More broadly put, it describes the behaviour of economic actors when exposed to uncertainty.

answering this question, this chapter also helps to identify why rural cooperative banks survived the Dutch financial crisis of the early 1920s in a better condition than most other types of bank. This chapter does not, however, attempt to determine the optimal level of risk-taking in banking; its more modest goal is to provide a first empirical assessment of the religion-risk relationship in banking in what may be considered a quasi-natural experiment.

Early twentieth century Dutch rural banking markets provide unique histories with which to investigate the effect of religion on risk, from two points of view: (1) different religious groups operated in the Netherlands during the period under investigation, each with a different involvement in business and enterprise; and (2) the performance of Dutch cooperative banks during the agricultural depression of the 1920s differed across the sector. Given this background, one possibility is that there were differences in the levels and types of risks taken by banks of different denominations. The Dutch case permits the isolation of religious factors from other region-specific, economic, factors which affected the crisis-period performance of banks of all denominations operating in the same market, regardless of religious affiliation or minority position, and so this paper is able to assess this working hypothesis against alternative explanations.

The question addressed by this chapter is important for four reasons: (1) Rabobank, today the largest bank operating in the Netherlands and the safest bank in the world not owned by a government,[21] is the direct descendant of the early twentieth century rural, religious, cooperative banking movement; (2) histories of Dutch cooperative businesses are always about a single organisation or geographic area, and are largely devoid of conclusions regarding the generality of their findings and their wider economic and historical importance; (3) the business history writing on Dutch cooperative banks lacks an economic analysis of its overt religiosity, a subject which is perhaps viewed today as an embarrassing historical curiosity; and (4) there is an absence of historical work on the economic consequences of religion at a microeconomic business level of analysis and hence the underlying causal processes which, in recent macroeconomic studies in this field, seem to be little understood.

Studies of the determinants of risk in banking are numerous. To the author's knowledge, however, economic studies of risk-taking and religion in banking are not. This is because religiously-motivated financial institutions are not the norm today, at

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[21]'World's 50 safest banks 2009', *Global Finance Magazine*, http://www.gfmag.com/tools/best-banks/2341-worlds-50-safest-banks-2009.html (last accessed August 2010).

least not in the developed world. But this was not always the case: 18 percent of the Dutch population in 1919 had a savings account with a (*de facto* or *de jure*) religiously-affiliated rural bank,[22] with the amount they saved totalling 260 million guilders, or 1.4 billion euros in today's money,[23] over four percent of all Dutch bank-held assets at the time (Van Zanden 1997).

This study addresses its religion-risk question in two stages. Stage one is a quantitative assessment of risk, using bank-level balance sheet data concerning the entire population of network-affiliated independent rural cooperative banks operating in the Netherlands in the early 1920s – 1,144 banks in all. It measures the impact of socioreligious, institutional and geographic factors on banks' leverage and savings ratios, measures of bank risk. This methodology does not reveal what happens *inside* the firm, however. Instead it provides a "first sieve" for risk determinants, which is necessary in generating specific historical hypotheses for stage two. Stage two of this study, then, uses a different kind of evidence – a kind more familiar to business historians – from looking inside specific firms and finding out how the measured effects work. It takes a comparative history approach to enable general conclusions to be drawn about the Dutch case, conclusions beyond those which can be made from "idiosyncratic" case studies.

One possible interpretation of the Parable of the Talents, the New Testament parable quoted at the start of this thesis (p. iv), is that Christians should look after the assets (talents) entrusted to their care and should feel compelled to take calculated risks with them to benefit themselves and others by investing them usefully for a return, in the service of their god (Hultgren 2002). The results of the present enquiry suggest that the modes of practical adherence to this parable differed greatly across the cooperative banking sector. The quantitative enquiry finds that banks servicing religious minority groups – Catholic ones in particular – operated less risky portfolios, unwilling to increase their leverage to levels typical of banks serving religious majorities, despite being in certain respects technically more able to do so. The comparative case studies are consistent with these findings and show how minority groups made use of superior screening, monitoring and enforcement mechanisms derived from repeated interaction combined with strong within-group societal norms. The result is not that religion

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[22]Own calculation using the annual reports of the three principal cooperative networks combined with the 1920 census.

[23]Inflation-adjusted using the International Institute of Social History's Value of the Guilder calculator (available at http://www.iisg.nl/hpw/calculate.php).

affected risk directly through a single special "religion characteristic" such as Weber's
Protestant work ethic (1930 [2003]), but is instead that religion affected risk through a
mixture of different information- and enforcement-related qualities of religious group
formation. This chapter points to a Buchanan (1965) theory of club goods to explain
the different risk-taking behaviour of religious minority groups, whatever their actual
denomination.

This chapter proceeds as follows. Section 3.2 reviews the literature underpinning
this chapter's research questions. Section 3.3 then provides the necessary historical
context in which to understand the structure and performance of the Dutch cooperative
banking sector. Section 3.4 sets out the testable implications for the religion-risk
relationship and describes in more detail the quantitative (cliometric) and qualitative
(comparative case studies) empirical strategy employed. Section 3.5 is a quantitative
assessment of the determinants of risk in the entire cooperative banking sector over the
period of the 1920s crisis. Section 3.6 follows, presenting the religion-risk question as
shown in business history archival sources. Finally, Section 3.7 concludes. Appendices
estimating the population density using Geographic Information Systems, discussing
a difference-in-differences analysis of the crisis, describing the economic geographies of
the case study regions and reporting detailed descriptions of the case studies themselves
are included at the end of this chapter.

3.2   Microfinance, norms and religious clubs

The motivation for the present study of bank risk is found in Bernanke (1983)
and Calomiris & Mason (2003), among others, who emphasise how the risk-taking
behaviour of bankers affects economic and financial stability. Empirical studies have
looked at the relationship between bank risk-taking in owner- versus manager-
controlled banks (Saunders et al. 1990), the relationship between competition, deposit
insurance and risk-taking (Keeley 1990, Boyd & De Nicolò 2005), and that between
bank governance structures, banking regulation and risk-taking (Laeven & Levine
2009). Economic studies of risk-taking and religion in banking are few. The only works
to date which look at this question (implicitly) are studies of Islamic banking, examples
of which are Iqbal & Llewellyn (2002) and Khan (2010). In addition to the above, this
chapter relates most directly to the literature on microfinance institutions, historical
ones in particular. Also relevant is the literature on the economics of religion, on

club goods, on trust and norms, and on the *verzuiling*, the religious segregation of
Dutch business and society. Each is discussed in turn, focusing on their usefulness for
understanding the present study of Dutch cooperative banks, and on the ways in which
the present study contributes to these works.

Microfinance business has received much recent attention from both policymakers
and academics, notably since the successes of the Grameen Bank (Yunus & Jolis 2003).
The existing study of microfinance institutions focuses on the methods used in this
sector to make small-scale banking work (or fail to work), despite (or because of)
disadvantages regarding scale and scope. The principal factors shown to influence
microfinance success are screening, peer monitoring and social sanctions (see in
particular Stiglitz 1990, Banerjee et al. 1994, Besley & Coate 1995, Ghatak & Guinnane
1999, Ahlin & Townsend 2007*b*). However, the literature largely fails to examine
institutional arrangements other than those relating to joint liability loan contracts,
formal or otherwise. The Dutch case of early rural microfinance provides a quasi-
natural experimental setting in which to explore the efficacy of different ideas on the
functioning of these arrangements, as well as alternative explanations for them.

The most appropriate historical comparisons for the present context are those which
look at the (late) adoption and adaptation (and often failure) of German-designed
credit cooperatives in countries other than Germany.[24] Guinnane (1994) argues that
the principal reason why Raiffeisen institutions did not work in Ireland was the
difference in social sanctions available in group lending; Irish people seemed reluctant to
force their neighbours to repay loans. Guinnane & Henriksen (1998) look at the failure
of Danish cooperatives around the same time, and argue that they were unsuccessful
due to strong competition from incumbent savings banks. Van Molle (2002) recounts
how Belgium's *spaar- en leengilden* took far more deposits than they could usefully
lend out, and instead participated in risky non-agricultural business ventures within
Belgium's Catholic community, ultimately with disastrous consequences. Unlike the
Irish, Danish and Belgian cases, Italy's attempt to introduce Raiffeisen cooperatives
was highly successful. Galassi (1996) puts this down to three factors: (1) effective *ex
ante* screening of members' type; (2) internal monitoring of customers in order to
reduce moral hazard problems; and (3) the ability to operate with lower overheads

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[24]These comparisons are discussed in more detail in Section 2.3.3, p.44; the discussion which follows
is a brief summary thereof.

than competitors.[25]

Economic enquiry into the consequences of religion has a long history and has recently seen a revival. Weber (1930 [2003]) argues that it was the peculiar "work ethic", or norms, associated with the Protestant interpretation of the Christian faith that led to industrialisation, growth and development. This thesis has long been the subject of criticism (notably, Tawney 1926, Samuelsson 1961, Cantoni 2010). But Weber-inspired economic enquiry is not void. Denominational differences have been linked with macroeconomic outcomes through causal chains other than a work ethic (e.g. La Porta et al. 1997, Guiso et al. 2004, Ekelund et al. 2006, Becker & Woessmann 2009, Arruñada 2010). However, the work of Ostrom (especially 1990, 2003) shows that the concept of norms remains useful for understanding economic behaviour.[26] Employing controlled laboratory experiments, Ostrom describes how a great number of alternative strategies are observed within any given population, from full cooperation to free riding. Whilst a more standard Williamson (1993) approach to explaining economic interaction sees trust only in the revelation of an economic actor's innate risk type (good or bad) through the flow of information in repeated interaction, Ostrom adds a "trust variable" which lies in the beholder and can depend on economic actors' (exogenously-determined) societal norms.[27]

A second strand in the literature on the economics of religion links religion and religiosity with microeconomic rather than macroeconomic performance, a popularly cited review of which is found in Iannaccone (1998). Particularly interesting for the Dutch context is Renneboog & Spaenjers (2009), who examine religious attitudes towards financial decision-making in the Netherlands today and find that religious households: (1) care more about saving; (2) are more risk averse; and (3) consider

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[25]Galassi speculates that the most important of these three was the first, which he posits was achieved through cultural and social variables; *casse rurali* had stringent membership selection criteria which resulted in a customer base with many common features, possibly including their attitudes towards risk. For example, the Cassa Rurale di Treviglio (near Milan) demanded that members 'shall be good Christians, [...]; shall neither drink to excess, nor abuse their family members; shall not swear or curse; [...]' (Galassi 1996, p.22).

[26]Norms can be understood here as non-outcome-oriented injunctions to act or to abstain from acting, sustained by the sanctions which others apply to norm violators, where sanctions can be as simple as social contempt.

[27]Elster (1989) argues that norms could be endogenous to society, chosen by individuals out of pure self-interest, for instance to avoid social sanctions. However, he finds such an explanation wanting and therefore adds psychological factors, such as emotional responses, into his explanation. Whatever the determinants of societal norms, they are treated here as being sufficiently removed from the cooperative banking sector to ignore their precise derivation; Dutch norms of behaviour were likely set well in advance of the period under investigation in this chapter, by the *verzuiling* phenomenon described below, and are hence treated as exogenous.

themselves more trusting. However, the nature of the causal chain which links religion and economic outcomes is difficult to ascertain from survey-based enquiry alone. Attempts have therefore been made to identify causation using empirically-testable models. One approach has been to model congregations as mutual-benefit organisations 'dedicated to the collective production of worship services, religious instruction, social activities, and other quasi-public "club goods"' (Iannaccone 1998, p. 1482). Club goods have been used with great effect to explain religious sects, public utilities, international organisations, military alliances and even gated communities (Iannaccone 1992, Sandler & Tschirhart 1997, Manzi & Smith-Bowers 2005). Buchanan (1965), who originally coined the term, describes club goods as differing from pure public goods in that they are excludable (it is possible to prevent access to non-paying consumers), and differ from pure private goods in that they are non-rivalrous (consumption by one consumer does not prevent simultaneous consumption by others). In the context of religious groups, the positive externalities associated with (mass) religious participation increase the utility of all members (i.e. non-rivalrous), whilst high-cost behavioural standards facilitate screening and monitoring and minimise free-riding (i.e. excludable).

Club good theory has proved to be a popular and successful way of understanding the structure and behaviour of religious groups. Three papers in this literature which are the most directly relevant to the research question addressed in this chapter are discussed here. In a theoretical paper, Zaleski & Zech (1994) posit that an optimal congregation size may exist, beyond which monitoring costs prove too high, thus many small religious clubs (denominations/sects) can exist side-by-side. He argues that differences in club size may be explained by differences in the externalities of religious worship. Berman (2000) employs a club good model to explain the purpose of costly religious rituals. He argues that ultra-Orthodox Jews choose high-cost religious worship over work because the externalities of worship (mutual insurance) outweigh any disincentives (prohibitions which tax real wages).[28] Chen (2010) exploits the differential impact on households of the 1997 Indonesian financial crisis to ask whether intensity of religious worship is induced by economic distress. He calculates that households which

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[28]Richardson (2011), however, argues that Berman's analysis contains a strong assumption in that his model has individuals voluntarily choosing to join sects. Richardson argues the contrary, that membership is instead largely involuntary; new members are simply born into ultra-Orthodoxy. Exit costs (financial and social) rather than entry costs are therefore important. Abramitzky (2011) makes a similar point for the case of Israeli *kibbutzim*.

suffered more economic distress significantly increased Koran study, whilst those which suffered less distress reduced such study. He then shows that households which turned to the Koran were much less likely to require alms or credit. He concludes that Koran study groups provided club goods in the form of social insurance and consumption smoothing.

The way in which religion has recently proved popular in business history journals is owing to the concept of "social capital"; Hansen & Hansen (2008), for example, argue that interwar business bankruptcies were lower in areas in the US with higher churchgoing populations because of the improved social capital brought by communal worship. Putnam (2000, p.19) defines social capital in terms of 'social networks and the norms of reciprocity that arise from them'. However, Hansen & Hansen appear to use social capital in the somewhat vaguer sense in which Coleman (1990) uses it, as "everything else" that is important in economic interaction, and hence their contribution to business history is not well defined; church membership could equally plausibly be the result of something other than social capital.

The work of Greif (e.g. 1993, 1994) has been seen by many as an application of the concept of social capital to the field of economic history (see, e.g., Edwards & Ogilvie 2008). However, it is not: he uses game-theoretical models to show how groups of eleventh-century traders belonging to tight-knit social groups were able to successfully employ overseas agents without recourse to a legal system. The historical evidence used suggests that repeated interaction combined with social punishment – easily enforced thanks to a common culture within their pan-Maghreb minority community – was sufficient to ensure successful economic interaction over long distances. Social capital-based explanations do not enter into his explanations.

The use of concepts such as trust and social capital, although increasingly prominent in the social sciences, is arguably unnecessary and creates confusion rather than clarity in thinking, a point argued to great effect in Guinnane (2005). What is it about social networks that is important? Greif does not rely on social capital in his work; he is instead able to specify exactly what is happening in terms of more precise, informative, economic terminology. The argument goes that the same should be true of other scholarship. In the context of the questions posed by the present study, a breakdown of the role of religion as a non-rivalrous but excludable service, the size and shape of which may be determined exogenously by societal norms, and the successful sustained enforcement of which is ensured through repeated interaction with screening

and monitoring and social punishment, provides a more precise and analytically more useful framework in which to analyse the history of Dutch cooperative finance.

The Netherlands has had a mixed religious make-up since the Reformation (Knippenberg 1992). By the late nineteenth century, Dutch citizens identified themselves strongly with a particular religious denomination, the main ones being Roman Catholicism, and the liberal *hervormde* (Dutch Reformed) or the orthodox *gereformeerde* (literally "re-reformed") forms of Calvinism. Dutch enterprise and society became highly segregated along religious lines; the different Christian denominations – in addition to socialist and neutral or secular groups – developed sophisticated parallel subcultures (Van Eijnatten & Van Lieburg 2006). Each had its own schools, political parties, newspapers, trade unions, scientific societies, music bands, sports clubs, youth organisations, hospitals, charities and banks. This phenomenon, known as the *verzuiling* (pillarisation), reached its zenith in the interwar period, but persists even to this day in politics and education provision, for example. In short, the *verzuiling* can be understood as a societal norm to exclusively interact – politically, socially and economically – within the religious group that an individual is born into. Figure 3.1 depicts the denominational allegiance of the Dutch at the time of the 1920 census. Note that the populous west of the country was religiously mixed, whilst the south and north are more homogeneously Catholic and Protestant.

The *verzuiling* phenomenon was first analysed scientifically by Kruijt (e.g. 1974) and by Lijphart (1975 in particular). Kruijt distinguishes *zuilen* (pillars) from social classes or castes because they: (1) included a non-religious *levensbeschouwing* (way of life and view on society); and (2) formed in a society which was otherwise ethnically homogenous. Meanwhile, Lijphart argues that *zuilen* came about as the consequence of a political compromise made by the country's social elites to divide power between themselves. Stuurman (1983) argues that the *verzuiling* was part of a wider political struggle for minority rights, in particular those of Catholics. He posits that the two necessary conditions for the phenomenon to work successfully were: (1) the presence of multiple religious denominations living side-by-side; and (2) a high level of economic prosperity. Recent revisions are found in De Rooy (1995), who uses different historical cases to argue that religiously separate identities were for most Dutch citizens more important in daily life than either economic or political concerns, and Luykx (1996), who argues that the phenomenon was Catholic-led, but that it was a form of social control by Catholic elites over the working classes rather than a reaction to any

Figure 3.1: Religious affiliation of the Dutch population, as a percentage of local population, per *gemeente*, 1920

(a) Percentage of census-declared Catholics
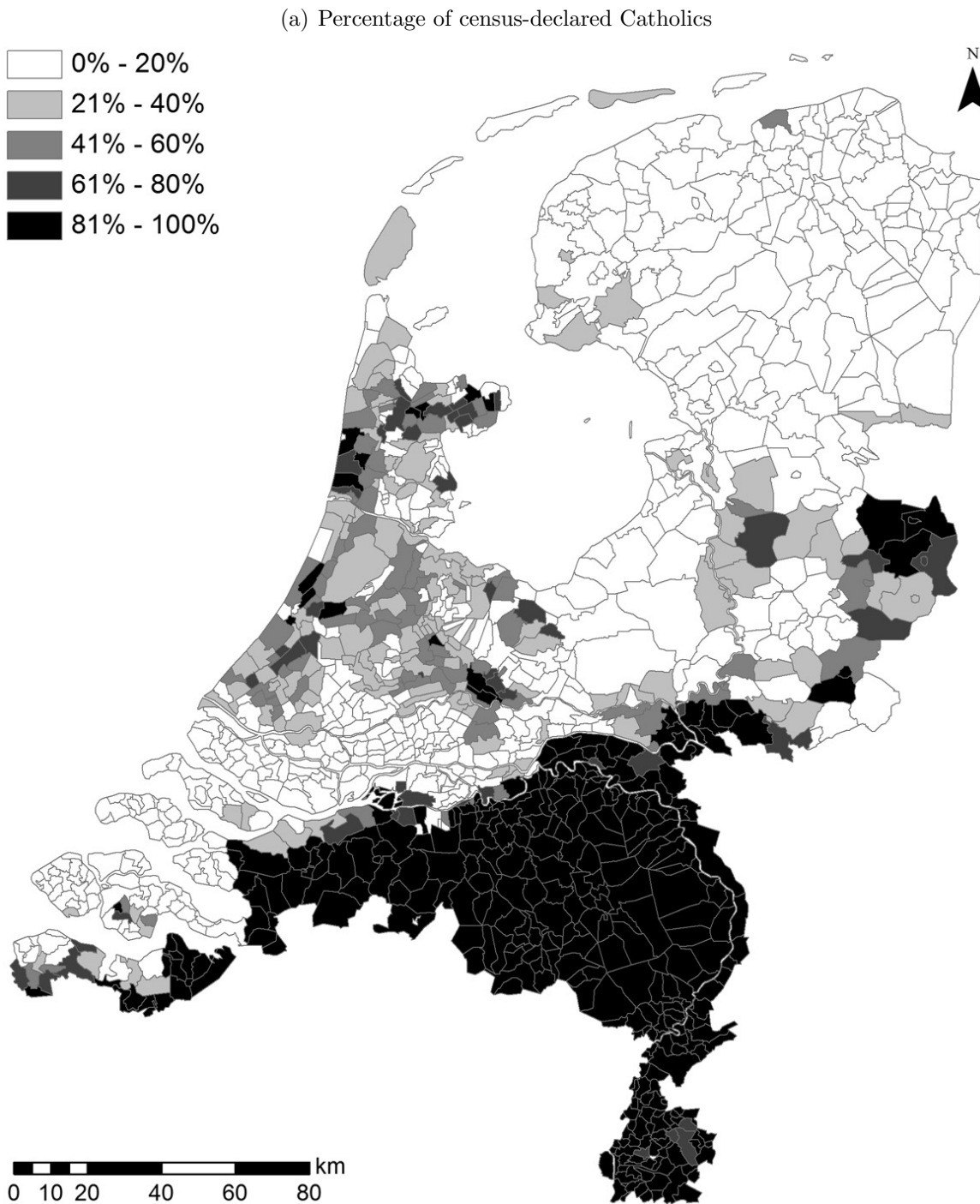
Notes: Shading of the percentage of a *gemeente* (municipality) that is Catholic is classified into equal intervals, in five categories.

Sources: Own calculation using the 1920 census and NLKAART.

(b) Percentage of census-declared Protestants (all denominations)

Notes: Shading iof the percentage of a *gemeente* (municipality) that is Protestant is classified into equal intervals, in five categories.

Sources: Own calculation using the 1920 census and NLKAART.

discrimination against this group.

Whatever the cause of the *verzuiling*, measuring its tangible economic consequences for business organisation and performance is an important endeavour in itself, and one which is of major interest to Arnoldus (2002) and Davids (2006). The latter looks at the day-to-day decision-making process of Dutch Protestant business leaders in the nineteenth century, but fails to make a similar analysis for Catholic or other business leaders. Arnoldus, in contrast, makes direct comparisons on succession strategies, firm financing and marketing relations between liberal and orthodox Protestant and Jewish businesses. She argues that the importance of (familial) social networks for arranging these business attributes was greatest for firms aligned to minority groups, but that, overall, firms' embeddedness within their regional economy and the location of their market were most important for maintaining stable business networks.

The effects of the *verzuiling* on rural finance have yet to be studied systematically. A reading of Jonker (1988*a,b*) suggests that many rural cooperative banks in the Catholic south were established by religious leaders for religious rather than economic reasons. Parts of Sluyterman et al. (1998) look at the influence of the *verzuiling* on the original choice to have multiple rather than a single cooperative clearinghouse network, but does not investigate decision-making at the level of local cooperative banks. Amateur business histories have been written on cooperatives which worked in specific localities where religious segregation was particularly prominent (see in particular Rouwenhorst et al. 1998 and Vercauteren et al. 2004). Additionally, Brusse has written a number of academic histories of religiously-split rural areas (e.g. 2002, 2008) which also cover the histories of different banks in these areas. However, all these studies fail to ask the religion-risk question explicitly, fail to frame their narrative as an economic inquiry and do not relate their findings to the *verzuiling* literature very broadly. Wider conclusions regarding the effect of religion on cooperative banking in the Netherlands as a whole are difficult to draw from these studies, as are answers to economic questions regarding the effect of religion on risk-taking behaviour.

3.3   Boerenleenbanken in their historical context

Data concerning the Dutch market for small-scale rural savings in the early twentieth century offer more or less unique opportunities for the study of religion and risk in

Figure 3.2: Geographic location of *boerenleenbanken*, by network affiliation, 1919
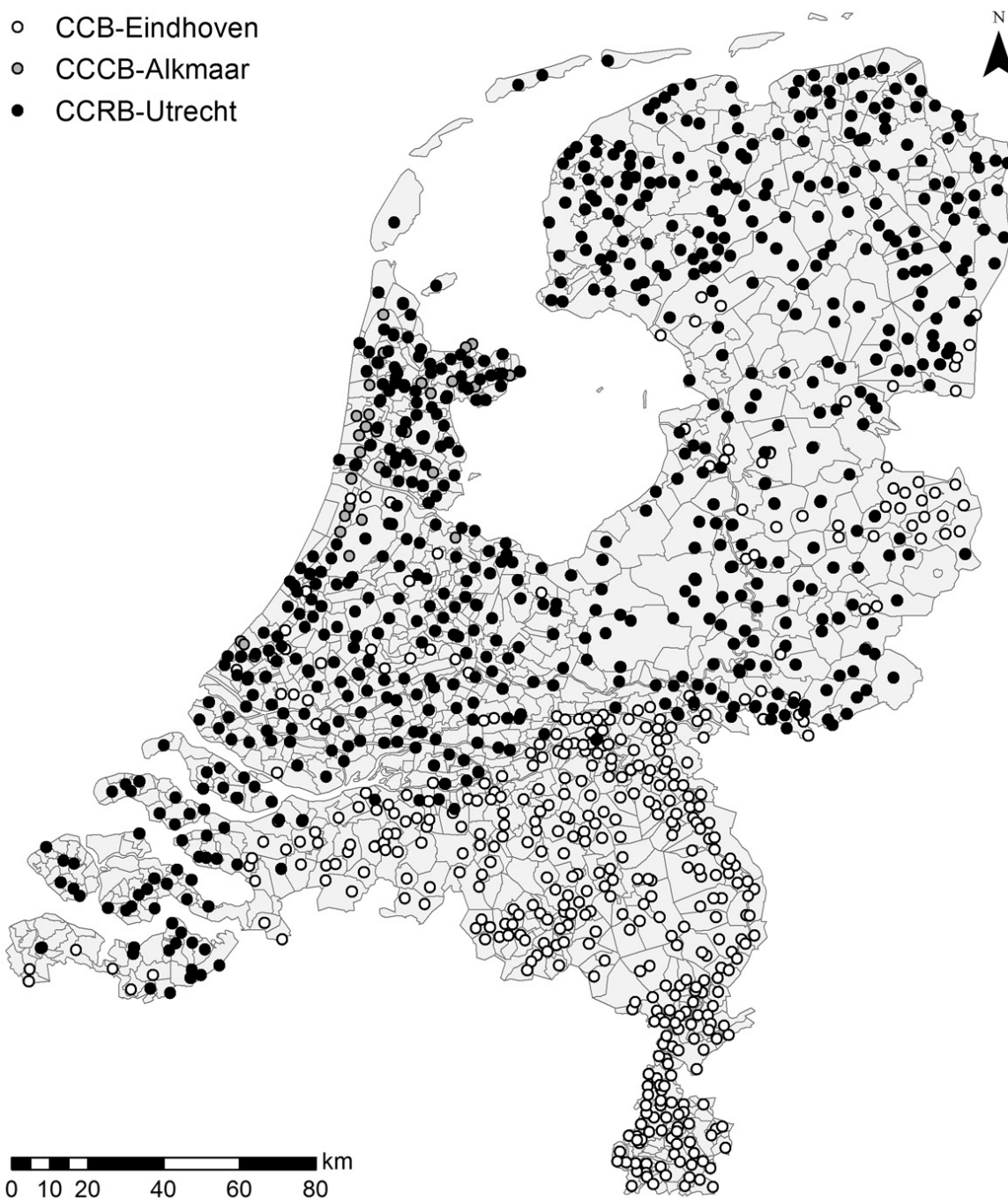
Notes: Each point represents a different bank. Political boundaries pertain to those prevailing at the time of the 1920 census.

Sources: TOP250namen, NLKAART, and the annual reports of the three Raiffeisen networks.

banking, due to the country's social, political and economic segregation with its basis in religious affiliation. The Dutch case is also interesting in that a financial crisis occurred during the period under scrutiny here, a crisis in which different types of bank had different survival chances, but in which cooperatively-owned rural banks performed well overall. This section provides the historical context necessary to understand the structure and performance of the Dutch rural cooperative banks. It discusses differences in their key institutional attributes and business objectives and outlines their performance during the 1920s crisis period.

3.3.1   Emergence, proliferation and institutional attributes

Small independent cooperative banks sprang up over all the rural areas of the Netherlands from the late 1890s (Jonker 1997). As was the case in Belgium, Denmark, Italy and Ireland – among others – the type of institution introduced to the Dutch countryside was inspired by the German Raiffeisen model first initiated some thirty years earlier in Rhenish Prussia by the mayor of Heddesdorf (now in Neuwied), Friedrich Wilhelm Raiffeisen. There are three explanations for their emergence in the Netherlands presented in the existing literature on the sector: (1) as a means of extending and consolidating the influence of (confessional) sociopolitical organisations across Dutch society (Jonker 1988*b*); (2) to meet untapped market demand for financial services from the unbanked and underbanked (Sluyterman et al. 1998); and (3) as an organisational response to agricultural depression and technological change (Bieleman 2008). These explanations are not mutually exclusive, however, and the exact reason probably varied by region.[29]

Whatever the reason for their emergence, the geographic penetration of these banks – which in Dutch were called *boerenleenbanken* or farmers' borrowing and/or lending banks – was almost universal by the end of the Great War, a war throughout which the Netherlands maintained political neutrality and in which Dutch farmers benefited greatly from trading with both belligerents (De Jong 2005). Figure 3.2 depicts the locations of all clearinghouse-affiliated cooperative rural microfinance institutions operating in the country in 1919. These networks were those of the Coöperatieve Centrale Boerenleenbank (CCB-Eindhoven), the Coöperatieve Christelijke Centrale Boerenleenbank (CCCB-Alkmaar) and the Coöperatieve Centrale Raiffeisen-Bank

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[29]Chapter 4 assesses the relative power of these explanations in some detail.

(CCRB-Utrecht). Locational growth in the sector was saturated by 1919, with 1,145 banks operating in approximately 70 percent of *gemeenten* (municipalities) nationwide.[30]

Many of the institutional attributes of the Netherlands' Raiffeisen banks mirrored those of their German cousins, which are described in detail in Guinnane (2001). Each bank was independent and theoretically operated in a narrowly-defined local market. Farmers who wished to borrow money from these institutions first had to seek membership and therefore stand liable for any future losses incurred by their peers, in theory up to an unlimited amount. Farmers who wished merely to deposit savings with a *boerenleenbank* were not obliged to join and thus stand liable. Banks were generally small operations: in 1919, each bank held an average of 194 thousand guilders of savings deposits and made 67 thousand guilders of loans to members.[31] Banks were managed part-time and gratis by their members and most had limited opening hours. They did not pay dividends to members, depositing any profits – which were tiny in any case – in their reserve funds.

Almost all banks belonged to one of three cooperative networks, the headquarters of which acted as their auditing authorities, clearinghouses and lenders-of-last-resort.[32] These central clearinghouses invested any excess savings lent by member banks in safe securities, such as municipal and government bonds, or railway shares. The biggest difference from the German setup was that cooperative networks were not principally regional but instead religious: Roman Catholic, or Protestant Calvinist (either strict *gereformeerd* or the more liberal *hervormd*). CCB-Eindhoven and CCCB-Alkmaar were Catholic-aligned; CCRB-Utrecht was (*de facto*) Protestant-aligned. Each may have had different attitudes towards business, the historical literature suggesting that Protestant groups favoured a clear separation between religious and commercial spheres, whilst Catholic groups pushed instead for more active involvement (Rasker 2004). Many villages had two banks in close proximity to one another, one for each

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[30]By comparing the Dutch government's official register of savings banks for 1919 with the annual reports of the three central clearinghouses for the same year, the author estimates that there were an additional 23 independent non-network affiliated *boerenleenbanken* in 1919. Furthermore, six members of the CCRB-Utrecht network are not counted, because these *boerenleenbanken* also functioned as agricultural purchasing cooperatives. Independent and bank-purchasing cooperatives are largely left outside the analysis of this chapter, for reasons of data availability.

[31]This is approximately one million and 360 thousand euros in today's money respectively.

[32]These headquarters are referred to as central banks in the existing literature, but are here referred to as central clearinghouses in order to avoid possible confusion with De Nederlandsche Bank, the Netherlands' *de facto* central bank.

denomination.

A further difference existed in the legal frameworks from which cooperators could choose to gain legal personality: (1) the *Wet van 1855*; or (2) the *Wet van 1876*.[33] The *Wet van 1855* was a general law governing associations (or meetings) of any type, permitted only completely unlimited liability for members and had few corporate governance rules or liability protection mechanisms for members. The *Wet van 1876* was specifically designed to govern organisations under cooperative ownership, imposed stricter rules on corporate governance, and provided members with increased protection in cases of bankruptcy. The ability of cooperators to do this was successfully tested in court in 1908 (Deking Dura 1913). Rommes (forthcoming, 2011) argues that the reasons for which many cooperators chose to adopt the older over the newer legislation were: (1) cost; and (2) religion. He calculates that the costs of establishing a *Wet van 1855* association were three fifths of those needed for a *Wet van 1876* cooperative and that qualified legal professionals were not required. However, he notes that these costs soon began to be subsidised by the government. Rommes then argues that Catholic organisations – apparently in fulfilment of a Papal encyclical concerning the 'rights and duties of capital and labour' (Pecci 1891) – saw *boerenleenbanken* not as organisations to further the financial interests of members *per se*, but rather to provide collective social improvements for the Catholic *zuil* (pillar). They felt that the *Wet van 1855* was the more expedient act for attaining this goal, due to its simplicity.

Boerenleenbanken were owned and operated by a (sub-)group of their customers. As such, their business objectives differed substantially from other types of financial institution. They made few profits and were indeed in principle non-profit making: an official communiqué in 1925 on the interest rate policy of cooperative banks belonging to the CCB-Eindhoven network makes this point explicitly.[34] Instead, the aim of these banks was the 'improvement of the farming and horticultural sector' by: (1) 'making loans available to members'; (2) 'placing deposits in interest-yielding safe investments'; and (3) 'the creation of a reserve fund' to be drawn upon in times of need.[35] These banks were effectively self-help societies which improved their own conditions by

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[33]See Chapter 5 for full references and a detailed discussion of the legal differences between these acts.

[34]'De rentepolitiek bij de plaatselijke banken', *Maandelijksche Mededelingen van de Coöperatieve Centrale Boerenleenbank*, No. 115, December 1925, p. 1163-1172.

[35]This is a translation of Article 1 of the founding statutes of the *boerenleenbank* in Baardwijk, Noord-Brabant (January 1904) and is typical of the sector.

recycling their depositors' savings into loans for members.[36] The best way in which *boerenleenbanken* could finance their lending business was through attracting deposits, from members and others. This was cheaper than borrowing from external sources, the primary one of which was their central clearinghouse. Clearinghouse loans came with unwanted extra scrutiny by auditors and were supposed to be only temporary in nature. Relying on internal funding was also safer, since a cooperative's members are unlikely to run on a bank which they co-own and for which they are therefore co-liable, whilst central clearinghouses could more easily call in their loans, for instance, if an emergency arose elsewhere in the network. Because *boerenleenbanken* had no (share) capital to speak of, the proportion of loans internally financed through deposits is therefore the appropriate measure of balance sheet leverage.

Banks were supervised by oversight committees which were also unpaid. In practice, however, much of the day-to-day decision-making process was in the hands of a (part time) paid cashier, from whose house the bank often operated. Larger loan requests were usually discussed jointly by the directors and supervisors, with the cashier in attendance. Banks in the CCRB-Utrecht network were advised that 25 to 30 percent of their deposits could be treated as long-term in nature, and that long-term loans to members should therefore not exceed 30 percent of their investment portfolios.[37] However, many banks apparently exceeded this ratio, or alternatively, had little loan business to speak of.[38]

3.3.2   Success and failure in the early 1920s

Between 1920 and 1924, and to a lesser degree even up to 1927, the Netherlands experienced a financial crisis which affected hundreds of banks and financial institutions of different types and in various locations. Their problems varied in the degree of seriousness and manifested themselves as depositor runs, share price crashes, bankruptcies and state interventions. The types of bank affected included large national joint stock public listed banks, smaller provincial banks, national and municipal savings houses and urban and agricultural cooperative banks. The story for each type of bank

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[36]Some cooperatives had the explicit additional aim of 'furthering the interests of God, the family and property' (Smits 1996, p. 56-57), something which is exploited in the quantitative assessment of bank risk in Section 3.5.

[37]This point is made in an article in the official newspaper of the CCRB-Utrecht network: 'Liquiditeit', *De Raiffeisen-Bode*, October 1924, p. 22-23.

[38]Chapter 4 discusses the heterogeneity in banks' balance sheet liquidity in more detail, also using spatial analysis.

appears to be distinct and the picture for many types of bank is understudied and remains opaque. This is the case with rural cooperatives in particular, which on the whole performed well and appear to have solved any serious problems privately thanks to the intervention of the two larger central clearinghouses, CCRB-Utrecht and CCB-Eindhoven.

The existing literature on the causes of the 1920s financial crisis is dominated by the work of Jonker (e.g. 1991, 1995, 1996*a*), the definitive restatement of which is found in Jonker & Van Zanden (1995) and Van Zanden (1997). It holds that the 1920s crisis was a result of banks' over-exuberance during the Great War and immediate post-war period. Large and sustained declines in aggregate demand and prices in the early 1920s – declines which were largely due to international factors, but arguably aggravated by (expectations of) the Dutch guilder's return to pre-war gold parity – put pressure on business and thus on the banking system which it used. In short, Dutch banks were over-exposed to the sectors of the economy which suffered most by the effects of debt-deflation *à la* Fisher (1933).

The Dutch state's bank of issue and monetary policy authority was De Nederlandsche Bank (DNB), a privately-owned exchange-listed bank with no formal regulatory powers. In his official history of DNB, De Vries (1989) argues that the central bank was 'sucked into the abyss of lack of experience' during the crisis period, rescuing some banks but allowing others to fail when it began to worry that it had overstreached itself. DNB served the purpose of *de facto* lender-of-last-resort through its *disconto* facility, its commercial bill rediscounting business. This facility was unpopular, however, its long-term use being seen by bankers as a sign of weakness. Added to this, it did not grant all cooperatives full use, permitting the CCRB-Utrecht clearinghouse access to the *disconto* facility from 1906 as a 'test', and allowing the CCCB-Alkmaar access in 1909, when it had clarified its legal position and raised sufficient savings deposits (DNB: 14.528), but never permitting CCB-Eindhoven any such access in the early twentieth century, on the grounds that it did not have sufficient capital reserves (DNB: 14.415), despite its reserves being superior to those of CCCB-Alkmaar. One possible reason for this exclusion was that DNB discriminated against Catholics, something which at least the internal records of the clearinghouse repeatedly suggest to have been true (RaboNed: E85). But given that CCCB-Alkmaar, a Catholic bank, was permitted access, this complaint seems too simplistic.

The biggest known casualty of the crisis in the rural cooperative sector was the

central clearinghouse of the CCCB-Alkmaar network, which was liquidated by DNB in 1924, following bankruptcy. This bank was overtly Catholic in its setup, having been established in 1904 precisely to service Catholic cooperatives located in the diocese of Haarlem, i.e. the provinces of Holland. It probably failed because its lack of scale and scope meant that it was insufficiently diversified to deal with the deflationary pressures of the early 1920s. However, at present little is known about this central clearinghouse and its member local banks. Sluyterman et al. (1998), the most authoritative business history of the sector to date, has a strong survivorship bias and hardly mentions this third clearinghouse. The only study to date of the fate of the CCCB-Alkmaar clearinghouse is Borst (2004), an unpublished Master's dissertation. Borst argues that this bank failed due to: (1) bad investments in securities; (2) write-offs following the failure of a banking subsidiary based in Leiden; (3) the failure of an agricultural purchasing cooperative which it financed; (4) in-fighting between the management of member local banks; (5) constant managerial staff changes; and (6) possible competitive pressures. Whatever the reason, member banks suffered great losses and were forced to join alternative networks. Interestingly, a significant minority of ex-CCCB-Alkmaar banks chose to join CCRB-Utrecht rather than CCB-Eindhoven, despite the former's *de facto* allegiance to the Protestant *zuil*. Having apparently learnt from their mistake of joining a small, weak, network purely on religious grounds, this group chose the largest and strongest network in the provinces of Holland over CCB-Eindhoven, which Figure 3.2 shows had far fewer members in the north of the country, and was still refused access to the *disconto*.

Other than the failure of CCCB-Alkmaar, no other difficulties in the rural cooperative sector show up in DNB (2000), a historical database of banks operating in the Netherlands compiled by the Dutch central bank. The list excludes events at local *boerenleenbanken*, however, probably because the sector was judged to be too small (and unimportant) to compile statistics for. The (absolute) failure of these banks is in any case difficult to detect; even if such data had been compiled, potential (large) losses at any individual local *boerenleenbank* could have been masked by (covert) rescues by the two surviving clearinghouses, e.g. by extending existing loans beyond their planned maturity. This last point is alluded to in a 1925 communiqué to members of the CCRB-Utrecht network, which warns the managers of local banks that recent inspections had identified six (new) issues as sources of risk for banks: (1) unverifiable or risky lending; (2) the granting of loans without a guarantee, or with insufficient guarantee;

(3) speculations with foreign currency or securities; (4) participation in large business ventures, which have the effect of aligning the interest of the bank too closely to that of the venture; (5) the unnecessary purchase of property by banks; and (6) unnecessary delays in assessing and writing off bad loans.[39] The empirical analysis of this chapter is part of a first attempt to identify the features of the rural cooperative banking sector which incentivised bank managers to make the kind of decision which caused these problems, using cliometric analysis as a first filter, and then using comparative business histories to study (changes in) the decision-making process *inside* the firm.

3.4   Testable implications and empirical strategy

This section outlines the differences between the four types of risk faced by banks. It then combines the literature review and historical context of the previous sections to form a number of testable working hypotheses on the possible relationship between religion and these different types of bank risk. Finally, this section outlines the quantitative and qualitative methods used in the analysis which follows.

(1) A bank's credit risks are due to uncertainties regarding business outcomes. Also known as default risks, they describe the ability of borrowers to repay debt. The riskiness of a loan is affected by the existence and quality of collateral, compensating balances and endorsements (e.g. personal guarantees). Credit market characteristics, including information sharing between banks and bankruptcy procedures, are also important determinants (Freixas & Rochet 2008). As Raiffeisen-style banks were unlimited liability cooperatives, all their members were financially responsible in the event of failure and hence membership criteria may also have been an important consideration.

(2) A bank's liquidity risks are due to differences between the marketability of claims issued and that of claims held. They describe the ability of a bank to meet (unexpected) withdrawal demand. Simply holding cash is an expensive unattractive way to meet the liquidity needs of depositors. The degree to which the cashiers and managers of *boerenleenbanken* had immediate access to sufficient cash whilst also generating necessary returns is an important avenue of enquiry.

(3) Interest rate risks are the risks that fluctuations in interest rates will adversely affect the value of banks' assets and liabilities. Kohn (2004) describes two ways in

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[39]'Redactioneel Gedeelte: De Centrale Bank' *De Raiffeisen-Bode*, No. 11, May 1925, pp. 73-74.

which banks can avoid such risks: (1) by matching the maturity of assets with the maturity of this funding; and (2) by matching the commitment or repricing period of loans. Exploring the exact terms of loans and deposit accounts offered by different cooperatives helps to build up a better idea of possible exposure to this type of risk.

(4) Market risks refer to the risks that the value of banks' portfolios of assets and/or liabilities will decline due to market risk factors, such as prevailing interest rates and commodity prices. Freixas & Rochet (2008) discuss how portfolio theory is used to characterise a bank manager's investment strategy as a compositional choice between asset classes with different levels of expected risk and return. Regulation aside, the standard model which they summarise holds that the most important determinant of the relative proportions of different portfolio constituents is the level of risk aversion.

Given the material presented in the previous sections, what are the specific expectations on the nature, size and direction of the religion-risk (aversion) relationship in the Dutch case? A club good theory explanation could suggest that overtly religious banks, whilst being technically more able to take on risks thanks to their improved ability to monitor and enforce, may be less willing to do so because their membership consists of individuals with closely aligned risk (aversion) characteristics, thanks to improved screening and similar social norms; free riding or Akerlof-style (1970) markets for lemons are avoided. Hence, the size of a religious community served by a bank should be positively associated with risk; banks servicing small minority groups would operate low risk portfolios, whilst those belonging to larger minorities – or indeed the majority religion – would be more risky in their decision-making; banks for majorities could not escape Akerlof.

In sum, the working hypothesis is that banks servicing religious minorities are exposed to fewer risks because: (1) the size of their congregation is such that religious norms and social sanctions – more specifically the fact that interaction is repeated and religious segregation makes group-exit difficult – reduce the cost of screening and monitoring below the forgone benefits of flouting the socioreligious standards of behaviour incurred through participation; (2) the local community can afford to operate its own exclusive bank, in spite of any costs attributable to its lack of scale and scope; and (3) they have strict membership criteria – used to differentiate their banks from those of the religious majority – which facilitate group formation by risk type, avoiding lemons, and they use insider monitors who are informationally well equipped to enforce repayment.

Given the literature inspired by Weber and the discussion of the Dutch *verzuiling*, one alternative hypothesis is that differences in risk-taking behaviour existed between the banks associated with the different denominations. Given the economic geography of the regions studied, another alternative hypothesis is that any differences in banks' risk-taking behaviour are explained by differences in their customers' economic activities. For this second alternative hypothesis, religious matters are relegated to a lower division of importance.

The cliometric assessment of Section 3.5 cannot conclusively answer the religion-risk question because: (1) the method indicates correlation rather than causation, due to potential endogeneity issues; and (2) the sources used do not reveal anything about what happens *inside* the firm, only their outwardly-observable (institutional) characteristics. The intuition behind some of the estimated effects is therefore better understood only after a closer examination of the business histories of the banks involved. Instead, the next section seeks to specify more precisely the guiding hypothesis for the qualitative business histories which follow later.

Historical research does not permit controlled replicable laboratory experiments. The alternative, used in Section 3.6, is the comparative method, or natural experimentation. This approach consists of comparing 'different systems that are similar in many aspects but that differ with respect to the factors whose influence one wishes to study' (Diamond & Robinson 2010, p.2). Two parallel comparisons are made using qualitative data concerning the day-to-day operations of banks serving two distinct geographic regions, the rural environs of the city of The Hague on the west coast and the country town of Waalwijk in the Rhine river delta in the south of the country. In addition to the fact that good business records still exist for the banks serving these two regions, they are chosen because they differed by agricultural specialisation, but were similar in being inhabited by a mixture of different Christian denominations. In this way, the influence of these other factors versus denominational and minority status religious ones can be gauged.

More specifically, Section 3.6 makes two sets of comparisons simultaneously to ascertain the link between religion and risk: (1) between Protestant and Catholic banks operating in the same geographic area (either that surrounding The Hague *or* that surrounding Waalwijk); and (2) between Protestant and Protestant (or Catholic and Catholic) banks operating in different geographic areas (that surrounding The Hague *with* that surrounding Waalwijk). Comparing banks within the same region minimises

Table 3.1: Definitions and descriptions of variables used in Chapter 3

Variable (unit)	Definition	Description	
Dependent variables			
balance sheet leverage (%)	percentage of deposits lent out to members	measure of a bank's reliance on riskier external financing; bank's willingness to take on risks	†
lost savings (%)	percentage of new savings withdrawn from bank over the financial year	measure of depositors' withdrawal behaviour; bank's ability to take on risks	†
Religious factors			
overtly Christian (dummy)	dummy = 1 if bank is overtly religious in its founding documents and statutory name	measure of those banks which took religious values very seriously	†
minority bank (dummy)	dummy = 1 if bank is (*de facto*) aligned to minority religion of bank's local market (2.25 km radius)*	measure of bank's sociopolitical origins	†
religious density (per km²)	density in local market (2.25 km radius)* of population (in thousands) aligned to the religion of the bank	measure of bank's sociopolitical support	†
Bank-specific attributes			
liquidity (%)	percentage of assets held in cash or at central clearinghouse	funds available for immediate withdrawal; measure of liquidity used by contemporaries	†
deposit accounts (no.)	number of deposit accounts	measure of a bank's size	†
assets (thousands)	monetary value of total assets owned by bank	measure of a bank's size	†
age of bank (years)	age of bank at year of cross-section	control for potential first-mover advantages	†
dist. to clearinghouse (km)	distance to central clearinghouse of bank's network	measure of transaction costs of bank access to clearinghouse deposits and loans	†
corporate form (dummy)	dummy = 1 if bank is established using the *Wet van 1876*	the alternative governance structure (*Wet van 1855*) is cheaper to enact	†

Table 3.1: Definitions and descriptions of variables used in Chapter 3 (*continued*)

Variable (unit)	Definition	Description	
Economic geography of market			
population density (per km²)	population (in thousands) density in bank's market (2.25 km radius)	control for population density	
agricultural employment (%)	percentage of local labour force employed in the agricultural sector	control for potential market size	
horticultural farming (%)	percentage of land in bank's region used for horticultural farming	control for credit-intensity of agriculture	
owner-occupied farms (%)	percentage of farms in bank's region which is owner-occupied	control for potential differences in depositor investment incentives	
Network- and year-specific effects			
CCB-Eindhoven (dummy)	dummy = 1 if bank belongs to CCB-Eindhoven network	control for network-specific leverage policy relative to the CCRB-Utrecht network	†
CCCB-Alkmaar (dummy)	dummy = 1 if bank belongs to CCCB-Alkmaar network	control for network-specific leverage policy relative to the CCRB-Utrecht network	†
year dummies (d19XX)	dummy = 1 if year = 19XX	controls for year-specific systemic risk	†
interaction dummies	network * year interaction dummies	controls for network- year-specific risk	†

Notes: * See Appendix 3.A for an explanation for the choice of 2.25 km. All variables marked with the † symbol are time-invariant fixed effects. Variables are calculated using data from the annual reports of the three central cooperative clearinghouses (CCB-Eindhoven, CCCB-Alkmaar and CCRB-Utrecht); the Dutch state's official register of savings banks published in 1919; the 1920 censuses of households and businesses; and the Dutch state's agricultural survey of 1919.

the possibility that the outcomes depend on other factors, since all banks are exposed to similar factors within this region. Subsequently, comparing banks operating in different regions minimises the possibility that the true explanatory factors are merely correlates of the measured factors.

3.5 Quantitative assessment of bank risk

The exposition thus far exposes unanswered questions, namely: (1) whether a relationship between religion and risk (aversion) exists in the first place, or whether observed patterns are due to other correlated factors; (2) if a relationship exists, which way the effect works and why; and (3) again, if a relationship exists, whether it is an important one *vis-à-vis* other determinants of risk. The present section takes a cliometric approach to answering these questions. It combines balance sheet data pertaining to all clearinghouse-affiliated rural cooperative banks operating in the Netherlands, with socioeconomic and geographic census data pertaining to the areas in which they operated, all for the first half of the 1920s.

The aims of the regression models discussed here are to measure banks' willingness and ability to take risks. More specifically, their aims are to measure the determinants of: (1) banks' *balance sheet leverage (%)*, a measure of bank risk defined as the proportion of all deposits (short- and long-term) which is lent out to members across a financial year; and (2) banks' *lost savings (%)*, a measure of depositors' withdrawal behaviour defined as the proportion of new deposits (short- and long-term) made in a financial year withdrawn from banks across that same year. As explained in Section 3.1, leverage as defined here is an appropriate measure for cooperatively-owned farmers' banks given their ownership structure. The ratio functions as an indicator of their *willingness* to take on risks: the higher a bank's leverage ratio is, the more it has chosen to rely on outside financing and thus the more it is exposed to bank risks. The second measure of risk – lost savings – measures something different: banks' *ability* to take on risks. Also, as discussed in Section 3.3.1, the core aim of cooperative farmers' banks was to expand their loans portfolio in the cheapest possible way: through new savings deposits. Small values for lost savings indicate that high amounts of savings are available for financing banks' loan books internally. The higher the value of a bank's lost savings measure, the more depositors withdraw their savings, thus limiting the bank's ability to internally finance its loans book. Values of the measure above

100 percent indicate that groups of depositors are withdrawing money faster than others are depositing new savings, thus forcing banks to finance loans either from any remaining retained deposits from previous years – i.e. to eat into their stocks of savings deposits – or from external loans.

The full list of explanatory variables used in all regressions is found in Table 3.1, which also provides detailed definitions and the economic intuition for their inclusion. Variables are classified into five groups: (1) dependent variables; (2) religious factors; (3) bank-specific attributes; (4) the economic geography of banks' markets; and, finally, (5) network- and year-specific effects. Table 3.2 reports summary statistics for all variables used in the regression analysis, including a breakdown of the dependent variable for the four years of the panel. Among other things, it shows how the dispersion of the two dependent variables increased significantly over the early 1920s, reflecting the balance sheet impact of the crisis. Figures 3.4 and 3.5 use kernel density estimation to illustrate that statistically significantly different distributions in 1923, the height of the crisis period, are observed for both dependent variables. In all cases, the distribution is complex and non-standard; it is censored at zero (a bank cannot have a balance sheet leverage or lost savings value below zero), and it has long upper tails (there is a sizable group of banks which are "extremely leveraged" or suffer massive withdrawals by depositors). Separate summary statistics for the three cooperative clearinghouse networks are reported in Table 3.3. They show that banks belonging to the CCCB-Alkmaar network in particular had significantly higher mean values for the two dependent variables, suggesting that they were more willing but less able to take on risks.

The results of four regression exercises are discussed in this chapter; the results of one additional exercise are reported in Appendix 3.B. Results of the two principal regressions are reported in Tables 3.4 and 3.6. Tobit specifications are used in order to take account of the zero censor in these two regressions; OLS specifications would yield biased estimates in this case (McDonald & Moffit 1980). Distribution-independent bootstrapped P-values and 95 percent confidence intervals are reported in all cases to aid with interpretation; some explanatory variables are not normally distributed and hence standard test statistics would be biased. In addition to the more usual frequentist approach to hypothesis testing, this analysis takes a simple Lindley-Bayesian approach, as described in Press (2003), by looking more explicitly at the size and position of the measured effects in relation to the confidence intervals. This provides a better

Figure 3.3: Location of banks for minorities, 1919

Note: Each point represents a different bank. Banks for minorities are those which are (de facto) aligned to the minority religion of the local market; see Table 3.1 for details. The sample consists of 93 banks for minority Catholic populations, and 100 for minority Protestant populations.

Sources: TOP250namen, NLKAART, annual reports of the three Raiffeisen networks and the 1920 census.

Figure 3.4: Epanechnikov kernel density distribution functions of balance sheet leverage, 1919-1925

(a) Kernel density distribution for 1919
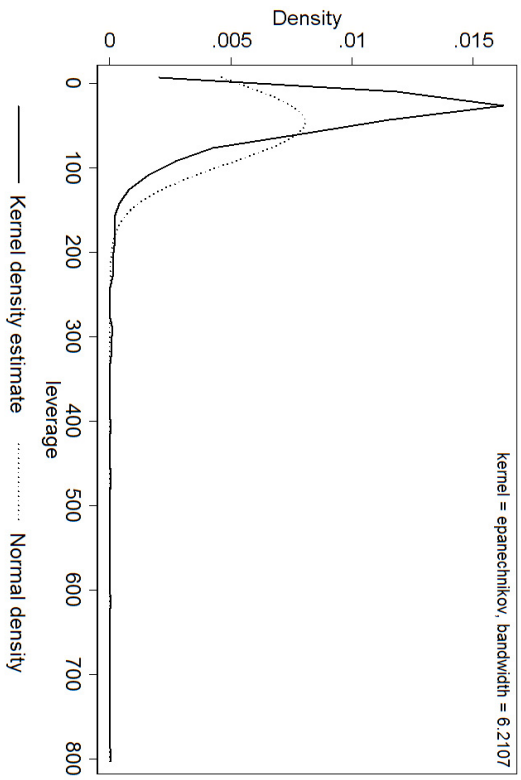
(b) Kernel density distribution for 1921
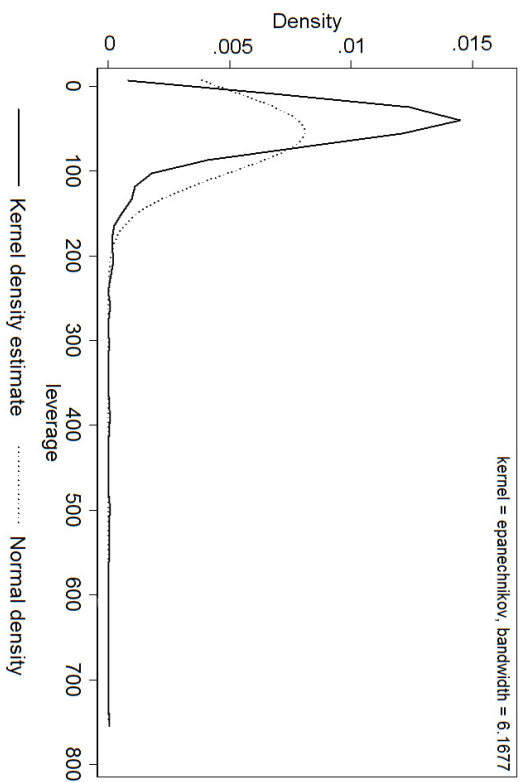
(c) Kernel density distribution for 1923
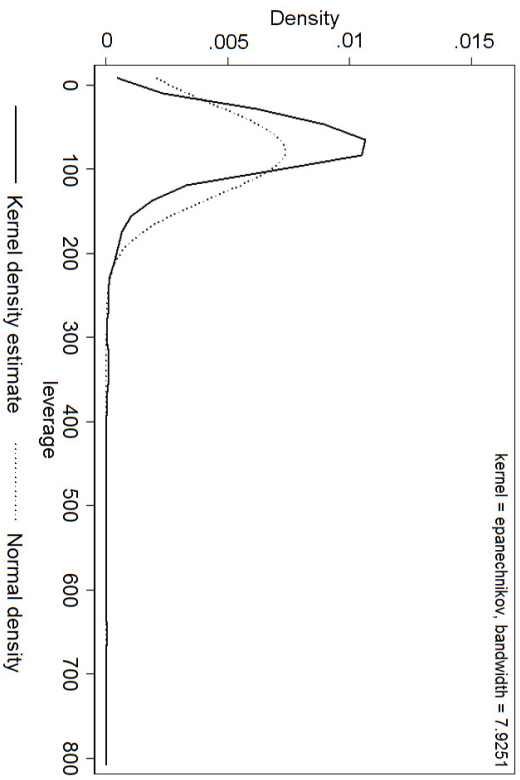
(d) Kernel density distribution for 1925
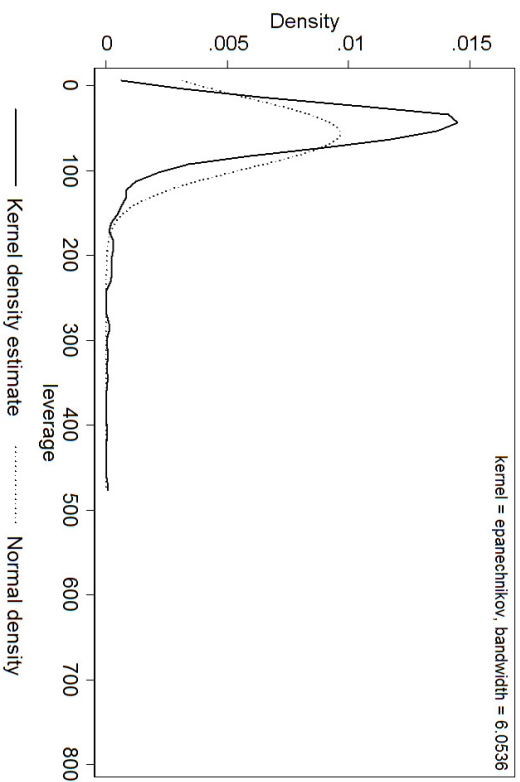
Figure 3.5: Epanechnikov kernel density distribution functions of lost savings, 1919-1925

(a) Kernel density distribution for 1919

(b) Kernel density distribution for 1921

(c) Kernel density distribution for 1923

(d) Kernel density distribution for 1925
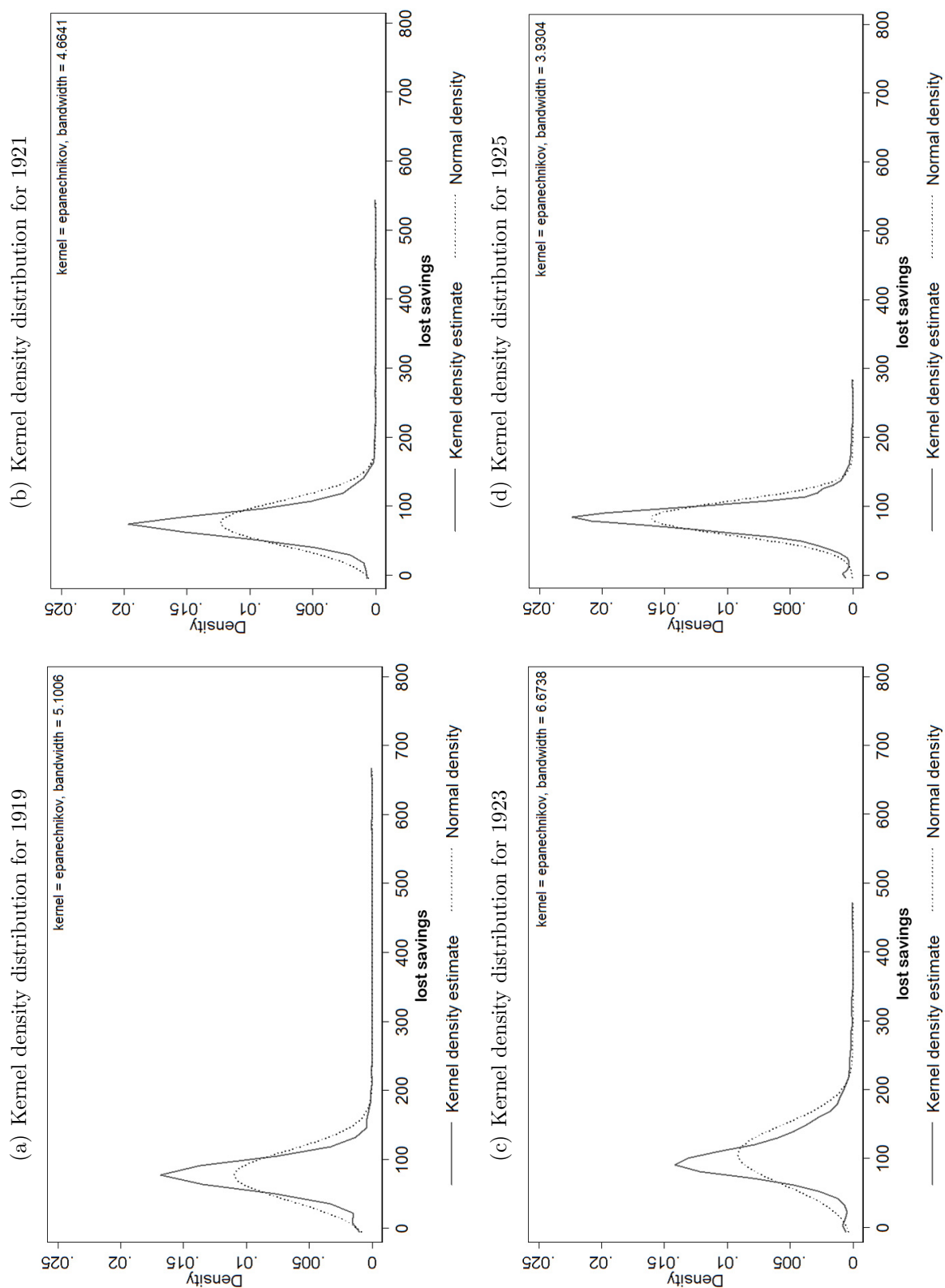
Table 3.2: Summary statistics for *boerenleenbank* sample, pooled, 1919-1925

Variable (unit)	Mean	Std. Dev.	C. V.	Min.	Max.
Dependent variables:					
balance sheet leverage (%)	60.47	84.88	0.71	0	4,113
in 1919	50.64	134.10	0.38	0	4,113
in 1921	55.90	68.65	0.81	0	1,260
in 1923	79.41	61.94	1.28	0	1,089
in 1925	55.94	41.31	1.35	0	471
savings lost (%)	86.14	41.55	2.07	0	1,058
in 1919	77.24	36.47	2.12	0	662
in 1921	76.01	32.43	2.34	0	539
in 1923	107.40	56.99	1.88	0	1,058
in 1925	83.14	24.80	3.35	0	280
Religious factors:					
overtly Christian (dummy)	0.02	0.15	0.13	0	1
minority bank (dummy)	0.22	0.42	0.52	0	1
religious density (per km^2)	153.45	252.81	0.61	0	3,378.28
Bank-specific attributes:					
liquidity (%)	34.44	24.60	1.40	0	100
assets (thousands)	235.65	222.34	1.06	0	3,336
depositors/members (ratio)	2.30	25.14	0.09	0	1,695
age of bank (years)	12.98	6.04	2.15	0	28
dist. to clearinghouse (km)	74.37	45.94	1.62	0	203
corporate form (dummy)	0.42	0.49	0.85	0	1
Economic geography of market:					
population density (per km^2)	305.97	1,091.58	0.28	8.87	21,897.17
agricultural employment (%)	35.68	12.62	2.83	1.00	59.00
horticultural farming (%)	6.06	7.10	0.85	0.46	35.05
owner-occupied farms (%)	49.32	18.26	2.70	11.16	98.85
Network- and year-specific effects:					
CCB-Eindhoven	0.42	0.49	0.84	0	1
CCCB-Alkmaar	0.03	0.17	0.17	0	1
CCRB-Utrecht	0.56	0.50	1.12	0	1

Notes: See Table 3.1 for description of variables. Panel constructed using data for four years: 1919, 1921, 1923 and 1925. The number of observations for each variable is 4,550. The total number of groups (i.e. number of banks) is 1,144. C. V., the coefficient of variation, is the mean by the standard deviation and is a measure of dispersion.

understanding of "economic significance" and relative importance, or as Ziliak & McCloskey (2008) put it, of "oomph". Additional regressions are run using quantile regression models, a method descibed in Koenker & Hallock (2001). Reported in Tables 3.5 and 3.7, the results of these quantile regressions help to determine whether banks behave differently along their distribution of risk, ability and willingness; does religion influence risk-taking differently for banks with low risk and high risk characteristics?

What follows is a discussion of each of the variables in the regressions and the accompanying economic intuition. Turning first to the regression models reported in Tables 3.4 and 3.5, the analysis of banks' balance sheet leverage positions: the first three variables concern this chapter's working hypothesis, that banks' socioreligious attributes affects their risk-taking behaviour. The first variable (*overtly Christian*) is a dummy variable which captures the effect of banks' advertising themselves openly as Christian to (potential) customers through their corporate (statutory) names. Some thirty banks in all advertised themselves in this way. They can be considered more strictly confessionalised than the rest of the population in terms of business practices, and also in their desire to exclude customers with dissimilar characteristics. The estimated marginal effect is statistically significant at the five percent level, and may be considered economically significant in that it is large and most of the possible outcomes are negative; the effect is negative for the whole 95 percent confidence interval. This suggests that overtly Christian institutions may have been less leveraged than their "less Christian" cooperative counterparts.

The second variable (*minority bank*) takes the value of one if (and only if) a bank is aligned to a (*de facto* or *de jure*) Catholic-leaning central clearinghouse and the local population is predominantly Protestant, or *vice versa*, where the local population is estimated using the procedure set out in Appendix 3.A. The intuition for its inclusion follows from: (1) the Ostrom framework, where the use of heuristic norms in homogeneous societal groups can result in stable cooperative group formation; and (2) ideas in club good theory, where small religious groups benefit from being able to monitor one another more easily, reducing moral hazard problems more generally. The estimated marginal effect is not small, moreover it lies just outside the conventional bounds of statistical significance and the confidence intervals suggest that it is positive for most possible outcomes; it is arguably economically significant. The third religious factor variable (*religious density*) measures the population density of the religious group aligned to a bank, e.g. the number of Protestants per square kilometre residing

Table 3.3: Comparison of mean values for *boerenleenbank* sample, by network

Variable	CCB-Eindhoven	CCCB-Alkmaar	CCRB-Utrecht
Dependent variables:			
balance sheet leverage (%)	58.17	96.30	60.36
	(58.27)	(64.38)	(100.72)
savings lost (%)	94.20	103.68	81.70
	(44.42)	(45.64)	(36.67)
Religious factors:			
overtly Christian (dummy)	0.03	0.33	0.00
	(0.18)	(0.47)	(0.04)
minority bank (dummy)	0.18	0.64	0.24
	(0.38)	(0.48)	(0.43)
religious density (per km^2)	193.49	152.17	123.52
	(324.55)	(238.66)	(176.63)
Bank-specific attributes:			
liquidity (%)	40.53	18.24	30.71
	(25.34)	(20.91)	(23.04)
assets (thousands)	203.05	185.39	277.80
	(167.39)	(124.75)	(259.17)
depositors/members (ratio)	1.94	2.88	2.54
	(0.89)	(5.95)	(33.69)
age of bank (years)	13.84	13.80	12.30
	(6.39)	(6.45)	(5.66)
dist. to clearinghouse (km)	59.69	22.06	88.03
	(38.12)	(17.77)	(46.99)
corporate form (dummy)	0.10	0.82	0.64
	(0.30)	(0.38)	(0.48)
Economic geography of market:			
population density (per km^2)	285.29	404.00	316.46
	(776.65)	(674.55)	(1,292.12)
agricultural employment (%)	35.39	31.07	36.13
	(12.00)	(8.43)	(13.19)
horticultural farming (%)	6.80	13.23	5.16
	(5.87)	(11.47)	(7.38)
owner-occupied farms (%)	55.28	40.61	45.30
	(16.42)	(8.31)	(18.66)
No. of banks	469	45	629
No. of observations	1,893	129	2527

Notes: Standard deviations in parentheses. See Table 3.1 for description of variables. Panel constructed using data for four years: 1919, 1921, 1923 and 1925. The number of observations for each variable is 4,550. The total number of groups (i.e. number of banks) is 1,144.

Table 3.4: Tobit panel regression of balance sheet leverage, 1919-1925

Variable (unit)	dy/dx	(P-value)	[95% Conf. Int.]	
Religious factors:				
overtly Christian (dummy)	-5.67	(0.06)	[-11.66	, -0.30]
minority bank (dummy)	2.08	(0.18)	[-0.98	, 5.15]
religious density (per km^2)	4.21	(0.42)	[-6.08	, 14.50]
Bank-specific attributes:				
liquidity (%)	-0.53	(<0.01)	[-0.64	, -0.42]
assets (thousands)	0.02	(0.05)	[<0.01	, 0.04]
depositors/members (ratio)	-0.01	(0.99)	[-4.76	, 4.73]
age of bank (years)	-0.62	(<0.01)	[-0.91	, -0.34]
dist. to clearinghouse (km)	0.11	(<0.01)	[0.06	, 0.16]
corporate form (dummy)	-4.09	(0.09)	[-8.79	, 0.70]
Economic geography of market:				
population density (per km^2)	1.40	(0.45)	[-2.23	, 5.01]
agricultural employment (%)	0.09	(0.13)	[-0.03	, 0.20]
horticultural farming (%)	0.18	(0.02)	[0.03	, 0.33]
owner-occupied farms (%)	-0.07	(0.15)	[-0.16	, 0.03]
Network- and year-specific effects:				
CCB-Eindhoven (dummy)	5.04	(0.27)	[-3.95	, 14.04]
CCCB-Alkmaar (dummy)	14.18	(<0.01)	[3.93	, 24.43]
d1921 (dummy)	-3.96	(0.16)	[-9.43	, 1.51]
d1923 (dummy)	8.80	(0.04)	[-0.22	, 17.38]
d1925 (dummy)	-5.84	(0.01)	[-10.39	, -1.28]
*CCB-Eind * d1921 (dummy)*	-1.93	(0.60)	[-9.10	, 5.25]
*CCB-Eind * d1923 (dummy)*	-0.30	(0.94)	[-8.08	, 7.48]
*CCB-Eind * d1925 (dummy)*	12.94	(<0.01)	[7.49	, 18.38]
*CCCB-Alk * d1921 (dummy)*	17.23	(0.03)	[1.73	, 32.73]
*CCCB-Alk * d1923 (dummy)*	6.71	(0.32)	[-6.41	, 19.83]

Observations (groups)	4,549 (1,143)	Censored observations	29 (left)	
St. error of RE estimate	36.28	Variance due to RE	0.20	
Log-likelihood	-26,153.45	Wald Chi^2	1,175.72	

Notes: See Table 3.1 for description of variables and Table 3.2 for summary statistics. Panel constructed using data for four years: 1919, 1921, 1923 and 1925. A Tobit model is used because the dependent variable is observed only at or above the interval zero, i.e. the data are censored. The panel regression is unbalanced, as some banks enter or leave the sample. A random-effects (RE) specification is used, since Tobit does not permit fixed-effects. Marginal effects of variables on the expected value, conditional on being uncensored (dy/dx), are calculated from the mean. For dummy variables, the marginal effect is for a discrete change of the dummy variable from zero to one. Clustered bootstrap P-value estimates (in parentheses) are calculated from 500 replications. These P-values are reported because the conditional distribution of the dependent variable is complicated; bootstrap P-values are distribution-independent. Null hypotheses that effects cannot be rejected at a ten percent level of significance occur with P-values less than or equal to 0.1. Confidence intervals [in square brackets] are the bounds between which the estimated coefficient lies at a 95% level of statistical significance.

Table 3.5: Quantile regressions of balance sheet leverage, 1919-1925

Variable (unit)	1919				1921			
	Mean	25%	50%	75%	Mean	25%	50%	75%
overtly Christian (dummy)	-11.59 (0.66)	-3.75 (0.22)	-5.84 (0.02)	-3.58 (0.32)	-16.89 (0.20)	-5.07 (0.49)	-0.21 (0.98)	-15.03 (0.02)
minority bank (dummy)	-0.45 (0.96)	0.95 (0.62)	2.02 (0.19)	2.08 (0.25)	10.27 (0.04)	9.64 (<0.01)	10.46 (<0.01)	13.75 (<0.01)
religious density (per km²)	12.01 (0.50)	-0.53 (0.88)	-0.45 (0.88)	1.39 (0.91)	11.73 (0.19)	1.03 (0.86)	1.11 (0.86)	5.21 (0.69)
liquidity (%)	-0.90 (<0.01)	-0.59 (<0.01)	-0.82 (<0.01)	-1.02 (<0.01)	-0.52 (<0.01)	-0.36 (<0.01)	-0.47 (<0.01)	-0.60 (<0.01)
depositors/members (ratio)	-15.89 (<0.01)	-3.93 (<0.01)	-4.09 (<0.01)	-3.64 (<0.01)	-0.03 (0.38)	-0.72 (1.00)	-0.62 (0.99)	-0.95 (0.99)
assets (thousands)	0.05 (0.05)	0.02 (<0.01)	0.02 (<0.01)	0.01 (0.04)	0.06 (<0.01)	0.04 (<0.01)	0.04 (<0.01)	0.05 (<0.01)
age of bank (years)	-1.09 (0.20)	-0.09 (0.44)	-0.09 (0.32)	-0.15 (0.09)	-1.24 (<0.01)	-0.72 (<0.01)	-0.62 (<0.01)	-0.95 (<0.01)
dist. to clearinghouse (km)	0.33 (<0.01)	0.07 (<0.01)	0.07 (<0.01)	0.06 (<0.01)	0.24 (<0.01)	0.09 (<0.01)	0.14 (<0.01)	0.20 (<0.01)
corporate form (dummy)	-11.52 (0.28)	3.25 (0.05)	0.69 (0.64)	-1.80 (0.14)	-9.00 (0.09)	3.43 (0.11)	1.29 (0.55)	-0.21 (0.95)
population density (per km²)	4.05 (0.32)	0.64 (0.69)	1.36 (0.33)	0.36 (0.97)	2.72 (0.18)	0.25 (0.82)	-0.08 (0.98)	1.46 (0.90)
agricultural employment (%)	0.20 (0.57)	0.02 (0.62)	0.04 (0.37)	0.03 (0.55)	0.13 (0.44)	0.03 (0.75)	-0.07 (0.33)	-0.03 (0.78)
horticultural farming (%)	0.18 (0.76)	0.02 (0.83)	-0.02 (0.83)	-0.04 (0.57)	0.40 (0.17)	0.13 (0.46)	0.21 (0.16)	0.23 (0.29)
owner-occupied farms (%)	-0.15 (0.51)	-0.14 (<0.01)	-0.09 (<0.01)	-0.04 (0.14)	-0.21 (0.06)	-0.04 (0.51)	-0.11 (0.04)	-0.16 (0.04)
CCB-Eindhoven (dummy)	9.45 (0.40)	14.75 (<0.01)	10.97 (<0.01)	4.04 (<0.01)	13.50 (0.01)	11.60 (<0.01)	13.21 (<0.01)	18.15 (<0.01)
CCCB-Alkmaar (dummy)	47.79 (0.04)	32.30 (<0.01)	25.03 (<0.01)	16.00 (0.01)	61.93 (<0.01)	41.93 (<0.01)	41.71 (<0.01)	57.96 (<0.01)
constant	92.28 (<0.01)	53.85 (<0.01)	76.79 (<0.01)	99.14 (<0.01)	50.71 (<0.01)	28.84 (<0.01)	45.97 (<0.01)	62.40 (<0.01)
Adjusted-R²	0.06				0.10			

Continued overleaf...

Table 3.5: Quantile regressions of balance sheet leverage, 1919-1925 (*continued*)

Variable (unit)	1923				1925			
	Mean	25%	50%	75%	Mean	25%	50%	75%
overtly Christian (dummy)	-5.81 (0.58)	-0.85 (0.86)	-0.30 (0.92)	-2.07 (0.80)	-5.06 (0.48)	-0.50 (0.91)	-1.89 (0.49)	-2.61 (0.34)
minority bank (dummy)	-0.87 (0.83)	0.42 (0.49)	0.48 (0.53)	3.08 (0.15)	7.33 (0.01)	7.34 (<0.01)	4.06 (0.02)	4.76 (0.08)
religious density (per km²)	1.61 (0.81)	0.28 (0.89)	0.65 (0.85)	-2.20 (0.80)	-4.70 (0.30)	-5.42 (0.24)	-3.20 (0.12)	-3.12 (0.41)
liquidity (%)	-1.55 (<0.01)	-1.08 (<0.01)	-1.12 (<0.01)	-1.28 (<0.01)	-0.93 (<0.01)	-0.75 (<0.01)	-0.93 (<0.01)	-1.02 (<0.01)
assets (thousands)	<0.01 (0.81)	>-0.01 (<0.01)	>-0.01 (0.04)	>-0.01 (0.65)	0.02 (<0.01)	0.02 (<0.01)	0.01 (<0.01)	0.01 (0.07)
depositors/members (ratio)	-5.67 (<0.01)	-1.28 (0.01)	-0.93 (0.01)	-1.93 (0.02)	-7.94 (<0.01)	-3.22 (<0.01)	-3.35 (<0.01)	-2.84 (0.01)
age of bank (years)	-0.52 (0.09)	-0.21 (<0.01)	-0.09 (0.08)	-0.22 (0.09)	-0.23 (0.26)	-0.42 (0.01)	-0.11 (0.07)	-0.01 (0.93)
dist. to clearinghouse (km)	0.09 (0.02)	0.01 (0.13)	0.01 (0.02)	0.03 (0.04)	0.15 (<0.01)	0.07 (<0.01)	0.06 (<0.01)	0.07 (0.01)
corporate form (dummy)	-2.97 (0.47)	1.01 (0.13)	0.11 (0.82)	-1.60 (0.29)	-1.26 (0.64)	4.20 (0.04)	-0.18 (0.89)	0.49 (0.82)
population density (per km²)	1.66 (0.29)	0.24 (0.85)	0.29 (0.91)	3.88 (0.51)	0.92 (0.38)	1.12 (0.53)	0.86 (0.37)	0.32 (0.92)
agricultural employment (%)	<0.01 (0.98)	-0.02 (0.48)	0.01 (0.43)	0.05 (0.40)	-0.07 (0.41)	-0.02 (0.80)	0.02 (0.59)	-0.01 (0.76)
horticultural farming (%)	0.53 (0.02)	0.10 (0.02)	0.12 (0.05)	0.30 (0.06)	-0.03 (0.85)	-0.05 (0.69)	-0.02 (0.81)	0.01 (0.89)
owner-occupied farms (%)	-0.10 (0.25)	-0.04 (0.01)	-0.05 (<0.01)	-0.07 (0.10)	-0.08 (0.16)	<0.01 (0.92)	-0.06 (0.02)	-0.04 (0.25)
CCB-Eindhoven (dummy)	14.04 (<0.01)	-0.13 (0.86)	0.86 (0.28)	3.97 (0.06)	32.40 (<0.01)	32.42 (<0.01)	24.93 (<0.01)	15.76 (<0.01)
CCCB-Alkmaar (dummy)	17.13 (0.08)	-3.71 (0.18)	-0.82 (0.87)	17.14 (0.05)	.			
constant	132.60 (<0.01)	106.85 (<0.01)	107.94 (<0.01)	119.05 (<0.01)	81.84 (<0.01)	53.04 (<0.01)	76.05 (<0.01)	90.60 (<0.01)
Adjusted-R²	0.35				0.35			

Notes: See Table 3.1 for description of variables and Table 3.2 for summary statistics. Coefficients are reported for the mean (OLS), 25th, 50th (median) and 75th percentiles. Bootstrap P-value estimates (in parentheses) are calculated from 500 replications.

in a bank's immediate target market (as defined in Appendix 3.A) for a Protestant bank. This variable is included to consider the idea of optimum congregation size according to club good theory; to account for the increased possibility of free riding behaviour by cooperative members in large congregations, or alternatively, to account for peer monitoring costs or the efficacy of the excludability constraint. The coefficient is not "frequentist-significant", the p-value being well over the ten percent cutoff. The quantile regressions of Table 3.5 do suggest, however, that religious density is important for the last year of the panel; banks located in areas with higher densities of religious adherents were leveraged to a lower degree after the conclusion of the crisis.

The second set of variables, reported in the second panel of Table 3.4 under the heading 'bank-specific attributes', concern more conventional determinants of bank leverage. A one percent increase from the mean in the proportion of the bank assets which are immediately callable (*liquidity*) results in a decline in a bank's level of leverage by 0.53 percent. The direction of this effect is as would be expected; banks which hold more assets in callable categories are probably lending out less to members. The monetary value of banks' total assets (*assets*) is positively associated with leverage and is statistically and economically significant. This suggests that larger banks were willing to take on more risks. The size of the principal-agent problem (*depositors/members*) does not seem to affect banks' leverage. Banks which are older (*age of bank*) appear to have been less leveraged, suggesting a lifecycle hypothesis-type explanation. The distance between a bank and its central clearinghouse (*dist. to clearinghouse*) greatly affects leverage; an additional kilometre increases the value of the leverage ratio by 0.11 percent. This distance can be interpreted as the combination of two effects which operate in different directions: the amount of central bank oversight over local banks' activities; and the cost to local banks of borrowing from their central. The first are information costs and work in a positive direction (the further away a bank is from its auditors, the more leverage the bank can get away with); the second are transaction costs and work in a negative direction (the further away the bank is from its clearinghouse, the more difficult it is to borrow, and the less leveraged it can be). The overall effect is positive, and so this suggests that information costs trumped transaction costs. Whether a bank derives legal personality from the *Wet van 1855* or the *Wet van 1876* (captured by *corporate form*) appears to have a large negative effect on the leverage ratio in the expected direction; the *Wet van 1855* offers slightly less protection in the case of bankruptcy and hence banks are less leveraged (see discussion

in Section 3.3). The marginal effect is large and negative for most of the 95 percent confidence interval, and lies inside the conventional bounds of statistical significance.

The third set of variables, reported in the third panel of Table 3.4 under the heading 'economic geography of market', concerns the principal alternative hypothesis, that banks' risks are determined mostly by the economic activity of their customers. Of the four factors included, two are discussed (*horticultural farming* and *owner-occupied farms*). The proportion of land used for horticulture affects banks' leverage positions in a positive direction and is statistically and economically significant; an increase in the portion of land used for horticulture by one percent is associated with an increase in banks' balance sheet leverage positions by 0.18 percent.[40] The direction of the effect is as could be expected, given that horticulture is a credit-intensive form of farming. The proportion of farms which is owner-exploited (as opposed to rented) does influence the likelihood of a bank being extremely leveraged (see Table 3.5), by a small amount, and for the last two years of the panel – exactly what would be expected from farm owners, who at the end of the crisis were no longer able to meet their obligations and were being forced to sell up, while at-risk renters were able to leave the market already much earlier.

Finally, the network-, and year-specific effects capture any differences in risk between the three networks, and also any changes to systemic risk present in specific years. Banks belonging to the CCB-Eindhoven network were economically significantly more leveraged than banks belonging to the CCRB-Utrecht network; although the effect is not statistically significant at conventional levels, on the chance that it had occurred, then it would have dwarfed most other factors. The positive sign of the marginal effect is to be expected because CCB-Eindhoven banks did not have access to DNB's discount facility, while CCRB-Utrecht banks, the base category with which the network dummy variables are compared, could access it. However, other network-correlated causal factors may be involved which cannot be measured using this cliometric approach, such as bank policy, cashier training, or inspection directives. Indeed, the direction of this effect could be interpreted as CCRB-Utrecht having had sounder policies with regards to bank leverage than their CCB-Eindhoven rivals,

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[40]Data for this refer to the regions in which banks operate, not necessarily the activities of customers themselves. To avoid the "ecological fallacy" (Gregory & Paul 2007), no geography-determined assumption is made about the economic activities of banks' customers, only about their potential market. Economically significant marginal effects should therefore not be treated as the result of causal relationships, but instead as correlations.

something which at least DNB claimed was the case at the time. Banks belonging to the CCCB-Alkmaar network were significantly more leveraged than banks in the other two networks. This too is as expected, for it was the central clearinghouse of this network that ultimately failed, in 1924, due to mismanagement. The entire cooperative banking sector appears to have been significantly more leveraged in 1923, in the middle of the crisis period, when agricultural prices reached their all-time low. The interaction terms suggest that the CCB-Eindhoven banks were particularly leveraged in 1925 – i.e. they had borrowed their way out of trouble – whilst the CCCB-Alkmaar banks were particularly leveraged in 1921 – just prior to their central's failure.

Turning briefly to the results reported in Tables 3.6 and 3.7, the regressions of banks' lost savings measure, some key results to note are: (1) overtly Christian banks did not experience significantly different losses in savings overall in the panel analysis, but did appear to have suffered in 1921, at least for the first and second quartiles; (2) banks for minority groups enjoyed higher deposit retention, i.e. fewer new deposits were immediately withdrawn by customers; (3) banks with more liquid balance sheets were more likely to have higher levels of deposit retention, but this result is weak for the 1925 cross-section; (4) older banks were likely to see higher turnaround in their savings deposits, losing more of any new savings deposits than their younger counterparts; (5) banks located further away from their central clearinghouse enjoyed higher levels of deposit retention; (6) cooperatives with more corporate governance protection experienced (statistically and economically) significantly higher losses in savings deposits, i.e. fewer savings were withdrawn from banks with the simpler corporate form; (7) the economic geography of banks' target markets appears to have been of little importance; and (8) bank size in terms of assets is an important determinant of the savings ratio of banks in the upper tail of the distribution, the upper quartile, i.e. those banks with many assets which were losing a proportion of their deposits were losing significantly more than similar banks with fewer assets.

Overall, then, the most relevant result for the working hypothesis of this chapter is that the ability of banks affiliated to religious minorities to take on risks may have been higher than for those affiliated to majorities. This is consistent with the theory summarised in the previous section, that banks for minorities were more able to use screening, monitoring and enforcement mechanisms and hence more able to take on risks. In combination with the results of the earlier regressions, this implies that banks for minority groups were not willing to take on risks, despite being more able to do

Table 3.6: Tobit panel regression of lost savings, 1919-1925

Variable	dy/dx	(P-value)	[95% Conf. Int.]	
Religious factors:				
overtly Christian (dummy)	1.76	(0.64)	[-5.59 ,	9.11]
minority bank (dummy)	-3.92	(0.01)	[-6.94 ,	-0.90]
religious density (per km^2)	1.71	(0.73)	[-8.13 ,	11.54]
Bank-specific attributes:				
liquidity (%)	-0.19	(<0.01)	[-0.25 ,	-0.14]
assets (thousands)	>-0.01	(0.80)	[-0.01 ,	0.01]
depositors/members (ratio)	≪0.01	(0.99)	[-0.01 ,	0.01]
age of bank (years)	0.53	(<0.01)	[0.28 ,	0.78]
dist. to clearinghouse (km)	-0.05	(<0.01)	[-0.07 ,	-0.02]
corporate form (dummy)	5.10	(<0.01)	[1.98 ,	8.21]
Economic geography of market:				
population density (per km^2)	1.24	(0.45)	[-2.00 ,	4.48]
agricultural employment (%)	0.06	(0.27)	[-0.04 ,	0.16]
horticultural farming (%)	-0.05	(0.50)	[-0.19 ,	0.10]
owner-occupied farms (%)	-0.02	(0.62)	[-0.09 ,	0.05]
Network- and year-specific effects:				
CCB-Eindhoven (dummy)	2.19	(0.44)	[-3.36 ,	-7.74]
CCCB-Alkmaar (dummy)	9.18	(0.02)	[1.22 ,	17.13]
d1921 (dummy)	-8.76	(<0.01)	[-11.31 ,	-6.20]
d1923 (dummy)	13.79	(<0.01)	[10.03 ,	17.54]
d1925 (dummy)	0.59	(0.71)	[-2.50 ,	3.68]
*CCB-Eind * d1921 (dummy)*	11.92	(<0.01)	[6.49 ,	17.34]
*CCB-Eind * d1923 (dummy)*	34.03	(<0.01)	[26.80 ,	41.26]
*CCB-Eind * d1925 (dummy)*	4.77	(0.08)	[-0.57 ,	10.11]
*CCCB-Alk * d1921 (dummy)*	10.69	(0.30)	[-9.55 ,	30.92]
*CCCB-Alk * d1923 (dummy)*	14.80	(0.03)	[1.49 ,	28.11]
Observations (groups)	4,549 (1,143)	Censored observations	4 (left)	
St. error of RE estimate	7.08	Variance due to RE	0.04	
Log-likelihood	-22,846.88	Wald Chi^2	1,128.19	

Notes: See Table 3.1 for description of variables and Table 3.2 for summary statistics. A random-effects (RE) specification is used. Clustered bootstrap P-value estimates (in parentheses) are calculated from 500 replications. Confidence intervals [in square brackets] are the bounds between which the estimated coefficient lies at a 95% level of statistical significance. For dummy variables, the marginal effect is for a discrete change of the dummy variable from zero to one. See Table 3.4 for further notes.

Table 3.7: Quantile regressions of lost savings, 1919-1925

Variable (unit)	1919				1921			
	Mean	25%	50%	75%	Mean	25%	50%	75%
overtly Christian (dummy)	2.28 (0.74)	11.22 (<0.01)	-0.11 (0.97)	2.49 (0.66)	13.56 (0.01)	12.24 (0.05)	9.34 (0.01)	8.05 (0.29)
minority bank (dummy)	-1.36 (0.60)	-6.09 (0.03)	-2.12 (0.33)	-0.29 (0.93)	-4.53 (0.03)	-1.55 (0.53)	-0.88 (0.61)	0.89 (0.74)
religious density (per km²)	24.54 (<0.01)	-0.87 (0.85)	0.54 (0.94)	10.58 (0.48)	-6.66 (0.07)	-4.67 (0.36)	-4.45 (0.28)	-5.14 (0.31)
liquidity (%)	-0.23 (<0.01)	-0.12 (<0.01)	-0.19 (<0.01)	-0.20 (<0.01)	-0.14 (<0.01)	-0.16 (<0.01)	-0.21 (<0.01)	-0.18 (<0.01)
assets (thousands)	>-0.01 (0.58)	-0.01 (0.13)	-0.01 (0.05)	-0.01 (0.03)	-0.01 (0.03)	<-0.01 (0.99)	>-0.01 (0.28)	-0.01 (<0.01)
depositors/members (ratio)	5.35 (<0.01)	5.05 (<0.01)	5.03 (<0.01)	3.19 (0.05)	>-0.01 (0.84)	0.01 (0.99)	>-0.01 (0.99)	-0.01 (0.99)
age of bank (years)	0.83 (<0.01)	1.50 (<0.01)	0.99 (<0.01)	0.82 (<0.01)	0.32 (0.05)	0.48 (0.01)	0.36 (0.01)	0.25 (0.22)
dist. to clearinghouse (km)	>-0.01 (0.87)	>-0.01 (0.98)	-0.01 (0.53)	-0.01 (0.83)	0.02 (0.20)	0.02 (0.28)	0.02 (0.30)	0.04 (0.08)
corporate form (dummy)	6.73 (0.01)	6.87 (0.01)	4.39 (0.06)	3.19 (0.26)	8.02 (<0.01)	6.08 (<0.01)	7.09 (<0.01)	5.33 (0.06)
population density (per km²)	3.84 (<0.01)	0.82 (0.64)	0.58 (0.83)	1.55 (0.88)	1.13 (0.17)	0.34 (0.84)	0.42 (0.78)	-0.25 (0.91)
agricultural employment (%)	0.07 (0.43)	-0.09 (0.29)	-0.04 (0.64)	-0.04 (0.70)	-0.02 (0.81)	-0.11 (0.21)	>-0.01 (0.95)	-0.02 (0.86)
horticultural farming (%)	0.33 (0.03)	0.35 (0.01)	0.35 (<0.01)	0.36 (0.01)	0.22 (0.06)	0.12 (0.34)	<0.01 (0.99)	0.01 (0.96)
owner-occupied farms (%)	-0.06 (0.27)	-0.19 (0.01)	-0.11 (0.01)	-0.10 (0.09)	0.06 (0.20)	0.06 (0.21)	0.08 (0.07)	0.03 (0.70)
CCB-Eindhoven (dummy)	3.00 (0.30)	-4.98 (0.09)	-0.70 (0.79)	0.50 (0.88)	16.80 (<0.01)	11.81 (<0.01)	13.13 (<0.01)	17.84 (<0.01)
CCCB-Alkmaar (dummy)	0.80 (0.90)	1.16 (0.79)	0.33 (0.92)	-4.99 (0.44)	18.22 (<0.01)	12.38 (<0.01)	7.64 (0.02)	4.42 (0.51)
constant	61.03 (<0.01)	52.86 (<0.01)	71.84 (<0.01)	88.97 (<0.01)	64.96 (<0.01)	52.82 (<0.01)	64.80 (<0.01)	80.63 (<0.01)
Adjusted-R²	0.15				0.13			

Table 3.7: Quantile regressions of lost savings, 1919-1925 (*continued*)

Variable (unit)	1923				1925			
	Mean	25%	50%	75%	Mean	25%	50%	75%
overtly Christian (dummy)	0.01 (1.00)	4.11 (0.40)	6.32 (0.35)	-11.26 (0.44)	-9.19 (0.06)	-18.03 (0.12)	-2.16 (0.75)	-9.15 (0.07)
minority bank (dummy)	-7.22 (0.09)	-4.80 (0.02)	-6.00 (0.01)	-5.68 (0.11)	-1.43 (0.44)	-3.86 (0.07)	-0.66 (0.74)	0.29 (0.89)
religious density (per km²)	-6.60 (0.37)	-7.12 (0.30)	-2.66 (0.70)	-6.06 (0.44)	-3.63 (0.25)	-5.12 (0.14)	-6.61 (0.08)	-4.42 (0.47)
liquidity (%)	-0.31 (<0.01)	-0.24 (<0.01)	-0.22 (<0.01)	-0.22 (<0.01)	-0.02 (0.46)	-0.07 (0.09)	-0.07 (0.07)	-0.05 (0.27)
assets (thousands)	<0.01 (0.77)	-0.01 (0.03)	-0.01 (<0.01)	-0.02 (<0.01)	>-0.01 (0.43)	<0.01 (0.41)	>-0.01 (0.98)	-0.01 (0.01)
depositors/members (ratio)	-1.78 (0.40)	4.29 (<0.01)	-0.41 (0.74)	-2.61 (0.18)	0.64 (0.42)	2.05 (0.01)	-0.13 (0.87)	-0.70 (0.46)
age of bank (years)	0.78 (0.02)	0.55 (0.01)	0.75 (<0.01)	0.62 (0.08)	0.03 (0.83)	-0.02 (0.90)	-0.01 (0.93)	0.12 (0.48)
dist. to clearinghouse (km)	-0.16 (<0.01)	-0.12 (<0.01)	-0.16 (<0.01)	-0.16 (<0.01)	-0.04 (0.01)	-0.04 (0.06)	-0.03 (0.16)	-0.03 (0.23)
corporate form (dummy)	4.53 (0.30)	-1.01 (0.66)	-3.52 (0.16)	1.40 (0.72)	1.53 (0.41)	5.04 (0.02)	4.85 (0.01)	-0.41 (0.85)
population density (per km²)	0.17 (0.92)	1.04 (0.69)	0.21 (0.92)	-0.21 (0.90)	-0.09 (0.91)	-0.02 (0.98)	-0.44 (0.52)	-0.01 (1.00)
agricultural employment (%)	0.32 (0.03)	0.22 (0.03)	0.09 (0.32)	0.12 (0.32)	-0.12 (0.06)	-0.13 (0.04)	-0.11 (0.03)	-0.10 (0.19)
horticultural farming (%)	-0.44 (0.07)	-0.26 (0.12)	-0.37 (0.01)	-0.28 (0.20)	-0.32 (<0.01)	-0.17 (0.33)	-0.17 (0.11)	-0.15 (0.15)
owner-occupied farms (%)	0.02 (0.85)	>-0.01 (0.94)	-0.05 (0.29)	-0.04 (0.63)	-0.07 (0.10)	-0.06 (0.21)	-0.10 (0.01)	-0.06 (0.15)
CCB-Eindhoven (dummy)	35.94 (<0.01)	17.20 (<0.01)	22.05 (<0.01)	38.34 (<0.01)	5.07 (0.01)	5.28 (0.04)	6.36 (<0.01)	5.00 (0.02)
CCCB-Alkmaar (dummy)	21.55 (0.04)	9.03 (0.05)	11.92 (0.17)	31.03 (0.01)	.			
constant	98.84 (<0.01)	77.21 (<0.01)	110.78 (<0.01)	129.01 (<0.01)	95.30 (<0.01)	78.63 (<0.01)	94.51 (<0.01)	107.31 (<0.01)
Adjusted-R^2	0.11				0.02			

Notes: Bootstrap P-value estimates (in parentheses) are calculated from 500 replications. See Table 3.5 for further notes.

so; they acted in a more risk averse fashion. The difference-in-differences analysis of Appendix 3.B, which measures the differential effect of the 1920s crisis on risks to banks for minorities versus those for majority denominations, is largely consistent with this conclusion.

Three religion-risk (aversion) questions are specified at the start of this section. Each is addressed in the light of the quantitative analysis. (1) A relationship between religion and banks' risk does appear to exist, specifically in relation to banks which were established for minority denominations. (2) The religious factors appear to have had an overall risk-reducing effect. Overtly Christian banks were less risky, and banks which were established for religious rather than economic reasons (so-called minority banks) were also less risky, despite the fact that they were able to take on more risks, had they so desired. This suggests an explanation of group formation in terms of club goods – mutual insurance combined with self-selection by risk type, perhaps one in which signalling combined with peer monitoring and easily-enforcible social sanctions prevented free riding behaviour. This theoretical interpretation of the results is only speculative at this stage, however, as the present cliometric approach concerns only banks' outwardly-observable characteristics and not their inside working, the subject of the next section.

(3) "Conventional" factors, such as banks' liquidity and the distance to their clearinghouse, do influence bank risk, and in theoretically expected directions. This is an encouraging result which strongly suggests that the regression results are not spurious. The results suggest that the most important risk-affecting factor is a bank's choice of clearinghouse network. Indeed, this choice may be considered more important than religion *per se*, although it may also be influenced by members' religious affiliation; each network was *de facto* affiliated with another religious *zuil* (pillar), and, as discussed in Section 3.3, there is a suggestion in some quarters of possible segregationist discrimination against Catholic-affiliated networks. The network effect is therefore very difficult to disentangle from a "specific denomination effect", and hence a Weber-style denominational explanation is difficult to formulate. Although a bank's risks are affected by the fundamentals of its customers, each network provided guidance on the way that customers were chosen and pursued in bankruptcy, and hence the choice of network can be considered to be partly endogenous to these fundamentals. Disentangling this factor requires the (qualitative) comparative approach of the next section.

3.6 Qualitative assessment of bank risk

This section compares the findings of case studies in two distinct regions of the Netherlands, one on the west coast and one in the south of the country. The methodology can perhaps be termed a "qualitative difference-in-differences", where differences between banks for minorities and majorities in each region are compared with one anther. The banks of interest are: (1) two banks in Loosduinen and two in Rijswijk, both rural satellite towns of The Hague; and (2) one bank in Baardwijk and one in Capelle, both satellites of Waalwijk. Appendix 3.C describes the two study regions which these banks service. Appendix 3.D comprises detailed microstudies of the banks operating in these regions.

Comparing the Loosduinen with the Rijswijk cooperatives suggests that minority religious groups, both Catholic and Protestant, were particularly militant in securing a separate and separated religious identity for their bank. The evidence presented in the appendices suggests that potential costs relating to the lack of scale and scope which resulted from this segregation were compensated for by the information and enforcement benefits of operating a religiously homogeneous banking institution. The strict joining requirements at the banks for Catholic minority groups suggest that they intended to use these as an exclusion device, a method of ensuring homogeneity between their customers. The cases highlight differences in the lending instruments used by banks with otherwise very similar customers. Banks for Protestant minority groups in particular appear to have been stricter in their lending requirements, but making no use of mortgages or loans without a guarantee, insisting instead on personal guarantors.

The history of the Baardwijk and Capelle cooperatives tells a similar story, with some interesting differences. In this case, both religious denominations lived in religiously homogenous communities, at spitting distance from one another. Capelle was a minority outpost of Protestantism in an otherwise Catholic region. The Baardwijk cooperative never attempted to accommodate the Protestants living next door in Capelle, who waited a further fifteen years for a bank to arrive in their village. As the type of farming carried out in both towns was virtually identical, and the access to alternative financial services similar, this suggest that: (1) there was initially little economic demand for a *boerenleenbank* in either place, but that the Catholic political drive for bank creation was stronger than that of Protestant groups; and/or (2) there

was sufficient untapped demand in Capelle, but an absence of Protestant political will to create an institution to meet this demand.

The Baardwijk bank was managed with heavy influence from local Catholic-only social and agricultural organisations, but its market was sufficiently large and diversified for this to have had an insignificant adverse influence on risk exposure or bank performance. But over the crisis period, when customers were most under stress, this bank was forced to borrow substantially from outside sources to accommodate credit demand, suggesting that it failed to hold on to or expand depositors' savings whilst continuing to lend as before; apparently business practices remained unaffected by the crisis. The Capelle bank, which was relatively free from socioreligious influence, was managed in a similar way to that in Baardwijk, but was more thorough with its screening of loan applications. This suggests that the men in charge of the bank were more risk averse. The bank's overall credit risk was lower than that of its neighbour, and it did not have to increase dependence on external sources during the crisis.

Comparing The Hague's cooperatives with those of the Waalwijk area shows how, regardless of location, Catholic-leaning banks limited membership by requiring members to also join local farming associations, while neutral ones did not do this explicitly. Instead, neutral banks "mopped up" everyone who was left in the market after the Catholics had siphoned off their group, and hence were left with Protestants; i.e. neutral banks were *de facto* Protestant. Although lending requirements were in many respects similar in all cases, The Hague's cooperatives in particular show how managers adapted their credit policy to the specific business activities of their customers, to their local economic geography. In addition to the unlimited liability of bank members, all cases demonstrate the use of peer monitors – in the form of named personal guarantors – in loan contracts. Differences in the banks' choice of legal corporate form – which theoretically influenced corporate governance practices – appear to have made little difference to their management structure or their day-to-day banking practices and processes, their business conduct.

Although all banks' financial positions worsened during the crisis, a close examination of loan procedures during this period provides little evidence that their conduct changed in reaction. But this lack of adaptation was not a major obstacle to their long-run performance. Comparing the financial performance of banks for minority religious groups in Capelle and Rijswijk with banks for the majority religious denominations in Baardwijk and Loosduinen does suggest that the stresses of the crisis

Table 3.8: Summary of qualitative comparisons of banks for minorities versus banks for majorities

Category	Minority banks	Majority banks
membership criteria	must join local farmers' union (Catholic); geographic market defined specifically to exclude majority	not explicit
network choice	joining clearinghouse network for religious rather than business reasons	always joining a different network from that of minority bank; choice governed more by business fundamentals
loan criteria	borrowers must sign up to socioreligious values of bank: 'belief in God and the family' (Catholic), or 'for useful purposes' (Protestant)	socioreligious values not explicit; willing to engage with more "exotic" lending instruments, such as mortgages
loan surety	all loans must have a personal guarantors; careful monitoring of loan holders' progress	willing to grant loans on prior business record rather than solely with personal sureties
governance	no clear corporate governance structure; strong involvement of local priest (Catholic)	some involvement of local priest (Catholic)

Notes: Summary of findings of comparative business histories, as described in Appendix 3.D and analysed in Section 3.6.

appear to have affected banks with similar customer religiosity in different ways: banks for minorities under stress, whatever their denomination, were unwilling or unable to take on any additional risks. The failure and disappearance of the CCCB-Alkmaar clearinghouse did cause some financial hardship for its member banks, such as those in Loosduinen, but the damage appears to have been short-lived.

Table 3.8 summarises some of the findings of this section's analysis. In summary, the qualitative evidence is largely consistent with the quantitative analysis of the previous section. Banks for religious minorities differed from those for majority groups, regardless of their denominational affiliation or the economic activities of their customers. They were less willing to extend credit using instruments other than personal guarantors and took greater care to screen and monitor their customers, among other things. A different pattern emerges, however, when looking at group norms and group exclusion: Catholics appear to have taken the lead – e.g. with more stringent membership requirements – and Protestants followed only afterwards. But the net result was much the same: a self-enforced segregated market in which the rural banking sector's structure followed directly from this market's socioreligious organisation. It was this organisation that influenced banks' risk-taking behaviour, not the religious denomination *per se*.

3.7   Conclusion

This thesis commences with a quote from a New Testament parable (see p. iv), one widely-held interpretation of which suggests a possible relationship between religion and risk-taking in banking: good Christians should not be overly risk averse, but should instead be willing to take calculated risks. Not to do so is a waste of talent; it will result in judgement. The evidence presented in this chapter suggests that religion obscured this parable in the Netherlands of the early twentieth century. Economic confessionalisation (the *verzuiling*) led to institutional duplication in religiously-mixed parts of the country. Managers of banks established for sociopolitical rather than economic reasons – so-called "minority banks" founded to service a region's religious minorities, either Catholic or Protestant – were unwilling to take on the same levels of risk as banks in religiously homogeneous areas. Instead minority banks operated a tight ship, making use of the informational and enforcement advantages of the small size of their flock. They buried their talents in the ground, could think only of security

and had to rule out risk, even though they were more able to take a gamble. It is this risk averse attitude which probably enabled these small undiversified banks to sit out a financial crisis which ravaged other parts of the Netherlands' financial services sector.

More specifically, this chapter finds evidence that: (1) the level of exposure to risk of banks for religious minorities is correlated with the size of the religious community that they serviced, with minority banks less willing to take on risks, despite potentially being more equipped to do so; (2) minority banks were much less willing to take on mortgages or loans backed merely with an individual's credit history, preferring instead personal sureties; (3) membership criteria were used to differentiate the market into sub-groups with similar (religious) characteristics, facilitating screening and monitoring; (4) banks for majority groups were more willing than banks for minority groups to adapt their lending policy to their local customer base, changing their credit policy to meet local needs; (5) while majority banks did not alter their business conduct over the period of the 1920s deflation, minority banks became more risk averse in their operations; and (6) the corporate legal form used by banks mattered little "on the ground" – the structural and procedural differences between banks using different legal codes were minimal – but the overall risk exposure of those banks using the more sophisticated corporate form was nevertheless measurably lower.

Following the economics and history literatures discussed in this chapter, it appears that: (1) a theory of group formation in club good terms, combined with within-group social norms on business interaction, best explains the Dutch case, and Weber-style theories linking a particular denomination with a particular attitude towards business are less useful; (2) Catholics in particular were more committed to economic confessionalisation, but Protestants in the end were also forced into confessional segregation as Catholics left previously religiously-heterogeneous institutions to form their own; and (3) although a number of different popular loan instruments were used in the Dutch case, the role of the "inside monitor" in a loan contract in particular appeared to have been important, over and above the joint-liability of cooperative organisations as a whole.

On the size and importance of the religion-effect, the regression analysis of banks' balance sheet leverage and lost savings measures – indicators of banks' willingness and ability to take on risks – suggests that religion is important, but that other risk-affecting factors are equally if not more so. The comparative case studies reveal a multitude of differences between banks for minority and majority groups in the way

that they extend credit to members and make decisions more generally. Although not governed directly by religious attitudes, these differences were nevertheless a consequence of religion, or more precisely of Dutch society's voluntary religious segregation. The Dutch case suggests that religion and risk are not related directly, but that risk is affected by the industrial structure of the banking system, which in turn is a consequence of religious preferences. It also suggests that scholars should explore Dutch society's confessionalism along minority-majority axes, rather than the Catholic-Protestant axes usually employed in social science research.

A wider point made by this chapter is that quantitative evidence is not always sufficient to understand the mechanisms by which estimated effects work, as it cannot always reveal what happens *inside* the firm. This chapter shows instead how cliometric methods can be useful to business historians: they can generate guiding hypotheses in research projects where the literature provides many alternative possible relationships of interest, hypotheses which can then be further investigated using qualitative historical methods. And, finally, it illustrates how qualitative case studies used in a comparative way can help reduce the risk that findings are merely idiosyncratic in nature.

Appendices to Chapter 3

3.A   GIS estimation of population densities

One of the problems faced in the quantitative analysis of Section 3.5 is the measurement of the relative size and importance of different religious denominations within banks' target markets. As discussed in some detail in Chapter 4, the geographic boundaries of banks' local markets is difficult to ascertain in historical research because the analysis conducted by modern antitrust authorities cannot be carried out; actual and potential customers cannot be interviewed about their banking preferences with regard to their proximity to their local branch since all economic actors are deceased. Studies of more recent history have been able to approximate banks' geographic markets using datasets of firm and bank locations. For example, Petersen & Rajan (2002) document increases in distance between small firms and their lenders in the US over the last 25 years of the twentieth century, from 2 miles in the mid-1970s to 5 miles in the mid-1990s. And Degryse & Ongena (2005) find that the mean travel time to a local bank branch for businesses in contemporary Belgium is 4 minutes 20 seconds, which translates to 2.25 km (1.40 miles) of driving at 31 km/h (20mph). Unfortunately, calculating bank-customer distances is also not a possibility in the Dutch case, as only the locations of banks are known, not that of their customers. Constructing a database of the location of the latter group is extremely data intensive and infeasible. Doing so for a smaller sample may be possible, if records of members include detailed address data – but this is beyond the scope of this study.

A way around the problem of geographic market definition is discussed in the next chapter, Chapter 4, where market conduct is measured more directly, without having to form an initial judgement on market structure. Meanwhile, in the present chapter, a solution is found using Geographic Information Systems (GIS). The location of all network-affiliated *boerenleenbanken* is known, and geo-referenced using ESRI ArcGIS software onto a map of the Netherlands depicting contemporary political borders. Census data on population and religious affiliation from the 1920 census are then merged into this database. A 2.25 km buffer is drawn around each bank location, and the census data corresponding to this buffer is calculated. If a bank is geo-referenced to a location in which multiple administrative districts (*gemeenten*) are within 2.25 km, then only the proportion of the population in each district which falls within the

Figure 3.6: Population densities of banks' target markets, 1920

(a) Population density of Catholics residing within 2.25 km radius of banks in the CCB-Eindhoven network, per square kilometre
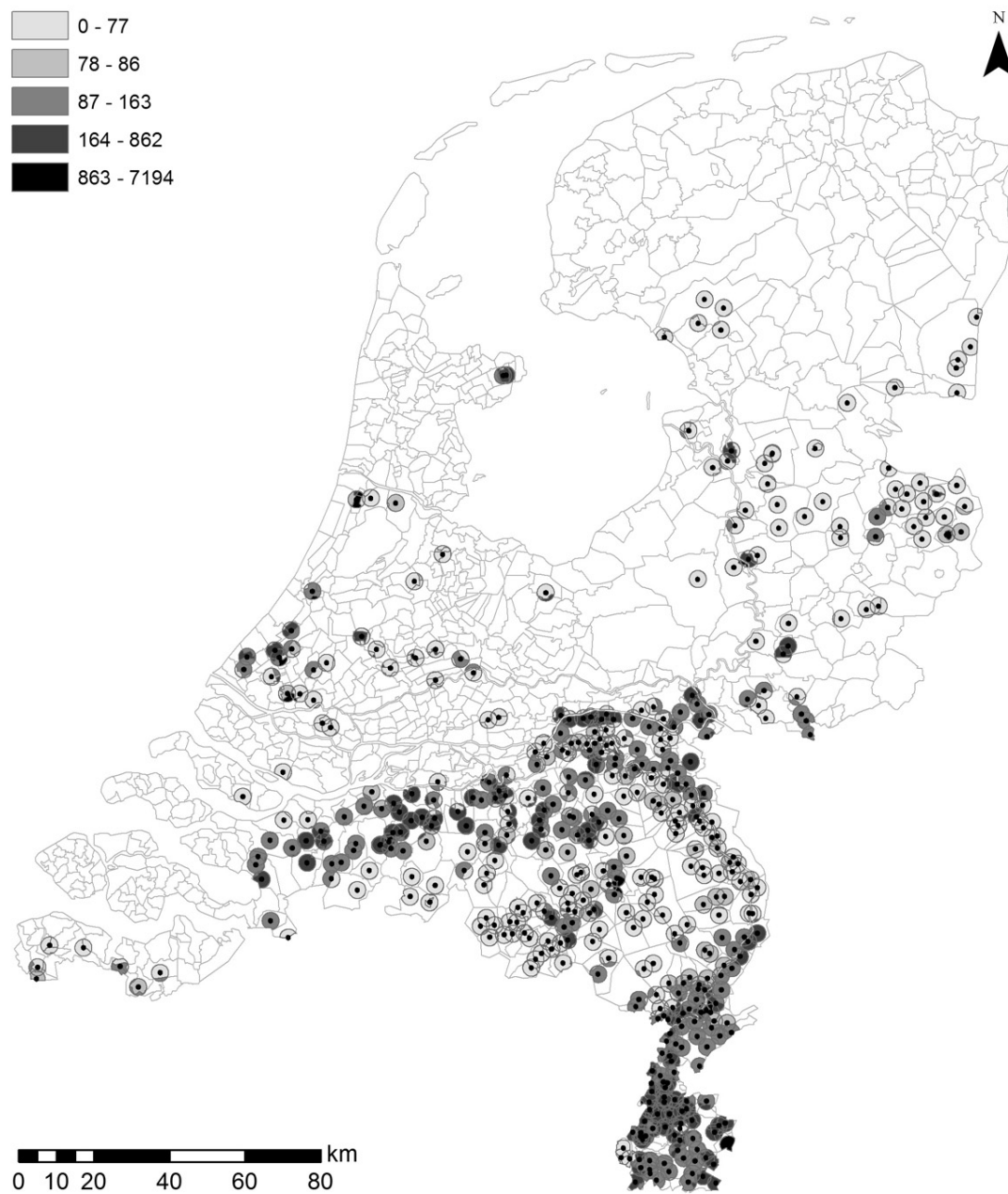
(b) Population density of Catholics residing within 2.25 km of banks in the CCCB-Alkmaar network, per square kilometre
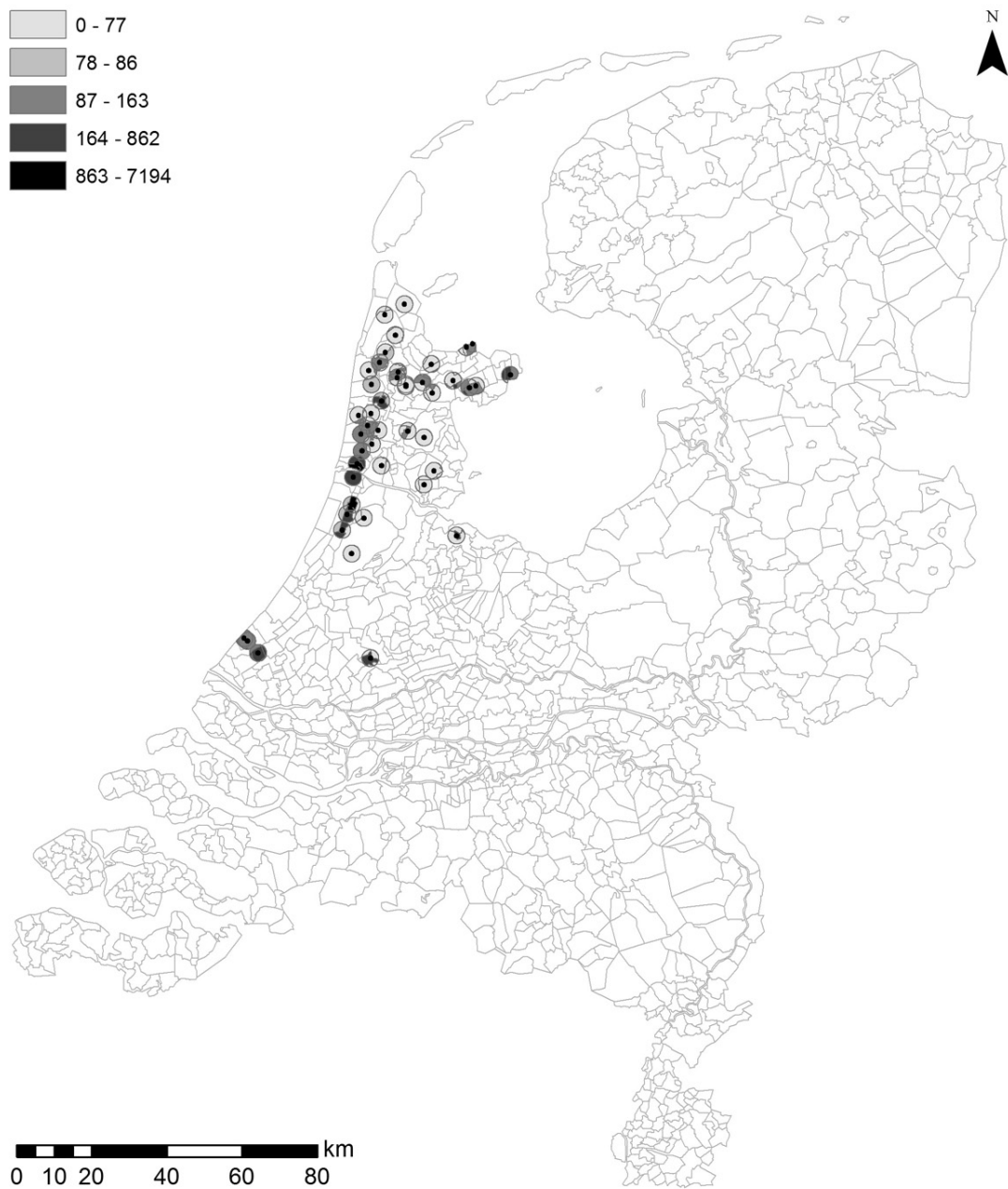
(c) Population density of Protestants residing within 2.25 km of banks in the CCRB-Utrecht network, per square kilometre
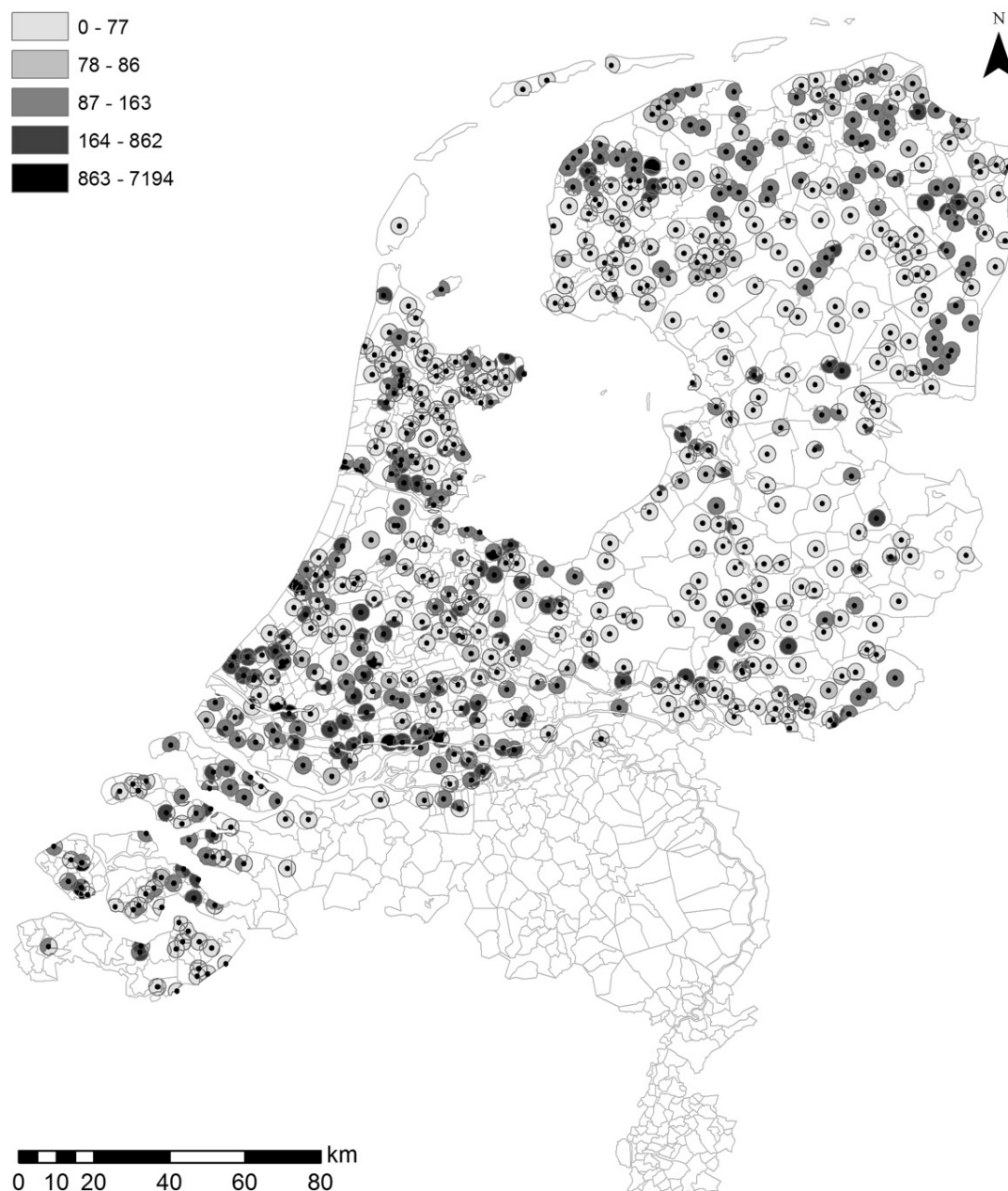
Notes: Shading of denominational population per square kilometre is classified into geometric intervals, in five categories. See text for justification of the 2.25km buffer.

Source: Own calculation using the 1920 census, NLKAART and the annual reports of the three Raiffeisen networks.

buffer zone is taken. Note that while census data are known for each administrative district, it is unknown where the population lives within the district; thus, for the purposes of this exercise, the population is assumed to be evenly distributed across its area. 2.25 km is chosen because this is the mean distance calculated in the Degryse & Ongena (2005) study of Belgium. Because transport costs were significantly higher in the 1920s in the Netherlands, and given the general trend for banks to be further away from their customers today than in even the recent past, the 2.25 km assumption is not too heroic, and can be treated perhaps as an upper-bound. The differences between urban and rural areas – between which transport (opportunity) costs may vary greatly – risk causing a systematic bias, which is controlled for in the regression analysis.

The maps depicted in Figure 4.8 visually report some of the ArcGIS calculations used in the regression analysis, specifically the population densities of the intended target markets of all network-affiliated *boerenleenbanken* in 1920, given each bank's (*de facto*) denominational affiliation. It is interesting to compare this with Figure 3.1, which simply depicts the proportion of each *gemeente*'s local population which adheres to each denomination. Those maps do not take into account the fact that, for example, an administrative district which is homogeneously Catholic might contain significantly fewer Catholics than one which is predominantly Protestant.

3.B Difference-in-differences analysis of the crisis

Following the methodology popularised in the Card & Krueger (1994, 1995) analysis of the effects of changes to minimum wage laws on employment, this appendix carries out a difference-in-differences analysis of the effects of the 1920s crisis on balance sheet leverage and lost savings, the two dependent variables used in Section 3.5 to capture banks' willingness and ability to take risks. Difference-in-differences is a way of measuring the effect of a treatment at a given period in time. Card & Krueger (1994) use it to measure the differential effect of an increase in minimum wage legislation in New Jersey's minimum wages (the treatment) on employment in the fast-food industry versus those in neighbouring Pennsylvania (the control). Here, the methodology is used to measure the differential effect of the exogenously-caused debt-deflationary crisis of the early 1920s on risks at banks for minority denominations (the treatment) versus those for majority denominations (the control).

The model specifications used are an OLS single base specification, and OLS and

quantile specifications which control for all co-variates used in the regression analysis of Section 3.5, as defined and described in Table 3.1. For the case of balance sheet leverage (willingness to take risks) reported in Table 3.9, while the difference between banks for minorities versus those for majorities was positive, large and statistically significant for 1925 (banks for majorities were more willing to take risks), this was less so for 1919, and the overall difference in the differences was relatively small and not statistically significant at standard levels. The OLS specification with co-variates does little to affect this base specification. The quantile regressions of the lower panel of Table 3.9 reveal that the difference in the differences is positive, large (five percentage points) and statistically significant for the 25 percentile specification; for banks in the lower tail of the distribution, those for majorities were significantly more leveraged after the crisis than before; over the crisis period, some 25 percent of banks for minorities increased their level of risk aversion compared with those for majorities.

For the case of savings lost (ability to take risks) reported in Table 3.10, all specifications (single and controlling for co-variates) show a negative, large and statistically significant difference in the differences; banks for minorities were better able to retain new savings deposits following the crisis period than before and also in relation to banks for majorities. The quantile regression shows that the effect is particularly strong for those in the lower tail of the distribution; minority banks which were no different from their majority counterparts before the crisis in their ability to retain large portions of any new savings deposits saw their fortunes significantly altered by the crisis: they were able to take more risks than their majority counterparts by virtue of the fact that they could retain more of their savings (by approximately 7 percentage points).

The findings of the regression analysis in Section 3.5 were that: (1) a relationship between religion and banks' risk does appear to exist, specifically in relation to banks which had been established for minority denominations; (2) religious factors appear to have had an overall risk-reducing effect, perhaps through a mutual insurance mechanism operating like a club good, combined with self-selection by risk type and easily-enforcible social sanctions; and (3) conventional factors, such as banks' liquidity and distance to clearinghouse, do influence bank risk, and in theoretically expected directions. The difference-in-differences analysis of this appendix is largely consistent with these findings. Indeed, the shock of the deflationary crisis, an exogenously-caused macroeconomic event, appears to have amplified any pre-existing differences.

Table 3.9: Average balance sheet leverage by religious minority status, 1919 versus 1925

Model	Mean averages before the crisis			Mean averages after the crisis			Difference-in-differences
	Minority	Majority	Diff.	Minority	Majority	Diff.	
Single base specification:							
mean (OLS)	48.74	57.07	8.32	52.94	66.86	13.92	5.60
	(12.00)	(12.79)	(7.02)	(3.35)	(6.36)	(7.19)	(10.05)
			[0.24]			[0.05]	[0.58]
Controlling for co-variates:							
mean (OLS)	91.58	89.90	-1.68	88.76	97.44	8.68	10.37
	(12.00)	(12.79)	(7.20)	(12.59)	(13.60)	(7.26)	(9.76)
			[0.82]			[0.23]	[0.29]
25% quantile	48.36	49.36	1.00	52.13	58.72	6.59	5.58
	(2.92)	(3.10)	(1.71)	(3.08)	(3.35)	(1.77)	(2.32)
			[0.56]			[<0.01]	[0.02]
50% quantile	75.50	78.10	3.21	78.67	83.51	4.84	1.63
	(1.59)	(1.69)	(0.95)	(1.67)	(1.80)	(0.96)	(1.29)
			[<0.01]			[<0.01]	[0.21]
75% quantile	96.15	99.55	3.40	97.75	101.59	3.84	0.44
	(1.23)	(1.34)	(0.70)	(1.27)	(1.40)	(0.71)	(0.96)
			[<0.01]			[<0.01]	[0.65]

Notes: Standard errors in parentheses; p-values in square brackets. Co-variates in the second panel of the table are all the religious factors, bank-specific attributes and economic geography of market variables, as defined and described in Table 3.1.

Table 3.10: Average lost savings by religious minority status, 1919 versus 1925

Model	Mean averages before the crisis			Mean averages after the crisis			Difference-in-differences
	Minority	Majority	Diff.	Minority	Majority	Diff.	
Single base specification:							
mean (OLS)	75.44	83.33	7.89	84.96	83.85	-1.11	-9.00
	(1.03)	(1.90)	(2.16)	(1.03)	(1.95)	(2.21)	(3.09)
			[<0.01]			[0.61]	[<0.01]
Controlling for co-variates:							
mean (OLS)	73.97	75.90	1.93	78.28	71.92	-6.35	-8.28
	(3.72)	(3.97)	(2.23)	(3.91)	(4.22)	(2.25)	(3.03)
			[0.39]			[0.01]	[0.01]
25% quantile	61.41	61.74	0.33	67.75	60.70	-7.05	-7.39
	(4.19)	(4.45)	(2.40)	(4.38)	(4.78)	(2.39)	(3.18)
			[0.89]			[<0.01]	[0.02]
50% quantile	82.17	82.62	0.45	85.72	81.84	-3.88	-4.33
	(3.68)	(3.92)	(2.21)	(3.86)	(4.17)	(2.22)	(2.99)
			[0.84]			[<0.01]	[0.02]
75% quantile	100.19	102.13	1.94	101.49	97.37	-4.12	-6.07
	(3.15)	(3.31)	(1.90)	(3.31)	(3.60)	(1.96)	(2.62)
			[0.31]			[0.08]	[0.15]

Notes: Standard errors in parentheses; p-values in square brackets. Co-variates in the second panel of the table are all the religious factors, bank-specific attributes and economic geography of market variables, as defined and described in Table 3.1.

3.C   Economic geographies of case study regions

This short appendix outlines the economic geographies of the two study regions used in the comparative business histories discussed in Section 3.6 and Appendix 3.D. This discussion is used to identify which differences in the histories of the study banks are due to the economic activities of their customers and which are due to other factors. The principal source used is Directie van den Landbouw (1923), a contemporary government agricultural survey of the Netherlands. In summary, while farming around The Hague was predominantly horticultural, that carried out in the Waalwijk area was mixed.

3.C.1   The Hague and the Westland

The area around the metropolitan centre of The Hague (Den Haag), the Netherlands' seat of government and residence of the Royal family (but not the country's capital), remained predominantly rural up until after the Second World War. The villages of Loosduinen, Wateringen, Rijswijk, Voorburg, Voorschoten and Wassenaar are today merely suburbs of The Hague, but in the period under investigation were separated from the city by large tracts of agricultural land. The two villages of special interest, for which significant records concerning rural cooperative banks have been preserved, are Loosduinen and Rijswijk. Both were religiously mixed: Loosduinen (population 8,500 in 1920) was 35 percent liberal Protestant, 15 percent orthodox Calvinist and 35 percent Catholic, whilst Rijswijk (population 9,000 in 1920) was 37 percent liberal Protestant, 9 percent orthodox Calvinist and 36 percent Catholic. Directie van den Landbouw (1923) classified these two villages, located to the south-west and south of The Hague respectively, as being part of two separate but similar agricultural regions: (1) Westland (literally western-land) for Loosduinen; and (2) Delf- en Schieland (named for two waterways) for Rijswijk. A short description of each region follows.

(1) By far the most important type of agriculture carried out in this region was horticultural farming (fruit and vegetable production), which took up about one third of all available land. Individual landholdings for horticulture were small; approximately 25 percent of all land in this region was worked by agricultural businesses of one to five hectares. According to the survey, between 20 and 40 thousand guilders was required to work just one hectare of horticultural land.[41] Much of the area was covered by

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[41] This is approximately 100 to 200 thousand euros in today's money.

greenhouses, from which cucumbers and grapes were the main crop. Other important produce included cabbages, carrots, new potatoes and strawberries. A major use of non-horticultural land was for dairy herds, the milk from which was either sold fresh to customers in nearby markets such as The Hague or used in butter production, and the waste products of which were used by horticulturists as fertiliser. Cereal production was unimportant. Less than 30 percent of land was owner-exploited.

(2) Horticulture was gaining increasing importance in the Delf- and Schieland area, which was a mixture of reclaimed *polders* and river clay soil. Cucumber production was especially important. Milk production was the main business in non-horticultural areas and cereal production was relatively unimportant. The region was characterised by small- and medium-sized businesses landholdings. Approximately 35 percent of land was owner-exploited.

3.C.2   Waalwijk and the Langstraat

The area surrounding the town of Waalwijk (population 5,500 in 1920) was known as the Langstraat (literally long street). It lies just south of the Rhine and Meuse river deltas, north of Tilburg, just south of the Bergse Maas (a canal connecting the Meuse river with the Hollandsch Diep to the west), east of Breda and west of Den Bosch. It houses a string of villages, which stretches along the northern border of the southern province of Noord-Brabant. The area used to be synonymous with the Dutch shoe making and leather industries, both of which were still active in the period under investigation. The area was quite sparsely populated and agricultural and remains so even today. Waalwijk was and still is the largest town in this region. The towns of special interest, for which significant records concerning their cooperative banks still exist, are Baardwijk (and surrounding villages) and Capelle, only five kilometres apart but with totally different constituencies: Baardwijk (population 1,605 in 1920) was 9 percent liberal Protestant, 1 percent orthodox Calvinist and 89 percent Catholic, whilst Capelle (population 2,500 in 1920) was 87 percent liberal Protestant, 6 percent orthodox Calvinist and 7 percent Catholic. The villages immediately bordering Baardwijk in the *gemeenten* of Besoijen, Sprang and Loon-op-Zand, were similar to it in their religious affiliations.

Directie van den Landbouw (1923) classifies both villages in the same agricultural region: (1) the Noordwestelijke zeekleigronden (northwestern sea clay areas), although

Figure 3.7: Postcards depicting Loosduinen at the turn of the twentieth century

(a) View of the Loosduinschen Weg, ca. 1902

(b) Greenhouse with peach trees on the Oude Haagweg, ca. 1903

Source: Beeldbank, Geemeentearchief Den Haag

Figure 3.8: Postcards depicting Sprang-Capelle at the turn of the twentieth century

(a) View of Oude Straat, Sprang

(b) View of the Ned. Hervormde Kerk, Capelle

Source: Beeldbank No. 2165 & 2452, Geemeentearchief Waalwijk

some of the neighbouring villages to their south are part of (2) the Meijerij (Bailiwick) area. An important farming type in (1) was large-scale hay production. Other land uses included cereal and sugar beet production, but also dairy cattle; indeed, cooperatively-owned steam-powered milk pasteurisation factories were first established here in the 1900s (Vercauteren et al. 2004). Artificial fertiliser was the principal type used by farmers in the region. A significant portion of the landholdings were medium-sized to large, but small landholdings were increasingly important; labourers would rent small plots for the production of potatoes and sugar beet. Approximately 28 percent of land was owner-exploited. Land use in (2) was different; in addition to sugar beet, potatoes, dairy cows and wheat production were also important. Landholdings here were also significantly smaller: 94 percent were below 20 hectares.

3.D   Comparative case study descriptions

This appendix describes in some detail the banks operating in the two case study areas, focusing in particular on their institutional development, day-to-day management processes and practice, the shape and size of loans taken out at these banks and the role of religion in all the above. Limited by the available material, its primary focus is on the factors which affect credit risk, but other classes of bank risk are also discussed.

3.D.1   The Loosduinen schism and the Rijswijk duplication

The history of the *boerenleenbanken* in Loosduinen reveals much about the impact of religion on the day-to-day management of a bank located in an area with a Catholic minority. A *boerenleenbank* was founded at a meeting held on 22 February 1909 in a café in the centre of Loosduinen (RaboHaag: Notulen Algemene Vergaderingen Loosduinen I). Most of those involved were members of the Loosduinen *warmoezenierspatroonsvereeniging* (association of horticultural business owners). They opted for the CCCB-Alkmaar network, despite reservations from the meeting's chairman that this network was smaller than the other two and that its overt Christianity – or, more specifically, Catholicism – might make members of other socioreligious groups feel isolated. Participants also decided that their bank should take the *Wet van 1876* corporate form and that its use should be restricted to

members of the *warmoezenierspatroonsvereeniging.* From a subsequent meeting held the following April, it is apparent that a significant number of farmers who initially expressed an interest in joining in the event did not do so, because they did not qualify for membership of the association, or refused to join it (RaboHaag: Bestuursnotulen Loosduinen I).

Records concerning the first two decades of the bank's existence suggest that customers became members of the bank only in order to become eligible to borrow money; those who already had a relationship with the bank – i.e. had a savings account – did not become liable members until they needed a loan. In addition to the bank's members, all of whom were liable in cases of bankruptcy, most loan agreements also enjoyed the security offered by either one or two named personal guarantors. Named guarantors were much preferred to mortgage contracts, because the value of property was argued to be too difficult for the bank to estimate accurately. Instances were not infrequent where mortgages were refused and instead rearranged as loans with personal guarantees from family members residing in the properties which would have been mortgaged. Most loans were small and did not require directors' approval – they were instead arranged by the cashier directly. Larger loan applications were considered by directors after applicants had provided sufficient sureties. A typical requirement of a loan was that borrowing members could not deposit anything in their savings account until their loan was fully paid off. For many applicants, the proof of past business activities was sufficient to secure a loan by itself; advances to the tune of one quarter of a horticulturist's recorded takings from the sale of his goods at the previous year's *groente veilingen* (vegetable auctions) appear to have been granted frequently, without needing any additional sureties.

Soon after the bank was established, the chairman of the local chapter of the Catholic *volksbond* (workmen's league) – who was co-opted to attend management meetings – mentioned that a group of Loosduinen Catholics were privately planning to set up a separate cooperative, exclusively for Catholics. One of the bank's directors worried that Catholics would misuse their religion to justify a lax credit (risk) policy for their bank. In June 1909, a local Catholic priest – who sat in on management meetings in his capacity as the bank's *geestelijke adviseur* (spiritual advisor) – informed directors that he had persuaded this "splinter group" that the creation of another bank was unnecessary, for the current construction was 'sufficiently Christian' in its values. To further appease its Catholic constituency, the bank's early advertising policy was

to attract new customers using only the region's Catholic press; the advert reproduced in Figure 3.9 appeared in The Hague's Catholic daily newspaper.

The question of religion apparently simmered in the background throughout the bank's early years, eventually coming to blows during the Great War; in October 1916, a letter from the CCCB-Alkmaar clearinghouse informed directors that the Loosduinen chapter of the newly-established Catholic *land- en tuinbouwbond* (horticultural farmers' association) had applied to set up its own bank, with CCCB-Alkmaar also acting as its clearinghouse. The new bank had been established by December, and was named Loosduinen II for the purposes of CCCB-Alkmaar's bookkeeping. The creation of this new bank coincided with the mass-defection of members of the *warmoezenierspatroonsvereeniging* to the *land- en tuinbouwbond* and the creation of separate Catholic-only *groente veiling* in the town (Vijverberg 2009).

As the position of the CCCB-Alkmaar group became more and more fragile, and following a 1919 clearinghouse circular which urged local banks to wind down their loans business because the clearinghouse could no longer afford to extend credit to banks in need, the original Loosduinen (I) cooperative shed the function of *geestelijke adviseur* and left the CCCB-Alkmaar group in the financial year 1921-1922, under much protest from this organisation. After this switch of central clearinghouse, to CCB-Eindhoven, the bank became much less leveraged, moving from levels above 100 percent to levels under 50 percent by the mid 1920s (see Table 3.1 for the definition of leverage in this case). The opening of an explicitly Catholic rival probably reduced the need for the bank's leaders to appease its Catholic customers, permitting them to join the financially more secure neutral (*de facto* Protestant) CCRB-Utrecht group instead. Loosduinen II, meanwhile, stayed a member of the CCCB-Alkmaar network until the bitter end of the latter's life, in 1924, and joined the Catholic-leaning CCB-Eindhoven thereafter. Its obstinate decision compelled it to shoulder part of the costs of winding up CCCB-Alkmaar, costs which Loosduinen's original bank was able to avoid.

The history of the *boerenleenbanken* in the nearby village of Rijswijk shows how a cooperative for Protestants emerged as a direct reaction to the setting up of one for Catholics. Two banks were established in Rijswijk in 1910. The first was set up in September, serviced the Catholic community and belonged to the Catholic-leaning CCB-Eindhoven group. The second was set up only two months later in November, serviced the Protestant community and belonged to the CCRB-Utrecht group. The main sources of the brief discussion below are the work of a local historian, Janse

Figure 3.9: First newspaper advertisement of the Coöperatieve Boerenleenbank te Loosduinen (Loosduinen I)

Translation: 'The directors wish to bring to your attention that the Bank will open for business on Tuesday 8 June, at which point anyone has the opportunity to invest money. The interest rate is 3% for savings deposits and large short-term deposits, 3.25% for sums deposited for at least six months, and, exclusively for members, 4.25% with a 0.5% provision for those wishing to take out an advance (borrow money).

'Further enquiries can be made from the cashier, Jac. Dekker, resident at Emmastraat 54 [this street was renamed the Loosduinse Hoofdstraat in 1967], who will be available every Tuesday and Friday between 7.30 and 9 in the evening.'

Source: *De Residentiebode*, No. 4560, Sunday 6 June 1909.

(1990), in addition to various annual inspection reports of the two banks conducted by their central clearinghouses (RaboNed: EI472 and UI559).

The Catholic agricultural bank – the Boerenleenbank te Rijswijk – derived its legal personality from the *Wet van 1855* at the primary instigation of members of the council of Rijswijk's Catholic Sunday school, the St Bonifatius Patronaat, and members of the local Catholic farming union, the local Catholic *land- en tuinbouwbond*. These farmers also made up the bank's management and oversight boards. The bank's director was a church chaplain. It opened on Thursday evenings between 6 pm and 8 pm in a rented room in the school, which initially cost the bank 30 guilders per year. It charged new members 10 cents to open a savings account. By 1913 the bank had 100 fully-liable members. Loan agreements mostly enjoyed personal guarantors, who according to the inspection reports were usually successfully pursued by curators when loans went sour. Loans sometimes involved financial securities (usually corporate bonds) as loan sureties. This bank functioned as a credit house; it was leveraged at a level above 100 percent throughout the period under analysis, relying on the central clearinghouse for outside finance.

It is likely that the Protestant agricultural bank – the Coöperatieve Boerenleenbank Rijswijk – was established in response to the Catholic one. It was instigated by the Rijswijk branch of the Hollandsche Maatschappij van Landbouw, a *landbouwmaatschappij* (farming association) which was officially neutral but which predominantly catered for Protestant farmers by virtue of the fact that the Catholics had by the 1910s largely left it to form their own organisations. Again, the management of the bank overlapped with that of this *maatschappij*, although members of the bank were not required to join the *maatschappij*. This bank derived its legal personality from the *Wet van 1876*. The Protestant cooperative was smaller than its Catholic neighbour in terms of membership. It did not extend large quantities of credit to its members, functioning predominantly as a savings house – apart from the 1923 crisis year, it was usually leveraged at a level of only approximately 20 percent. Inspection reports reveal that the bank did not grant any mortgages, nor did it grant credit to members purely on reputation without guarantors. All loans were explicitly to be used for (agricultural) business finance and were monitored annually to ensure that this was indeed the case.

Given the differences in the way that the Catholic and Protestant banks were used, and the size of the Catholic bank's balance sheet relative to that of its Protestant

neighbour, and comparing these differences with the proportion of Catholics living in the Rijswijk area, it remains a possibility that Protestants banked with the Catholic cooperative, with the Protestant cooperative in a neighbouring village, or alternatively used non-cooperative financial institutions. Although the interest rates offered by each at this time are unclear, elsewhere rates differed by as much as one percent, which may have influenced farmers' choice of bank over and above religious community loyalty.

There was an interesting early confrontation between the Protestant cooperatives in Rijswijk and neighbouring Voorburg, which was established slightly earlier. The former requested the CCRB-Utrecht central clearinghouse to prohibit individuals from joining both cooperative banks. The central bank conceded; the cost of enacting such a ban (the sudden transfer of funds from Voorburg to Rijswijk) were deemed lower than the costs associated with doing nothing (the possibility that the bank would leave the CCRB-Utrecht network altogether). The Catholic cooperative appears to have had similar confrontations with the bank in Wateringen, to the west of Rijswijk. After this chapter's period of analysis, Rijswijk's Protestant bank was forced to merge for scale reasons with its Voorburg neighbour.

3.D.2   The same but separate in Baardwijk and Capelle

In the Waalwijk area, the idea of establishing a cooperative 'in aid of the area's farmers' was first discussed in late 1903 by the local chapter of the Noord-Brabant Christelijke Boerenbond (provincial Catholic farmers' union) (RaboLang: Notulen NCB Waalwijk). Gerlacus van den Elsen, a Catholic priest from Heeswijk, some 60 kilometres to the east of Waalwijk, a leading force in the Catholic cooperative movement and quasi-official propagandist thereof, attended the next meeting of the *bond* (union), in January 1904. He recommended that the new bank should: (1) be exclusively for local farmers; (2) accept deposits from and make loans to farmers; (3) be managed by a committee of directors and supervised by a separate committee of supervisors; (4) insist that members of both these committees should be fully liable for the bank's losses, just as all regular members were; (5) require large loan applications to be approved by both committees; and (6) join the CCB-Eindhoven network.

Supervisory and management committees were appointed in April 1904 and later confirmed at the first annual general meeting of the bank's members. Baardwijk's mayor was appointed to the board of directors. Members had also to be members of

the *bond*, and had to sign up to the bank's statutes, which espoused Christianity and the family as its core values. The bank's working area was geographically large for such a bank: Baardewijk, Waalwijk, Besoijen, Sprang and Loon-op-Zand (RaboLang: Statutes Baardwijk). These were all majority Catholic areas; the bank did not extend to Capelle, even though this was geographically closer than some of the villages that it covered. Each participating village received representation on the different committees according to its relative size. Legal personality was derived from the *Wet van 1855* and, on Van den Elsen's advice, the CCB-Eindhoven network was chosen. Most committee meetings in the bank's early history were witnessed by a *geestelijke adviseur*, a local Catholic priest, who started and ended proceedings with a Christian prayer. His exact influence on proceedings beyond these formalities is unclear, however. General meetings for all members were brief and not well attended (RaboLang: Notulen Ledenvergaderingen Baardwijk), and so *de facto* control rested with the small committee of directors and supervisors.

Typical loan requests at the Baardwijk bank were for amounts between 200 and 500 guilders, and had two named guarantors (RaboLang: Notulen Directie Baardwijk). Sometimes physical property was used as collateral, or even livestock, but this was rare. There were some mortgage contracts, which required an official notarial act before consideration. At the combined meetings between directors and supervisors, the cashier, at whose house these meetings were held, ran through the bank's financial position and then asked for advice on any particular problems, such as a shortfall on the books or a loan application from a member with a poor credit history (RaboLang: Notulen Bestuur en RvT Baardewijk). A number of instances can be found where applications for loans from individuals judged not to be agriculturalists in the strictest sense were rejected; they were advised instead to take their business elsewhere, and one bank especially recommended was the Hanzebank, a Catholic bank for small- and medium-sized enterprises (*middenstandsbank*) which had a branch in Waalwijk.[42]

The Capelle bank was founded some fifteen years after its neighbour, in 1919. It took its legal personality from the *Wet van 1867* and joined the CCRB-Utrecht network (RaboLang: Register en Statuten Boerenleenbank Capelle). The statutes of this bank stated that customers could join only if they were not already a member of another *boerenleenbank* (Article 3), i.e. not a member of Baardwijk's cooperative. They had to reside in, or at least work in, the *gemeenten* of Capelle or Loon-op-Zand.

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[42]See Chapter 5 for a detailed discussion of the history of this bank.

Members were permitted to borrow from the bank only if they were 'careful in nature' and would use their loan for 'useful purposes'; the use of the loan was to be monitored by the bank (Article 33). Unlike the Catholic banks in the region, the statutes did not insist that the loan must be exclusively used for agricultural finance. Indeed, among the original instigators of this bank was a local physician (Vercauteren et al. 2004). Non-members were also permitted to deposit savings at the bank, with the agreement of the supervisory committee. If a loan took the form of a mortgage, then the market value of the property had to be at least double the value of the loan (Article 36). If property or securities were to be used as collateral, then agreement had to be sought from the central clearinghouse in Utrecht, since that institution was reputed to have superior valuation expertise.

The bank's statutes make no reference to Christianity, making this bank *de jure* religiously neutral. But by virtue of the fact that the overwhelming proportion of local residents were Protestant, this bank was *de facto* Protestant; the bank was located in a Protestant enclave inside a largely Catholic area. There was no direct influence from any overtly Protestant institution, however, much in line with contemporary Dutch Protestant thinking about the separation of spiritual from "worldly matters" (Rasker 2004). By the end of its first year, the bank counted 114 members, most resident in Capelle (100 members), with the rest in Loon-op-Zand. Two cooperative organisations also joined the bank: the local horticulture purchasing society and a housing association. Whilst supervisors were meant in theory to scrutinise the work of the directors, a clear separation of executive and supervisory responsibilities appears not to have been strictly adhered to at Capelle; the bank's supervisors met together only with its directors and did not meet on their own.

Financial records of the Capelle bank have been well preserved and a detailed picture of how the bank functioned day-to-day is easily constructed (RaboLang: Bankadministratie Capelle). The bank's administration is typical of this time and probably of banks of all networks. The cashier held four ledgers, named the *grootboek* I, II, III and the *dagboek*. In the latter, all daily mutations, including withdrawals and deposits, were recorded. At the close of play, new entries from the *dagboek* were copied over to the relevant *grootboek*. *Grootboek* I recorded all savings accounts, *grootboek* II all loans and *grootboek* III all current account mutations. Each page of the books concerned a different customer. The books were professional and updated (almost) daily, even though the bank operated mostly from the cashier's own premises.

A reading of the management meeting minutes of the Capelle bank reveals much about the bank's lending policy and processes (RaboLang: Bestuursnotulen Capelle). Loans were requested for a variety of different things, but in particular for the purchase of livestock or as working capital. Some mortgage contracts were also taken out. Big customers of this bank were the *gemeente* (the village's municipal government) and the local *polder* (land-reclamation works). Rates of interest on loans usually ranged between four and five percent. The interest percentage does not, however, appear to have been used as an instrument to differentiate loans by expected level of risk; rather, the rate was whatever currently prevailed, i.e. whatever the central clearinghouse advised. The instrument used by the bank's managers appears instead to have been the amount of the physical loan itself; the riskier the customer, the less he was permitted to borrow. Loan sureties were predominantly personal guarantors and often included applicants' family members or even residents of other (far away) villages. Further screening of the quality of personal guarantors was carried out in cases in which they were unknown; loans were sometimes rejected if such investigations yielded unfavourable results. The opening of a current account (with overdraft facilities) also required a personal guarantor. Large loan requests, above two thousand guilders, needed approval from supervisory committee members.

Differences between the balance sheet structures of the Baardwijk and Capelle banks are striking. Over the early 1920s, the Baardwijk bank increased its level of balance sheet leverage from the lower end to the upper tail of the distribution, ending the crisis period as overleveraged and very illiquid. Over the same period, the Capelle bank maintained a low level of balance sheet leverage, acting as a bank predominantly for savings rather than loans. It also maintained a very liquid portfolio.

Chapter 4

Competition versus stability

4.1   Introduction

Standard paradigms of competition are inappropriate for the analysis of the banking sector due to the presence of strong information asymmetries in financial markets which simultaneously accord banks their *raison d'être* and the source of their fragility (Freixas & Rochet 2008). Unlike many other markets for goods and services, banking markets show no discernible relationship between their structure and their competitive outcome. For instance, a market with no more than two banks can be considered to be very competitive if customers can easily switch their business between them. Measuring switching costs directly should therefore be the focus of any empirical study of competition in banking.

The nature of the relationship between interbank competition and financial stability is controversial (Berger et al. 2009). The traditional view is that competition encourages bankers to take on high-risk projects, whilst bankers with market power are more risk averse, since they stand to lose their monopoly rents. A revisionist view is that competition drives up the interest paid out on deposits, reducing bankers' moral hazard and increasing stability. A third, new, view proposes that a U-shaped relationship exists between the two, where the traditional and revisionist relationships operate at different extremes of the market. Empirical studies of the relationship have thus far failed to clarify which model best explains the real world, partly because competition is measured incorrectly.

This chapter analyses the industrial organisation of the Dutch rural market for small-scale deposits in the early twentieth century. Following an enquiry into the origins

and early history of *boerenleenbanken*, the new rural cooperatively-owned Raiffeisen-style banks which dominated this market by the early 1920s, this chapter hypothesises that interbank competition in rural areas of the Netherlands was probably affected by the *verzuiling*, a social and economic confessionalisation phenomenon which was strongest in the interwar period. It explores ways of measuring the nature and level of competition for deposits in rural markets and uses this measure to see how the competition-stability relationship evolved across the early 1920s, a crisis period in which rural banks outperformed other types of financial institution.

This case study is useful because its peculiarities permit the direct measurement of the factors which influence competition in banking: transaction and information switching costs, in this case associated with geographic distance and religious segregation. The chapter combines a cross-section of balance sheet financial performance data pertaining to over 1,200 banks for the period 1919 to 1925, with socioreligious census, farming survey and land registry topographical data. Regression analysis is used to quantify both the direction of the relationship between interbank competition and financial stability and the importance of competition versus other likely determinants of stability.

The ownership structure of *boerenleenbanken* brings particular challenges; cooperatives' business objectives differ significantly from conventional firms because they are owned and run by (a sub-set of) their customers. This chapter meets these challenges by applying intuition from the so-called new industrial organisation literature to the specific Dutch historical context; it abandons the discredited structure-conduct-performance paradigm – which even today underlies much of the competition analysis conducted by antitrust authorities – and instead infers behaviour from the appropriate performance measures, in so doing dropping the assumption that there is a direct causal connection from market structure to competition. It also uses a stability measure which is not binary, allowing a fuller range of stability performance possibilities to be considered and thus reducing the incidence of false negatives, or type II errors, where banks are considered financially sound when actually they are not.

This chapter finds that the distance between the closest neighbouring banks in rival religious networks is positively associated with the growth in the banks' deposits, the appropriate performance measure for *boerenleenbanken*, but only for years of extreme financial distress. It concludes from this that rigidity in religious affiliation probably acted as a costly barrier to rural inhabitants of the Netherlands who wanted to switch

between banks. The benefits of banking within a farmer's religious community – possibly in terms of improved information concerning other *boerenleenbank* customers within that community and the confidence in their bank which resulted from this – were thus an important source of banks' market power during periods of financial distress. This chapter subsequently uses the same distance measures to explore the relationship between competition and bank liquidity, the appropriate way to measure bank stability for such institutions in this period. It finds that the banks which were furthest away from their closest neighbours in rival religious networks – and were thus subject to least competitive pressures – operated more liquid balance sheets. It concludes, therefore, that there was a tradeoff between competition and stability in the Dutch case, as the traditional view of the relationship would predict. However, this chapter shows that interbank competition is just one of several factors which affect the performance of cooperative banks; interest rates, the stock of savings deposits and the level of balance sheet leverage together explain more of the variation in the sector.

This chapter continues as follows. Section 4.2 is a review of the industrial organisation literature on the conflicting views of the competition-stability relationship and focuses centrally on the empirical challenges of measuring interbank competition and financial stability. It ends by discussing the application of this literature to the Dutch case. Section 4.3 provides all the historical context necessary for understanding the Dutch rural cooperative banking sector, focusing in particular on why these banks were established (when and where they were) in the first place. Section 4.4 briefly sets out the testable implications of the existing literature for the competition-stability relationship in the Dutch case and describes in more detail the cliometric empirical strategy employed in this research. Section 4.5 directly measures the switching costs incurred by depositors in Dutch rural banking markets and then explores the competition-stability relationship. Finally, Section 4.6 concludes. An appendix, Appendix 4.A, reports the results of a spatial analysis of Dutch rural markets for savings.

4.2   Competition versus stability in theory and history

The nature of the relationship between competition and stability is controversial. The introduction takes the form of a debate between traditionalists and revisionists. This is perhaps an oversimplification of the recent literature. Boyd et al. (2009) argue that older studies find in favour of the traditional wisdom only because they focus exclusively on the liabilities side of banks' balance sheets (deposits) whilst ignoring their assets (loans). Berger et al. (2009) argue that the two competing views are not incompatible and can work together. This section presents some of the recent debate and then discusses why studies – old and new – yield such different results.

A dynamic model of asymmetric information of the type proposed in Keeley (1990) and used more recently in Allen & Gale (2004) suggests that there is a tradeoff between competition and risk, i.e. competition increases bankers' risk-taking incentives. In such a model, perfectly competitive banking markets (i.e. with no switching costs) imply zero future profits; the so-called "charter value" is zero. With no potential to make future profits, there is little incentive for banks to finance low-risk projects. Bankers instead gravitate towards high-risk, high-yield projects as they have "nothing to lose". Conversely, if banks have some degree of market power and therefore a charter value, then there is likely to be a higher aversion to risk, since bankers will now have "something to lose".

Of course, this assumes that bankers are able to choose their exposure to risk. This is perhaps not an obvious assumption to make, given the likely presence of information asymmetries. The reverse assumption is that borrowers choose the riskiness of their projects, but they are undertaken with loans granted by bankers who have little influence over their choices. Models which explore this – found in the work of Boyd et al. (2004, 2005 and 2009) – yield the opposite result, namely, that competition and aversion to risk are complementary. Their argument goes that competition is likely to lower interest rates and therefore may improve the quality of loan applications and reduce the need for banks to ration credit. More profitable bank customers may in turn themselves have a lower incentive to risk losing their own charter value (their "excess capital"), therefore lowering the probability of loan defaults and increasing bank stability. Conversely, the higher interest rates likely to result from lower levels

of competition will probably draw riskier applicants (adverse selection) and induce borrowers to choose riskier projects (moral hazard), as noted in Vives (2008).

In the light of the drying up of interbank lending markets in the global financial crisis which started in 2007, Vives (2010) proposes an additional channel through which a competition-stability tradeoff may occur: competition may exacerbate the coordination problem of investors on the liability side of banks' balance sheets. His model posits that competitive pressures may increase the probability of a systemic crisis by increasing banks' reliance on forms of debt other than depositors. These liabilities can be more easily "withdrawn" because their short maturity means that they require constant renewal re-negotiation.

An alternative possibility for the competition-stability relationship is proposed in Martinez-Miera & Repullo (2008). In this, the authors argue that there are two co-occurring effects which must be considered together: (1) a risk-shifting effect; and (2) a margin effect. The first is the charter value explanation discussed above. The second works as follows: more competition leads to lower loan rates and consequently lower revenues from non-defaulting loans, which amounts to a reduction in a bank's buffer against losses, leading to riskier banks. In both their static and dynamic models of bank failure, the authors argue that the risk-shifting effect dominates in monopolistic markets, whilst the margin effect dominates in more competitive ones, amounting to a U-shaped relationship overall.

In their brief discussion of the competition-stability literature, Beck et al. (2010) discuss papers on scale in banking which do not touch on competition directly, but are instead on the outcome of the competitive process, on market structure and concentration. The contention is that larger banks are more able to diversify their portfolio, geographically or otherwise, and therefore weather shocks better. However, Wagner (2010) shows theoretically that such diversification can have negative consequences: 'even though diversification reduces each institution's individual probability of failure, it makes systemic crises more likely' (p. 373). The basic argument goes that a bank in a sector composed of (many) small specialised banks will not be affected by a shock to some asset class or geographic region outside its specialisation, yet all banks in a sector composed of (few) large diversified financial institutions would be exposed to the same risks. Another argument concerning the scale and number of banks is that of Allen & Gale (2000), who compare North American and European financial systems to argue that concentrated banking systems are easier

to supervise than ones with many small institutions. Finally, an as-yet unexplored possibility – which could follow from Motta's (2004, p.147-148) discussion that firms with symmetric market shares, cost structures and capacities find it easier to collude, overtly or covertly – is that markets populated by symmetric banks may have a different experience of stability.

Note that all the papers in this literature assume that banks adopt a limited liability public company corporate form. In financial economics, limited liability shareholdings can be valued as call options; if a company is on the brink of failure, shareholders can pay the debt and keep the profits, or they can walk away, leaving the assets and business of a company to its creditors. As discussed in Chapter 5, shareholders in unlimited or less limited liability companies give more weight to the negative tail of asset returns because they cannot walk away so easily. As a result, the competition-stability relationship may be more complicated in the case of unlimited liability cooperative banks. But in what way this complicates matters is unclear; no theoretical or empirical exercise looking at competition among such banks currently exists.

One paper which may inspire a solution to the above – at least theoretically, and with respect to the market for loans rather than deposits – is McIntosh & Wydick (2005), who look at the competition-stability relationship for modern microfinance institutions in the developing world. They construct a model to show that competition may prove detrimental to borrowers in a market for small-scale loans. Modelled as client-maximising non-profit institutions, microfinance banks are initially pitted against informal profit-maximising moneylenders to show their advantages in terms of expanding markets to new customers. But when even newer microfinance banks join a market already populated by microfinance incumbents, fierce competition for the same pool of borrowers leads to: (1) a reduction in the ability of richer lenders to cross-subsidise loans to poorer neighbours; (2) the total prevention of any viable competitive market, as the non-profit institutions undercut profit-motivated incumbents and remove their incentive and ability to survive; and (3) an increase in asymmetric information problems, due to microfinance banks being unwilling to share customer information, resulting in the ability of customers to secure multiple loans from different institutions, not all of which they will be able to repay.

In summary, the many conflicting models of this literature make the competition-stability relationship theoretically ambiguous, and thus make this an area of research in which empirical economics has much potential for providing useful contributions.

However, it has proved difficult for empiricists to agree on: (1) the way to measure competition; and, to a lesser extent, (2) the way to measure stability. Each of these problems is presented in turn. This section then discusses the current understanding in the history literature of the relationship in the Dutch context.

(1) How should competition be measured in banking? Carbó et al. (2009) provide a comprehensive review of the different competition measures used in the banking literature. By far the most popular is the Herfindahl index, which measures the size of firms in relation to the market.[43] However, this measure is problematic, in particular when applied to banking markets. Bos et al. (2010) show empirically that Herfindahl indices suffer from the "fallacy of division", a logical fallacy where inferences from the fact that a whole (the market) has a property, to the conclusion that a part of that whole (a single bank) also has that property prove false; not every bank benefits equally from an increase in market concentration. Measurement problems aside, the structure-conduct-performance paradigm – which (implicitly) underlies all works which measure competition using Herfindahl indices – has fallen out of fashion, because it treats market structure as exogenous, whereas firms' conduct (behaviour) can in practice influence market structure in a feedback loop. Schaeck et al. (2009) make a similar point empirically and conclude that 'concentration is an inappropriate proxy for competition'. Furthermore, it is often difficult to arrive at defendable (geographic) market definitions in the first place, in historical research above all; conducting a "hypothetical monopolist test" as described in OFT (2004), where the relevant market is defined by an iterated test which finds the smallest possible geographic area and product group in which a hypothetical monopolist could profitably sustain supra-competitive prices is unfortunately difficult to ascertain without surveying actual and potential customers. When this problem arises, Herfindahl indices are incalculable in any case.

A number of recent empirical studies of competition in banking are discussed and compared in Degryse et al. (2009). This review documents new empirical

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[43]The exact definition is the sum of the squares of the market shares of the 50 largest firms (or summed over all the firms if there are fewer than 50) operating in the relevant market. The result is proportional to the average market share, weighted by market share. The index ranges between zero and one (or zero and 10,000 if market shares are measured as percentages), moving from a huge number of very small firms to a single monopolistic producer. The new horizontal merger guidelines of the US Department of Justice and the Federal Trade Commission state that a merger which increases the index by 0.1 raises 'significant competitive concerns' if the market is already moderately concentrated, i.e. between 0.15 and 0.25 (US DOJ & FTC 2010, p.19).

industrial organisation studies which have begun to circumvent the problems associated with Herfindahl-type competition indices by measuring firms' conduct more directly, without explicitly having to take market structure into account. Competition measures new to the banking literature include the use of the Panzar & Rosse (1987) "H-statistic" in e.g. Claessens & Laeven (2004), where competition is defined as the sum of elasticities of the total interest revenue of banks with respect to their factor input prices; and the hitherto little explored relative profit differences measure introduced by Boone (2008), where firms are modelled as being punished more harshly for inefficiency, the more competitive the market in which they operate. However, as in the theoretical debate, the conclusions of these empirical studies vary greatly and depend largely on the measure chosen and data used; the conflicting conclusions in the comparison of competition measures used in Schaeck et al. (2009) are evidence of this. And in line with the more general observation by Ziliak & McCloskey (2008) of the empirical economics profession, these papers largely focus on the direction of the relationship only, thus forgetting the equally, if not more, important consequences of magnitude.

(2) How should bank stability be measured? In an early contribution to the literature, Martin (1977) argues that the "early warning" bankruptcy prediction methodologies employed in academic studies fall into three classes. The first, which is by far the most popular, he calls *ex post* empirical, and describes as follows: 'a group of actual failures is identified from individual case studies, and the characteristics of these banks one or more years prior to failure are compared with a group of banks which did not fail' (p. 250). The second Martin names *a priori* defined and describes as being based on models 'where the measure of risk is independent of the historical record of actual failures, but nevertheless is defined as the probability of a specific event, based on an explicit theory of what causes that event to occur' (ibid.). The third, which Martin dismisses as being of little academic merit, is termed *a priori* undefined, and works as follows: 'a concept of bank vulnerability is posited without reference to failure or any other specific event, and an arbitrary linear or quadratic function of financial variables is assumed to be a measure of this undefined vulnerability' (ibid.).

Although the techniques used in bankruptcy prediction literature have moved on since 1977, Martin's methodological categorisation remains largely accurate, according to a review of the state of the art in this literature in Ravi Kumar & Ravi (2007). The methodology which is still most popular in historical research is of the first type, *ex post* empirical. Binomial regression techniques are used to "predict" market exit, where

a bank's observed failure or survival is explained by a series of explanatory variables, the bulk of which constitute financial ratios. A recent example is Battilossi (2009), who looks at the determinants of failure in universal banks operating in interwar Italy. Another is Chapter 5 of this thesis, which conducts a multinomial logit analysis of the fate of urban cooperatives during the Dutch crisis. The principal problem with this approach – and the point which Martin fails to realise in his dismissal of the *a priori* undefined methodologies – is the possibility of "false negatives" or type II errors; many "exit decisions" are masked by covert rescues by the state or otherwise; thus, firms which "should have failed" do not actually do so. A further problem is that there is no gradation in the stability performance metric – banks either live or die. Using balance sheet ratios as dependent rather than independent variables in regression analysis permits a much more fluid definition of bank performance, one which captures all types of eventuality and picks up problem banks which would have previously been considered success stories.[44]

There has not been much study of the competition-stability relationship in historical research. One exception is Carlson & Mitchener (2006), a study of Depression-era US banks which measures the effect of bank branching on financial stability. Like the revisionists, Carlson & Mitchener posit that competition could have a positive effect on financial stability, this time through a "competitive shakeout process" similar to that which underlines Boone (2008), whereby branching forces weaker banks to exit through merger or voluntary liquidation. They test their hypothesis by a natural experiment, comparing those US states which permitted branching with those which did not. They find that the positive effect which competition had on banking stability was greater than the positive effect of diversification. However, their measure of competition does not take switching costs into account; they rely instead on a Herfindahl-type measure.

Whilst there has been much empirical and theoretical research concerning the institutional attributes and business performance of cooperative banks in the early twentieth century,[45] there is no extant analysis of interbank competition in this sector,

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[44]Note also that Bongini et al. (2002) show that the predictive power of balance sheet ratios was in any case not outperformed by other more sophisticated measures in the East Asian crisis of 1997. Stock price data did perform better, but these are of course not applicable in the case of cooperatively-owned business organisations.

[45]See in particular the following country case studies for an overview of the state of the art in historical research on early cooperative banks: Van Molle (2002) on Belgium; Guinnane & Henriksen (1998) on Denmark; Guinnane (2001) on Germany; McLaughlin (2009) on Ireland; and Galassi (1996)

for the Netherlands or any other country. A reading of the history literature on the
Dutch case (summarised in Sluyterman et al. 1998) suggests that it was affected by
a market segmentation based on religious affiliation; a farmer would apparently bank
with a cooperative whose members subscribed to his personal religious beliefs. This was
because, like trade unions, schools, hospitals and many other institutions, rural banks
were caught up in a confessionalisation process which began in the late nineteenth
century and is explored further in Section 4.3 below.

How competition could be affected by the *verzuiling* works as follows. The
Netherlands' religious group formation could have affected the presence of the
prohibitively high costs associated with switching to a bank affiliated to another
Christian denomination, e.g. a Protestant farmer might have had difficulty gaining
access to the informal church-centred Catholic community which ran his village's
other bank. Whilst plausible, this segmentation hypothesis remains unproven. Indeed,
anecdotal evidence suggests that farmers based their choice of bank on other factors
too. Whether these were the social disincentives of switching trumping economic
factors, such as improved interest rates or opening hours, has yet to be formally and
systematically tested. Moreover, the relationship between this (lack of) competition
and the sector's financial stability remains wholly untested. Although the sector as a
whole performed comparatively well during the crisis years, within-sector differences
in bank stability (i.e. relative stability) have not been examined. The analysis which
follows is a first attempt to address these two issues. It uses measures of competition
more sympathetic to the new industrial organisation literature, in combination with
measures of stability which reflect the full set of performance possibilities, to solve the
competition-stability dilemma in the Dutch case.

4.3   Origins and early history of boerenleenbanken

Data concerning the Dutch market for small-scale rural savings in the early twentieth
century can be used for the study of interbank competition because they permit the
direct measurement of transaction and information costs due to spatial location and
the country's social, political and economic segregation based on religious affiliation.
How did such segregation come about in this relatively new market? And why was it
so pervasive? This section explores the merits of the three reasons put forward in the

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on Italy.

Figure 4.1: Geographic location of *boerenleenbanken*, 1899-1914

(a) Cooperatives established by 1899

(b) Cooperatives established by 1904

(c) Cooperatives established by 1909

(d) Cooperatives established by 1914
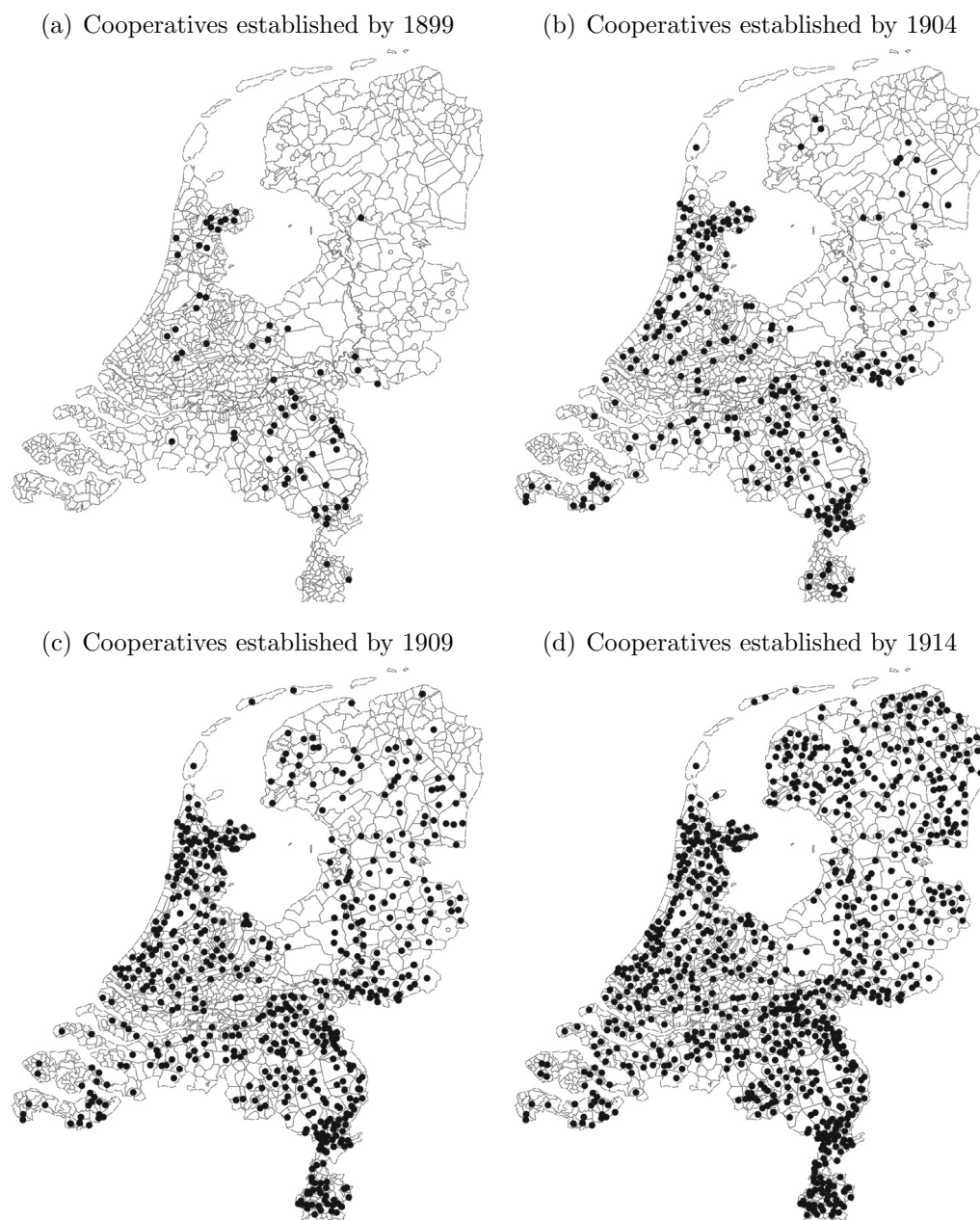
Notes: Black dots depict approximate geographic location of banks. Political boundaries pertain to those prevailing at the time of the 1920 census.

Sources: TOP250namen, NLKAART, and the annual reports of the three Raiffeisen networks.

historical literature for the emergence of *boerenleenbanken* and rapid expansion of rural financial markets at the start of the twentieth century: (1) to meet untapped market demand; (2) as an organisational response to economic and technical change; and (3) as an extension of socioreligious confessional politics.[46] It contributes to the historical literature on the sector by using economic reasoning to weigh the importance of these three solutions, something which has not been done before. In so doing, it provides the historical context necessary to understand rural banking in the Netherlands, its peculiar industrial organisation in particular. It concludes that the third view is especially important, but that the three are not mutually exclusive and probably worked together.

4.3.1   Market demand

The traditional argument put forward in the economic history literature is that *boerenleenbanken* were created in response to an unfulfilled demand for credit from the unbanked and underbanked. This view has been defended as recently as 2008 by agricultural historian Bieleman. It is also the argument made in anniversary business histories of the rural cooperative movement such as Campen et al. (1948), Weststrate (1948) and Sluyterman et al. (1998). The roots of this view probably lie with the government agricultural inquiries of the late nineteenth century, but, most importantly, with the propaganda emanating from cooperative banks themselves. Van der Marck (1924) is a good example of the latter. This pamphlet was written by the *geestelijke adviseur* (spiritual advisor) to CCB-Eindhoven, the central clearinghouse and auditing authority of the main Catholic *boerenleenbank* network, and appears to form part of a "media strategy" for the external justification of this network's existence. It attributes any growth in the rural economy to the cooperative movement itself and states that *boerenleenbanken* 'have set farmers free' from their previous financiers – caricatured as shylocks who charged usurious interest rates – permitting farmers to 'help themselves by helping each other'.

The pamphlet's main argument is that farmers no longer had problems finding external financing after the market entry of cooperative banks. This could be

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[46]Similar taxonomies on the origins of cooperatives have been put forward in the theoretical literature on cooperatives, such as the Kyriakopoulos (2000) classification of cooperatives into utilitarian (business-orientated), solidarity (service-orientated) and purposive (socioreligiously-motivated) organisations.

interpreted as either "credit rationing" or "red-lining" behaviour on the part of incumbent financial intermediaries (Freixas & Rochet 2008). Credit rationing occurs when borrowers' demand for credit is turned down, even if these borrowers are willing and able to pay both the price component (interest rate) and nonprice component (collateral requirements) of prevailing loan contracts. Red-lining occurs when complete categories of borrowers are totally excluded from the credit market because they are unwilling and/or unable to pay the price and/or nonprice components of prevailing loan contracts.

Whilst both phenomena force farmers to self-finance (part of) their projects, or indeed not carry them out for a lack of funds, they imply very different conduct by the incumbent suppliers of financial services. Credit rationing implies that banks could increase their market share still further and attract additional creditors by increasing the price and/or nonprice components of their loan contract, but that they are unwilling to do so due to the potential high risk of such creditors' projects, or due to the presence of some information asymmetry which, for instance, makes *ex post* state verification too costly. Red-lining, by contrast, implies that banks could increase their market share only by reducing the price and/or nonprice components of their loan contracts, but are unwilling to do so because the expected returns on the projects which such loan contracts would attract are insufficient.

The institutional innovation which most of the modern literature on microfinance institutions argues is necessary for cooperatives to reduce the price and/or nonprice components of loan contracts is joint liability or group lending.[47] This literature posits that cooperative finance enables small-scale business to borrow with little or no collateral through making cooperators liable for one another's financial losses. The argument is summarised as follows. Adverse selection is probably reduced as group members are screened: they often have to fulfil certain requirements before they can join, such as a minimum deposit – or even belief in a particular god. Providing the group is small and geographically concentrated, members are more able to monitor one another's effort and can therefore reduce free riding and moral hazard. As cooperators are all in similar lines of business, they can probably more easily verify one another's business outcomes and so state verification is less costly. As members engage in long-

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[47]See Guinnane (2001) for a discussion of this point in the context of nineteenth century German Raiffeisen banks, or Armendáriz de Aghion & Morduch (2005) for a wider review of contemporary microfinance institutions.

term repeated interaction with an unknown or uncertain end point and as it is difficult and costly to renounce membership, a cooperative equilibrium outcome is likely to be sustainable, which benefits all members at least a little, and from which it is not in the interest of any one member to deviate.

Micro-business histories of *boerenleenbanken* in the majority-Catholic south of the Netherlands by Jonker (1988*b*) and Brusse (2008) provide evidence that the market for agricultural credit was already satiated by the time the cooperatives entered it, and that additional credit-granting institutions were not in demand. This argument implies that the sector's origins could not have been demand-led. Jonker shows that the new cooperative banks were largely used as savings institutions, a type of service already catered for by the Rijkspostspaarbank (RPS), the state-owned post office savings bank. The argument holds that no new market for banking services was created with the arrival of cooperatives, only additional competitors added to an already crowded one. Although the language of modern banking economics is not used in either work, the Jonker and Brusse studies imply that incumbents were engaging in credit rationing. Ample credit was available, and the only way to attract more custom would have been to offer services to risk-loving individuals willing to take on higher interest rates.

Rommes (forthcoming, 2011) comes to similar conclusions in his new book on the origins of rural cooperatives in the Netherlands. He argues that the reason why Raiffeisen banks reached the Netherlands significantly later than some neighbouring countries was that the credit situation in much of the Dutch countryside was not as dire; good substitute sources of funds were available. He tracks various failed initiatives to establish cooperatives in the nineteenth century, and analyses survey data from the 1880s which reveal mixed feelings about the demand for new rural banks. He finds *kassiers* – small private cashier firms – to be the principal incumbent in the market for rural credit. These were especially active in the north of the Kingdom, where *boerenleenbanken* arrived on the scene much later (see Figure 4.1).

How does this argument relate to the rural market for savings, the focus of this chapter? Figure 4.2 shows that interest rates paid out to customers of *boerenleenbanken* were at least one percentage point higher than those paid out by the RPS. This enabled *boerenleenbanken* to poach customers away from this institution, or at least attract more new customers. Whilst Raiffeisen banks in Ireland relied on subsidies to fund their loan books (McLaughlin 2009), Dutch Raiffeisen banks did not; they could attract deposits and did not have to rely solely on more expensive outside financing. Van

Zanden (1997, p.127) estimates that the RPS held 7.8 percent of all bank assets in 1900 but 5 percent in 1918, whilst *boerenleenbanken* went from 0.1 percent to 4.2 percent of assets in the same period. In short, it was their activities in the market for deposits that enabled them to operate so successfully in the market for loans. *Boerenleenbanken* had one great advantage over incumbents in the market for savings and loans: fewer fixed and variable costs. Case study evidence discussed in Chapter 3 suggests that these institutions relied on free management, low overheads and insider or peer monitors to provide the necessary incentives for the loan-holder to use his loan conservatively and repay it on time. And so it is the conclusion here that incumbents in some parts of the Netherlands were engaging in red-lining rather than credit rationing behaviour; cooperative Raiffeisen banks deepened rural financial markets, extending them to customers who could not afford existing loan contracts, or at least could not borrow as much as they wanted at the prevailing prices. They did so by becoming very active and successful in the market for rural savings. Although the financial rewards in this new, extended, market were lower than in existing ones, so were the costs of doing business here for cooperatively-owned banks *vis-à-vis* conventionally-owned ones.

4.3.2 Organisational response

This sub-section assesses whether it was the organisational form of cooperative banks that permitted farmers to compete away a share of the existing financial market from incumbents, and/or deepen the market to capture customers previously excluded from it. The argument being explored is that cooperation in rural finance was an organisational innovation which better aligned the incentives of the owners and users of capital, permitting a better functioning savings and loans market and resulting in the relative demise of substitute incumbent institutions. It further investigates whether the timing of the banks' proliferation across the Netherlands could have been a response to the (perceived) late industrialisation of Dutch agriculture and to the deflationary *Grote Landbouwcrisis* (Great Agricultural Crisis) of the late nineteenth century.

A cooperative is an organisation which is owned and run by the same set of economic actors with which it conducts its business. Producer and consumer surplus are both allocated to the same actors, as a result of which the objective function of cooperative organisations differs significantly from those of other more conventional business types. Cooperatives are not profit maximising firms in the traditional sense.

Figure 4.2: Rural interest rates on borrowing and lending, nominal terms

(a) Average interest rate percentage paid to depositors by central clearinghouses and local banks and by the RPS, 1915-1929
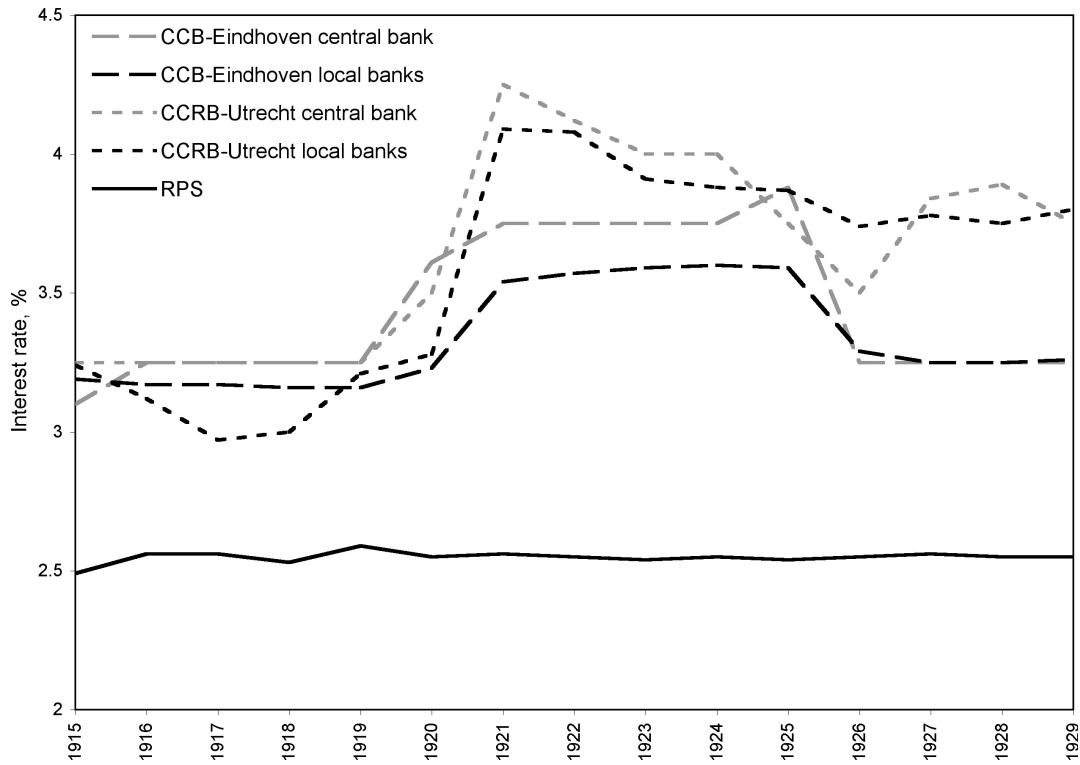
(b) Interest rate percentage paid by local banks on loans from their central clearinghouse, 1904-1929
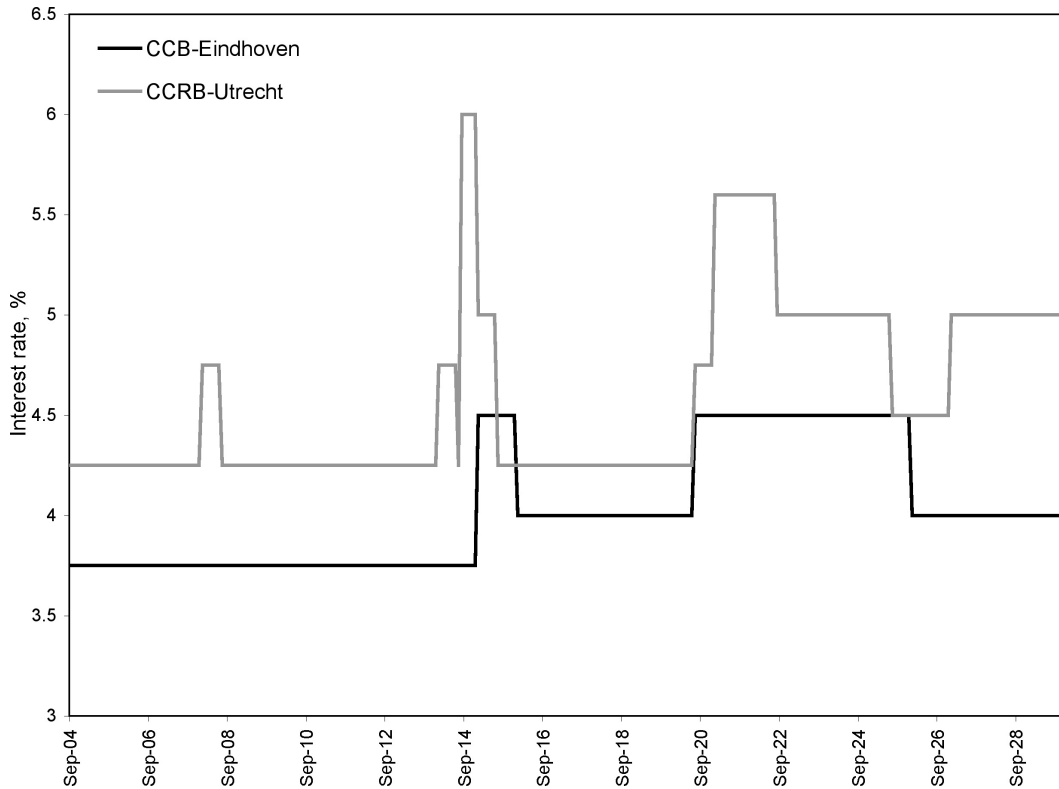
Source: Van Campen et al. (1948)

Indeed, they are arguably not even independent business ventures, but instead simply extensions of each individual cooperator's private interests. Where a conventional company seeks to maximise returns for its owners and managers, a cooperative's owners and managers may instead maximise their own returns by minimising those of the cooperative organisation which they co-use, co-own and co-manage. This is in line with the model of cooperative behaviour outlined for the Italian case in Galassi (1996), and, more generally, to the "cooperatives as an extension of the farm" approach to cooperative theory discussed in the review by Cook et al. (2004) of the literature on cooperative business organisations.

Boerenleenbanken may have been able to attract savers in the rural Netherlands and displace incumbents exactly because of their cooperative ownership; capturing producer and consumer surplus meant that the interest rates offered on savings could be consistently above those offered by the RPS, an institution which, unlike the Raiffeisen cooperatives, enjoyed a full state guarantee. Cooperators – who were both owners and customers – were able to internalise any profit before it reached the cooperative business organisation itself by setting below-market interest rates on loans and above-market rates on deposits. And if not internalised at the level of individual members, then returns were probably captured by the many other agricultural cooperatives using these banks.

Cooperation in Dutch rural finance occurred simultaneously with the cooperation in other types of rural business: the first cooperative dairy in Friesland in 1886, the first cooperative butter manufacturer in Maastricht 1895, the first cooperative fruit farm in Gelderland in 1904, and the first cooperative flower market in Noord-Holland in 1912 (Bieleman 2008, p.287). Cooperative banks could be viewed as an extension of these other cooperatives, an attempt to further internalise positive externalities. By self-financing agricultural improvement, farmers were creating vertically integrated business organisations. Not only does this result in the elimination of margins through the supply chain and of costs associated with information asymmetries, but it arguably also reduces principal-agent incentive problems as the owners and users of capital were now the same economic actor. Rommes (forthcoming, 2011) finds many cases of overlapping membership and management of different types of rural cooperative, further evidence of this integration.

Douma (2001) and Douma & Schreuder (2008, pp.171-173) use transaction cost economics to explain why cooperative businesses have proved more successful in some

markets than others. They posit that different forms of business organisation are more appropriate in different circumstances. Using the case of Dutch dairying in the late nineteenth century, the authors argue that cooperative dairies were more successful in markets where milk was coagulated into cheese than where milk was sold to customers directly; dairy cooperatives could not displace private creameries around cities such as Amsterdam because these incumbents had invested in sophisticated fresh milk distribution networks, whilst cooperatives in the province of Friesland were more successful because milk there was principally made into products with a longer shelf life and fewer distribution pressures, such as cheese and butter. The idea behind Douma's work is that organisational forms compete with one another, and that in the long run, one form of organisation is triumphant. Perhaps the rapid rise of *boerenleenbanken* can be seen in this context; their organisational form allowed them to displace incumbents, with varying degrees of success in different parts of the country, in both the markets for loans (versus the *kassiers*) and savings (versus the RPS). Their organisational form was perhaps most appropriate where the costs of doing business were too high for conventionally-owned banks to turn a profit.

The question then remains, what brought about this sudden organisational change; what was so different at the turn of the twentieth century to make cooperatives suddenly so widespread? One possibility is the *Grote Landbouwcrisis*, an exogenous shock to Dutch agriculture which Bieleman (2008) dates as running from 1878 to 1895. This crisis manifested itself as a sustained fall in the prices of, and demand for, agricultural output across most sectors. The tillage of monocot cereals was particularly affected, with prices falling by up to 50 percent. Although this crisis was global in nature, two factors caused Dutch agriculture to suffer particularly badly: (1) increased competition from abroad, especially the US for cereals and Denmark for dairying; and (2) technological changes which made many agricultural products obsolete, such as madder, used for dyeing clothes, and rapeseed, used as fuel (Knibbe 1993).

Traditional accounts of Dutch agriculture argue that it lagged behind its competitors and only industrialised after, and because of, the agricultural crisis (Brugmans 1961). Van Zanden (1985), Smits et al. (1999), Smits (2009) and Bieleman (2008) in particular, however, argue that the mechanisation of Dutch agriculture started long before the crisis, and that the crisis actually slowed this process down. Bieleman (2008) lists a long series of innovations which came on stream before and during the crisis period, such as the US-designed Eagle plough, which had replaced

the entire stock of ploughs across the Kingdom by 1880. The significant lag between agricultural industrialisation and the advent of agricultural cooperative organisations in general, and cooperative microfinance for agriculture in particular, suggests that the sector's origins lie elsewhere. Whilst the advantages of cooperative ownership discussed above cannot be denied, whether or not they are the root cause of cooperation, it may be more difficult to argue that the nineteenth century agricultural crisis was the "initial spark" or sufficient condition for cooperation.

Knibbe (1993) advances a different approach to finding the reason for the advent of agricultural cooperation: he sees it as a response to the weak market power of farmers, beginning in the 1880s. Farmers experienced problems with respect to their price and quality, even when agricultural markets had fully recovered. Knibbe argues that they were suffering from an increase in concentration and cartelisation of the suppliers of their inputs and the purchasers of their output, principally in the sugar, potato starch and straw markets, and possibly also in the dairy market. Aside from this, they also suffered pressure on labour costs as a consequence of rural-urban migration. Cooperation was their solution, a form of cartelisation which improved the market power of agriculturalists versus the upstream and downstream parts of the market. Knibbe argues that cooperation drastically improved the market position of farmers between 1890, when purchasers had the upper hand, and 1910, when farmers could themselves dictate prices. What aided in this process was increasing demand for agricultural output, providing room for expansion. Knibbe's argument can be easily extended to include cooperative finance, which, as discussed, was tightly interwoven with the rest of the agricultural cooperative movement through interlocking membership and management. Whilst the creation of new cooperatively-owned financial institutions may not have been as "needed" as e.g. new cooperatively-owned dairies, the market entry of the former could be seen as a path-dependent extension of the latter, where the latter rather than the former was the result of the Douma-style process of organisational competition discussed above.

4.3.3 Sociopolitical control

The third argument for the origins of *boerenleenbanken* concerns the growing role of confessionalism around the time of the movement's inception. By the late nineteenth century, most Dutch citizens identified themselves strongly with a particular religious

denomination, primarily Roman Catholicism, and the liberal *hervormde* (Dutch Reformed) and orthodox *gereformeerde* (literally "re-reformed") forms of Calvinism. Dutch enterprise and society became highly segregated along religious lines, with the different Christian denominations developing sophisticated parallel economies, each with its own schools, political parties, newspapers, trade unions, hospitals and even banks. This phenomenon, known as the *verzuiling* (pillarisation), reached its zenith in the interwar period. Its origins have been analysed, among others, by Kruijt (1974), Lijphart (1975), Stuurman (1983), De Rooy (1995), and Luykx (1996) – and is also the subject of Chapter 3 in the context of religion and risk-taking in *boerenleenbanken.*

The argument put forward or implied in Jonker (1988*a,b*), Sluyterman et al. (1998), Van Zanden & Van Riel (2000) and, recently, in Rommes (forthcoming, 2011), is that sociopolitical interest groups – the Roman Catholic clergy above all – were crucial in the creation of the first cooperative banks and that these groups viewed cooperatives as a way of consolidating or extending their political influence. This is much in line with the ideas of Stuurman and Luykx in their wider analysis of the *verzuiling*, both of whom argue that the phenomenon was Catholic-led. But while the former sees it as part of a wider political struggle for minority rights, the latter argues that the *verzuiling* was a form of social control by Catholic elites over the working classes rather than a reaction to discrimination.

The *verzuiling* affected *boerenleenbanken* through institutionalised confessional politics, a narrative description of which follows. All eleven provinces of the Kingdom gained provincial *landbouwmaatschappijen*, or agricultural companies, between 1837 and 1855 (Smits 1996). These organisations aimed to stimulate the improvement of agricultural technology by organising trade fairs and subsidising agricultural consultants. Partly on the initiative of the Hollandish *landbouwmaatschappijen*, a national Nederlandsch Landbouw-Comité (NLC) was established in 1884 to deal with agricultural issues, such as disease, which affected all regions of the country. This new institution was not universally loved, however. Devastating criticism came in particular from the Catholic press, which argued that: (1) agricultural fairs and other efforts by the local *landbouwmaatschappijen* were not remedying the plight of all farmers; and (2) it was wrong that social questions were of less importance to the new organisation than economic ones (Smits 1996). Against this backdrop there were calls for the creation of business cooperatives from the Catholic priesthood in response to Papal papal Encyclical Pecci (1891), an open letter sent by the Vatican to the clergy in support of

anti-socialist confessional trade unionism.

A new organisation for Dutch agriculturalists was established in 1895: the Nederlandsche Boerenbond (NBB), or Dutch Farmers' Union (Smits 1996). The creation of new regional unions soon followed and most in turn joined this national NBB on a quasi-federal basis. The Noordbrabantse Christelijke Boerenbond (NCB) was one of the largest and most influential regional unions, operating in the large southern province of Noord-Brabant. It was instigated and initially led by a Catholic priest. In theory, the difference between the farmers' unions and the *landbouwmaatschappijen* was that the first were created from the ground up by farmers whilst the second were centrally imposed on farmers by an elite, however defined. However, the actual difference appears to have been that, unlike the *landbouwmaatschappijen*, the unions' stated aims were religiously motivated, such as the NCB's aim of 'furthering the interests of God, the family and property', henceforth referred to as the "God Requirement". The unions were predominantly Catholic affairs; farmers in the Catholic provinces (Noord-Brabant and Limburg) made up 73 percent of the NBB's membership in 1904, and even unions north of the Rhine river delta – the half of the Kingdom that was predominantly populated by Protestants – were almost completely dominated by Catholics (Smits 1996). Meanwhile, the *landbouwmaatschappijen* became *de facto* Protestant when Catholic farmers left them to join their new unions.

Jonker (1988*b*) argues that it was the regional farmers' unions that were the primary instigators of the *boerenleenbanken* in Noord-Brabant. Catholic priests and others working on behalf of the unions would visit villages to spread the idea of cooperation. These propagandists would help villagers write their new organisations' statutes and provide them with a small amount of initial financing. Local priests would be recruited to provide these cooperatives with day-to-day "spiritual guidance". In Protestant parts of the country it was the *landbouwmaatschappijen* that performed this same function, without the spiritual guidance, but perhaps only as a response to Catholic-only cooperative efforts.

There were soon serious conflicts between regional and national unions. This led, in 1898, to the creation of not one but two central clearinghouses and audit authorities for the *boerenleenbanken,* one sponsored by the NBB and based in Utrecht, CCRB-Utrecht, and the other by the NCB and established in Eindhoven, the CCB-Eindhoven.[48] Further division in the *boerenleenbank* family came in 1901 when the

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[48]Officially, this split was due to a legal question about the appropriate act of parliament to use

members of the Utrecht network decided to drop the God Requirement from their founding statutes and disaffiliate themselves from the NBB. The NBB responded by calling on its members to leave this network and form their own provincial central banks, which would continue to observe the God Requirement. However, this attempt at blackmailing Utrecht was not very successful; only one new provincial central bank was created, in 1904, for the provinces of Holland – CCCB-Alkmaar. This lack of response is perhaps unsurprising, given that the NBB's god was decidedly Catholic and therefore not popular in much of the predominantly-Protestant north.

The net result of the cooperative in-fighting was that confessionalism became rigidly institutionalised in the rural banking sector: the south and the north-west had their Catholic networks, supported by regional farmers' unions, whilst everyone else had the officially neutral but *de facto* Protestant network of the Utrecht central bank. Interesting unexplained differences between cooperatives of the two Christianities persisted throughout their early existence. For instance, Catholic interest rates paid by local banks on loans from their central bank were consistently lower than Protestant ones (see Figure 4.2). This is perhaps evidence of segregation trumping economic concerns; the *verzuiling* meant that the two denominations did not have to worry about competing with one another for the same customers. However, evidence to the contrary also exists: the strength of the Catholic bank in the village of Rijswijk in the province of Zuid-Holland – as described in Janse (1990) and analysed above in the appendices to Chapter 3 – can be accounted for if and only if it courted local Protestants, given the relative size of the two religious communities at the time of the 1920 census. The interest rate difference of one percent may have influenced farmers' choice of bank over and above religious community loyalty.

4.4   Testable implications and empirical strategy

This chapter carries out two empirical exercises: (1) it looks at the way in which *boerenleenbanken* competed with one another in the Dutch rural market for savings; and (2) it explores whether there is any implication of the level of observed competition for financial performance at the level of individual banks during the early 1920s, a

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in the founding of cooperative organisations, discussed in Chapter 3; but legal analysis in Chapter 5 shows that these legal differences could have had little impact on the functioning of cooperative banks in practice.

period of financial turmoil induced by the simultaneous occurrence of wide-spread indebtedness and (exogenously-caused) price deflation. In so doing, it is able to shed light on the history discussed in the previous section; how important were the sociopolitical factors versus other explanations for the origins of these financial institutions? This current section discusses how competition is measured, outlines the alternative hypotheses on the competition-stability relationship and discusses the data sources used in the econometric exercises which follow.

This present study is similar to Carlson & Mitchener (2006) in that it analyses detailed historical data about an extreme market structure which: (1) permits the identification of relationships between variables such as would be less observable in modern financial markets; and (2) uses detailed bank (branch-) level data which are largely unavailable for modern financial markets, at least not publicly. It differs in that: (1) it measures competition in a way which is more sensitive to the theoretical concerns, discussed in Section 4.2, regarding what constitutes interbank competition; and (2) it measures bank stability in a way which makes use of the entire range of performance possibilities, not simply success or failure.

In the case of early twentieth century Dutch cooperative banking markets, the financial penalties for borrowing from an institution other than the bank with which farmers already had a relationship were very high. Joining a bank, and therefore standing liable for any of that bank's potential losses, was a prerequisite for securing a loan from any Dutch cooperative Raiffeisen bank. They often flatly prohibited their members from joining other banks. If they renounced their membership, ex-members would continue by law to stand liable for a minimum of one further year, a period sometimes lengthened by banks in their statutes. The analysis here instead focuses on the liabilities side of these banks' balance sheets, the market for savings deposits, where this prohibitive switching cost was wholly absent and hence active competition was a real possibility. Rural inhabitants did not have to join a *boerenleenbank* to deposit there, and could withdraw their cash, with appropriate notice (sometimes several weeks for large amounts), and deposit it elsewhere at any time. Even if switching did not occur regularly – no data exist which count incidents of switching – then, at the very least, this chapter focuses on the ability of different banks to attract new rural customers, or new savings from existing customers, a type of *ex ante* switching cost.

As discussed in the previous section, the cheapest source of banks' funding for their lending activities was their depositors. To fulfil their aim of meeting members' demands

for loans, their cheapest strategy was to attract more deposits. It is the growth in deposits that is the principal component of the objective function of *boerenleenbanken*, for it is the growth of these that permitted members to borrow cheaply. The way in which members captured any of their cooperatives' rent "before" it reached the cooperative business organisation itself was through interest rate policy: charging below-market interest on loans and paying above-market interest on savings. This looks to have been a successful business strategy which at the time greatly annoyed DNB (Sluyterman et al. 1998), the Dutch bank of issue and *de facto* central bank, because it argued that this was not sustainable, apparently not fully understanding that the cost of doing business was significantly lower for them than for conventional banks. Each bank's excess customer deposits were lent to its central clearinghouse for only a small mark-up, usually amounting to just one quarter or one half of one percent. Combined with low operational costs, thanks to e.g. employing voluntary managers and operating out of cashiers' own premises, it was only through attracting scale in deposit gathering that *boerenleenbanken* were afforded the possibility of "recycling" their liabilities as loans to their members at "mates' rates".

Like the new empirical industrial organisation literature, this chapter does not make the assumption underlying much of the work of the "traditionalists", that market structure causes performance. Instead it attempts to infer conduct directly from performance measures. The theoretical idea follows Boone (2008), i.e. that the process of interbank competition should homogenise banks' performance, controlled for various social, economic and institutional factors. Banks whose performance diverges significantly from the norm are hypothesised to benefit from some market power due to switching costs, or suffer from a lack thereof. However, whilst Boone uses measures of profit to infer conduct, the present analysis instead focuses on the growth in banks' savings deposits; as discussed, these banks aimed to maximise deposits, not profits. It exploits the peculiarities of the Dutch market for small-scale rural deposits to develop measures which reflect transaction and information costs in terms of geographical distance to the nearest alternative banks on the same and on different sides of the Dutch confessional divide. The use of distance as a measure follows from Degryse & Ongena (2005), an application to banking markets of locational differentiation models of the Hotelling (1929) and Salop (1979) tradition.

This chapter uses bank liquidity – the ability of a bank to meet its financial obligations as they fall due – as its principal measure of bank stability. In a fractional

reserve banking system, banks lend out deposited funds, while still permitting (most) deposits to be withdrawn on demand. In the popular Diamond & Dybvig (1983) random-withdrawal-risk explanation of bank runs – sometimes known as the "sunspot" explanation – unexpected withdrawals by depositors are associated with location-specific economic shocks (Calomiris & Gorton 1991, p.123), such as seasonal demands for currency due to agricultural payment procedures. A bank's level of liquidity can be thought of as a measure of its ability to meet withdrawal demand during such a bank run. *Boerenleenbanken* were advised that long-term deposits to members should not exceed 30 percent of their investment portfolios (*De Raiffeisen-Bode*, October 1924, pp.22-23). In this chapter, liquidity is defined as the percentage of banks' assets that is held either in cash or callable deposits at banks' central clearinghouses, the two most short-term investments. Contemporary advice to banks therefore corresponds approximately to a value of 70 percent liquidity using this measure. While illiquidity does not necessarily lead to insolvency, the former is nevertheless a necessary condition for the latter. Indeed, Goodhart (2007) proposes in the first sentence of his paper that 'liquidity and solvency are the heavenly twins of banking, frequently indistinguishable'. The measure for bank stability used here can therefore be characterised as a measure of "instability potential". It is an appropriate measure in the current context because, rather than the more conventional binomial success-or-failure measure used in much of the bank stability literature, it offers a continuity of stability possibilities to reflect the fact that no *boerenleenbank* failed outright during the 1920s financial crisis period, but many would not have stayed in business had it not been for the constant support which they enjoyed from their central clearinghouses – 110 banks were leveraged more than 100 percent (i.e. depended on their clearinghouse) in 1921, rising to 278 in 1923. Looking at bank liquidity helps to reduce the incidence of false negatives, where the null hypothesis of bank stability is not rejected when it is false – the patient testing negative when he is in fact infected.

The two alternative hypotheses for stage one of the empirical exercise, the degree of competition between *boerenleenbanken*, are derived from the history literature discussed in Section 4.3, as follows: (1) members of a religious denomination did not bank with *boerenleenbanken* which were affiliated (implicitly or explicitly) with another denomination; or (2) denomination mattered little in agriculturalists' choice of bank, interest rate and other factors being substantially more important determinants of *boerenleenbank* choice. The three possible hypotheses for stage two of the empirical

Table 4.1: Definitions and descriptions of variables used in Chapter 4

Variable (unit)	Definition	Description
deposit growth (%)	annual change in deposits (medium- and long-term) over original stock	maximising this is a bank's core objective
liquidity (%)	percentage of assets held in cash or at central clearinghouse	funds available for immediate withdrawal; a measure of liquidity used by contemporaries
distance own bank (km)	distance to closest neighbouring bank in the same clearinghouse network	proxy for transaction and information costs of switching
distance other bank (km)	distance to closest neighbouring bank in another clearinghouse network	proxy for transaction and information costs of switching
interest rate (%)	highest interest rate paid by central clearinghouse to local banks on excess deposits	local banks cannot pay out higher interest rates than this; also serves as network indicator
deposits (thousands)	total deposits (long-term) held by bank at the start of the financial year	measure of a bank's initial size; control for initial position
accounts (hundreds)	number of deposit accounts	measure of a bank's size
depositors/members (ratio)	number of depositors who are members	only members are liable co-owners, hence a measure of the principal-agent problem
leverage (%)	percentage of bank's deposits used to finance loans	measure of bank risk: a value higher than 100% means that a bank is relying on external funds
age of bank (years)	age of bank at year of cross-section	control for potential first-mover advantages
corporate form (dummy)	dummy = 1 if bank is established using the *Wet van 1876*	the alternative governance structure (*Wet van 1855*) is cheaper to enact*
overtly Christian (dummy)	dummy = 1 if bank is overtly religious in its founding documents or statutory name	measure of those banks which took religious values very seriously*
Catholic population (%)	percentage of people who are self-declared Catholic in bank's immediate municipality	control for potential denominational differences in savings preferences†
horticultural farming (%)	percentage of land in bank's region used for horticultural farming (market gardening)	control for capital-intensity of agriculture†
owner-occupied farms (%)	percentage of farms in bank's region which is owner-occupied	control for potential differences in depositor investment incentives†

Notes: * data available only for 1919; † data available only for 1920.

Table 4.2: Summary statistics for *boerenleenbank* sample, by year, 1919-1925

(a) Summary statistics for *boerenleenbank* sample, 1919

Variable (unit)	Mean	Std. Dev.	Min.	Max.
deposit growth (%)	24.67	44.66	-85.36	616.24
liquidity (%)	44.90	25.77	0	98.87
distance own bank (km)	3.86	3.81	0.18	104.02
distance other bank (km)	19.40	19.62	0.06	117.97
interest rate (%)	3.48	0.26	3.25	4.00
deposits (thousands)	176.70	159.35	0.02	1,641.96
accounts (hundreds)	2.17	1.67	0.03	18.04
depositors/members (ratio)	1.81	0.91	0.08	12.23
leverage (%)	45.94	53.28	0	1,156.86
age of bank (years)	10.44	5.35	0	22
corporate form (dummy)	0.44	0.50	0	1
overtly Christian (dummy)	0.03	0.16	0	1
Catholic population (%)	47.91	40.51	0	100
horticultural farming (%)	6.19	7.21	0.47	35.05
owner-occupied farms (%)	49.05	18.09	11.15	98.85
n	1,081			

Notes: 60 (new) banks which took their first deposits in 1919 (and therefore experienced a deposit growth rate of infinite percent) were eliminated from the original 1,141-bank sample, after interbank distances were calculated.

(b) Summary statistics for *boerenleenbank* sample, 1921

Variable (unit)	Mean	Std. Dev.	Min.	Max.
deposit growth (%)	24.80	34.22	-139.79	353.69
liquidity (%)	29.50	21.97	0	97.75
distance own bank (km)	3.78	3.63	0.10	104.02
distance other bank (km)	15.33	16.32	0.06	117.97
interest rate (%)	4.30	0.25	4.25	5.50
deposits (thousands)	221.06	181.78	0.21	1,778.28
accounts (hundreds)	2.66	2.03	0	21.17
depositors/members (ratio)	3.54	51.35	0	1,695
leverage (%)	54.03	59.19	0	1,260
age of bank (years)	12.38	5.37	2	24
corporate form (dummy)	0.44	0.50	0	1
overtly Christian (dummy)	0.03	0.16	0	1
Catholic population (%)	47.59	40.55	0	100
horticultural farming (%)	6.16	7.19	0.47	35.05
owner-occupied farms (%)	49.05	18.06	11.15	98.85
n	1,089			

Notes: 33 (new) banks which took their first deposits in 1921 were eliminated from the original 1,152-bank sample, after interbank distances were calculated. A further 30 banks were eliminated, because their corporate form and overt Christianity status are unknown.

(c) Summary statistics for *boerenleenbank* sample, 1923

Variable (unit)	Mean	Std. Dev.	Min.	Max.
deposit growth (%)	-0.16	34.47	-71.11	838.97
liquidity (%)	29.40	23.50	0	96.19
distance own bank (km)	3.81	3.75	0.18	104.02
distance other bank (km)	14.38	15.33	0.06	117.97
interest rate (%)	4.12	0.14	4.00	4.50
deposits (thousands)	263.77	218.41	1.00	2,400.71
accounts (hundreds)	2.93	2.16	0.04	26.15
depositors/members (ratio)	2.00	0.86	2	6.90
leverage (%)	80.37	62.71	1.87	1,089.04
age of bank (years)	14.38	5.38	4	26
corporate form (dummy)	0.44	0.50	0	1
overtly Christian (dummy)	0.03	0.16	0	1
Catholic population (%)	47.85	40.60	0	100
horticultural farming (%)	6.12	7.16	0.47	35.05
owner-occupied farms (%)	49.08	18.11	11.15	98.85
n	1,078			

Notes: 32 (new) banks which took their first deposits in 1923 were eliminated from the original 1,233-bank sample, after interbank distances were calculated. A further 123 banks were eliminated, because their corporate form and overt Christianity status are unknown.

(d) Summary statistics for *boerenleenbank* sample, 1925

Variable (unit)	Mean	Std. Dev.	Min.	Max.
deposit growth (%)	10.34	14.81	-27.74	152.28
liquidity (%)	33.79	22.47	0	97.86
distance own bank (km)	3.70	3.61	0.18	104.02
distance other bank (km)	14.74	15.38	0.03	117.97
interest rate (%)	4.40	0.12	4.25	4.50
deposits (thousands)	279.95	254.98	6.55	2,909.18
accounts (hundreds)	3.28	2.55	0.18	33.36
depositors/members (ratio)	2.05	0.95	0.14	16.04
leverage (%)	54.28	38.07	0	471.00
age of bank (years)	16.36	5.32	6	28
corporate form (dummy)	0.43	0.50	0	1
overtly Christian (dummy)	0.02	0.13	0	1
Catholic population (%)	47.73	41.10	0	100
horticultural farming (%)	5.94	6.86	0.47	35.05
owner-occupied farms (%)	49.36	18.20	11.15	98.85
n	1,050			

Notes: 42 (new) banks which took their first deposits in 1925 were eliminated from the original 1,233-bank sample, after interbank distances were calculated. A further 141 banks were eliminated, because their corporate form and overt Christianity status are unknown.

exercise, the relationship between competition and stability, are derived from the (largely theoretical) literature reviewed in Section 4.2, as follows: (1) increased interbank competition should result in less stability by incentivising risk-loving behaviour from banks and their customers; (2) increased interbank competition should result in more stability by improving the quality of customers and lowering their default probability; and (3) a combination of the two: increased competition may result in less stability in an extreme industrial organisation – if the market is highly concentrated or highly monopolistic – or under an extreme (temporary) market condition, perhaps due to some exogenous price shock, but in more stability otherwise.

The data used in the present analysis pertain to each and every *boerenleenbank* operating in the period 1919 to 1925 as a member of a cooperative clearing and auditing network, nearly the entire population of such banks. During the time period analysed, 1,141 banks operated throughout the Dutch countryside in 1919, 1,152 in 1921, 1,233 in 1923 and 1,233 in 1925. 1919 was a relatively stable year following the end of the Great War – a war in which the Netherlands was politically neutral – and was two years before the start of a financial crisis. 1925 marks the end of the deflationary period, and the end of the financial crisis proper. The sources used principally constitute: financial tables compiled and published by the three cooperative networks which operated in the Netherlands; sociopolitical data from the 1920 census, the closest census year; contemporary agricultural survey data published by the Dutch government's Directie van de Landbouw (agricultural directorate); and topographical data from the land registry. The financial tables report the key balance sheet items of each bank, including cash holdings, balance with their clearinghouse, short- and long-term deposits and loans and the number of account holders and liable members. The topographical data are used to calculate the geographical distance (as the crow flies) between all banks and serve as a proxy for transport costs. This is an imperfect measure, however, as it does not take actual road layout into account, nor does it consider major water obstacles: rivers and canals. But as the distances involved are mostly small, and as the country lacks any significant topographical variation, such as in altitude, distance remains a good approximation.

Two distance measures are used in the models: (1) between one *boerenleenbank* and its closest neighbour in the same clearinghouse network; and (2) between one *boerenleenbank* and its closest neighbour in the another network. As discussed in Section 4.3, networks were organised along socioreligious lines as a result of the

verzuiling. The first measure attempts to capture any potential competition between banks within the same socioreligious *zuil* (pillar), whilst the second attempts to capture competition between *zuilen.* Using distance to infer switching costs does not come without problems: the geographic location of banks is endogenous, in that they were probably established where there was a (socioreligious) demand for their services. However, this should systematically bias results in the opposite direction to that which would show an effect of distance, because the greater the distance between two closest rivals, the fewer potential customers the region enjoys. If, despite this bias, a statistically significant effect of distance is found in the expected direction, then this only strengthens any findings.

No branch-level data pertaining to the RPS or other (private) savings houses are available. Potential competition between *boerenleenbanken* and these other types of savings institution cannot therefore be considered. Although this is a limitation to the analysis of this study, it is defensible on two counts: (1) the RPS was accessible to all depositors, on the exactly the same terms, regardless of location; and (2) *nutsspaarbanken* operated only in urban markets, and only in the Protestant north of the country. Regarding the first point, depositors could even deposit at the RPS from their own doorsteps, using their local postman. This institution was also politically neutral and therefore not aligned to any confessional group. Switching costs between *boerenleenbanken* and the RPS due to distance and market segmentation were therefore zero, and affected all *boerenleenbanken* equally. Regarding the second point, *boerenleenbanken* can be said to have largely operated in a different geographic market from that of *nutsspaarbanken,* and so these institutions competed little with one another. The potential for competition with this type of financial institution was present only for *boerenleenbanken* located near urban centres, something which is controlled for in the empirical analysis.

Table 4.1 defines all the variables used in the regression analyses, including the two dependent variables. The two distance variables which form the core of these regression exercises should be statistically significant and economically important (in terms of relative magnitude) before the conclusion that competition matters can be drawn. The sign of the effect should give the direction of the competition-stability relationship in the second regression exercise. The remaining explanatory variables described in the table act as controls for more conventional factors which are theoretically justified by their impact on deposit growth and liquidity: the interest rate as a control for the

"attractiveness" of a bank's savings accounts; the stock of deposits and the number of accounts as controls for a bank's initial position; the depositors/members ratio as a measure of any potential principal-agent problems experienced by a cooperatively-owned bank; a bank's balance sheet leverage as a measure of bank risk; a bank's age as a control for first-mover advantages; a dummy for the Act of Parliament used to gain legal personality as a control for possible institutional differences; a dummy for banks with an overtly Christian ethos to account for the possible effects of religious values on incentives; and three variables (Catholic population, horticultural farming and owner-occupied farms) which take account of potential local peculiarities of the market in which a bank operates *vis-à-vis* incentives to save and the need for liquidity.

Tables 4.2(a) to 4.2(d) report summary statistics for each for the four years collected and Figures 4.4 and 4.5 depict the distributions of the two dependent variables. Together, they reveal that the range and distribution (especially the kurtosis) of values for banks' deposit growth and liquidity recorded over the 1919 to 1925 period differed considerably year-on-year. Deposit growth has long upper tails in every year, but 1925 in particular saw a large reduction in the size of the upper tail and the variance. Liquidity, which by construction ranges between zero and 100 percent, has a bimodal distribution in every year, but 1921 and 1923 see a clustering of liquidity possibilities around the lower end of the distribution. Figure 4.6 depicts the distributions of the two core explanatory variables related to the working hypotheses, namely, the distance to the nearest bank in the same and another clearinghouse network. It shows that the range of distances between banks in the same network is much narrower than between banks in different networks.

4.5 Switching costs and bank liquidity

Tables 4.3(a) to 4.3(d) report the results of OLS regressions of interbank distances and other (control) variables – defined in Table 4.1 – on the percentage growth rate in savings held by *boerenleenbanken* at two-yearly intervals, spanning the entire crisis period. Rather than a pooled or panel regression, separate regressions for each year are reported in order to explore whether and how any relationships changed over the crisis years; factors which are important determinants of deposit growth in a "good" (non-crisis) year may hold little explanatory power in a "bad" (crisis) one, possibly because exogenous factors have caused some change in the underlying nature of the

Figure 4.3: Agricultural survey regions of the Netherlands, 1923
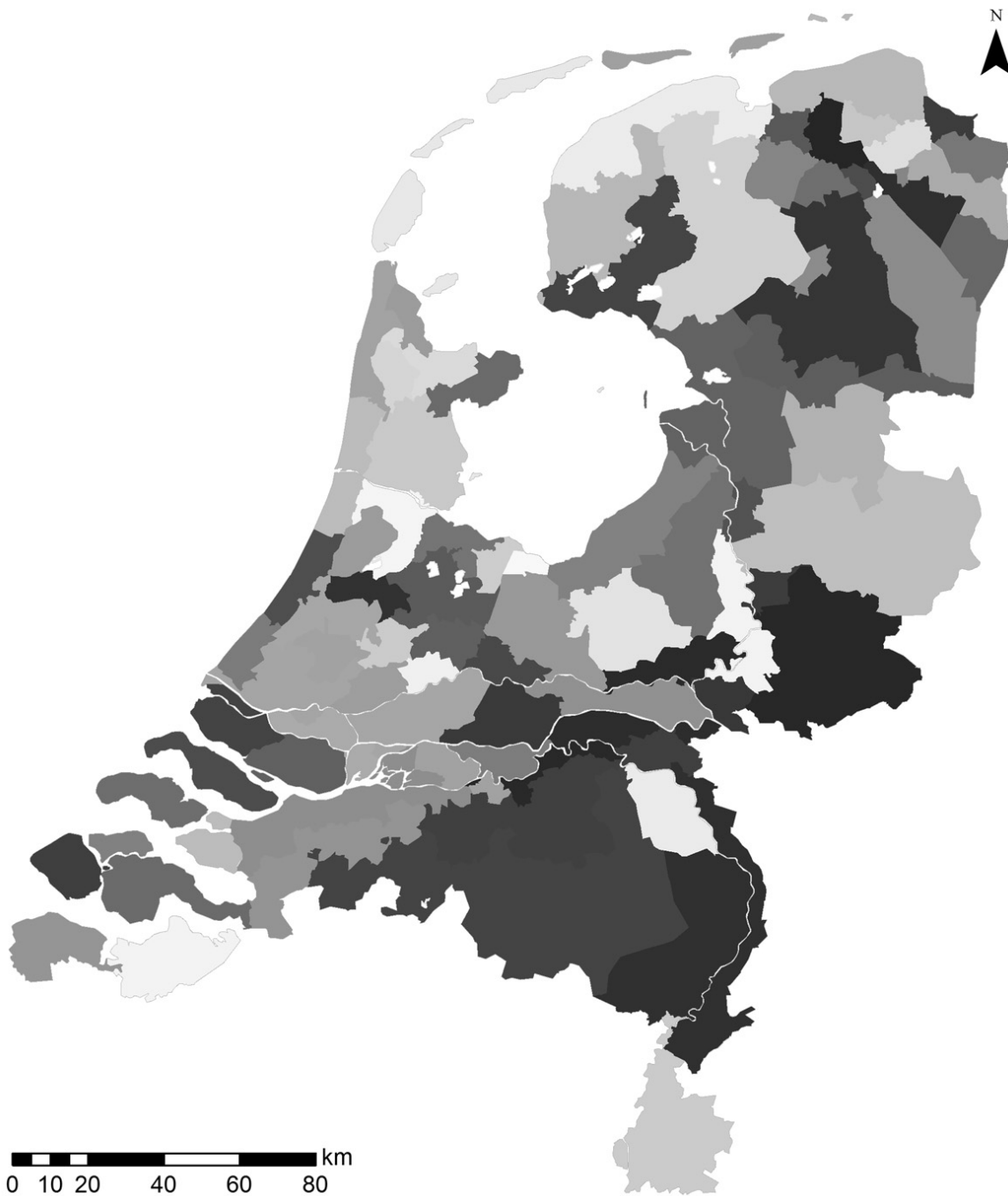
Note: The Kingdom is divided into 83 distinct agricultural survey regions, depicted here in distinct shades, each defined according to the similar types of farming carried out there.

Sources: NLKAART and Directie van den Landbouw (1923).

Figure 4.4: Epanechnikov kernel density distribution functions of growth in deposits, 1919-1925

(a) Kernel density distribution for 1919

(b) Kernel density distribution for 1921

(c) Kernel density distribution for 1923

(d) Kernel density distribution for 1925
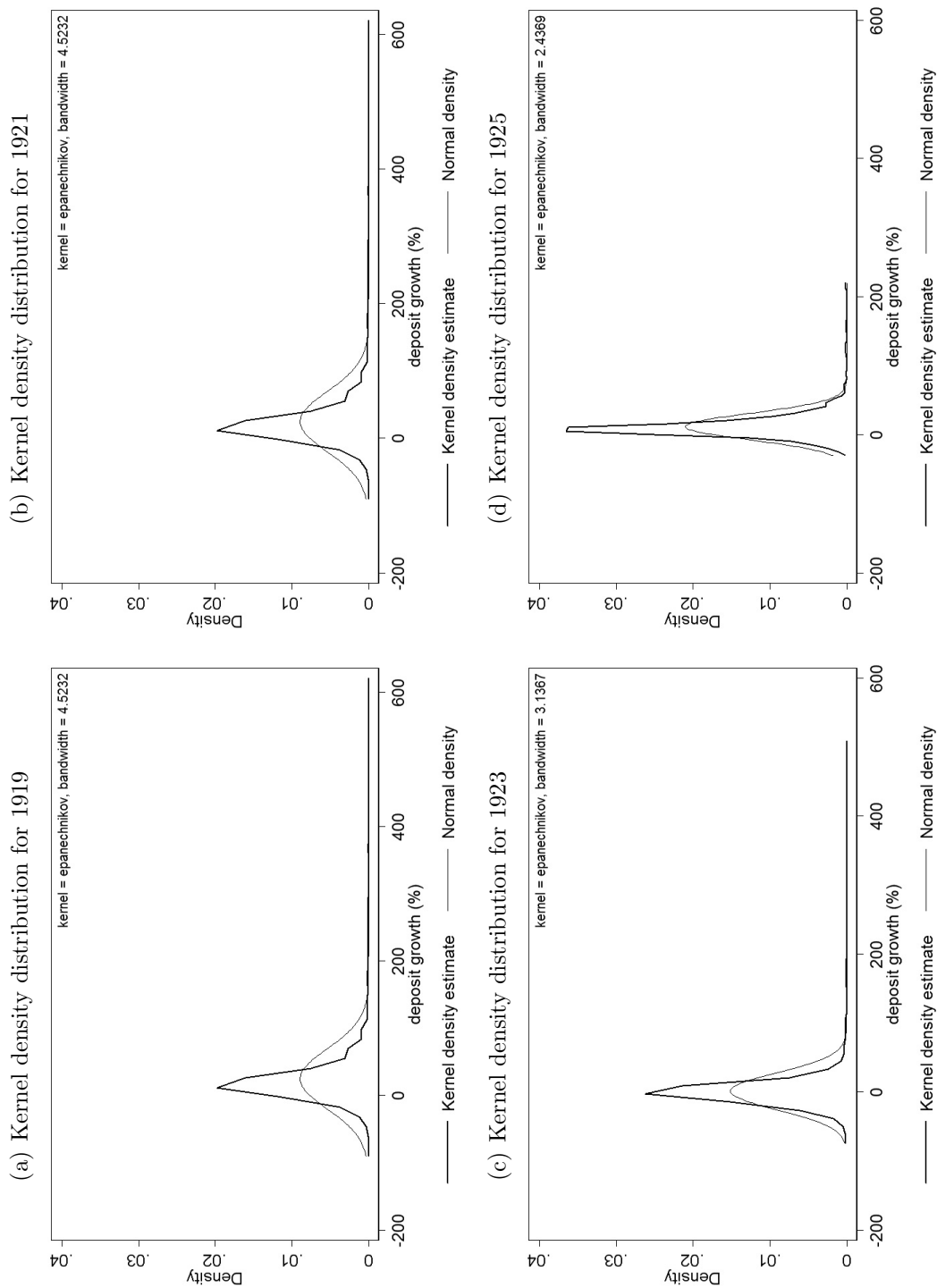
Figure 4.5: Epanechnikov kernel density distribution functions of liquidity, 1919-1925

(a) Kernel density distribution for 1919

(b) Kernel density distribution for 1921

(c) Kernel density distribution for 1923

(d) Kernel density distribution for 1925
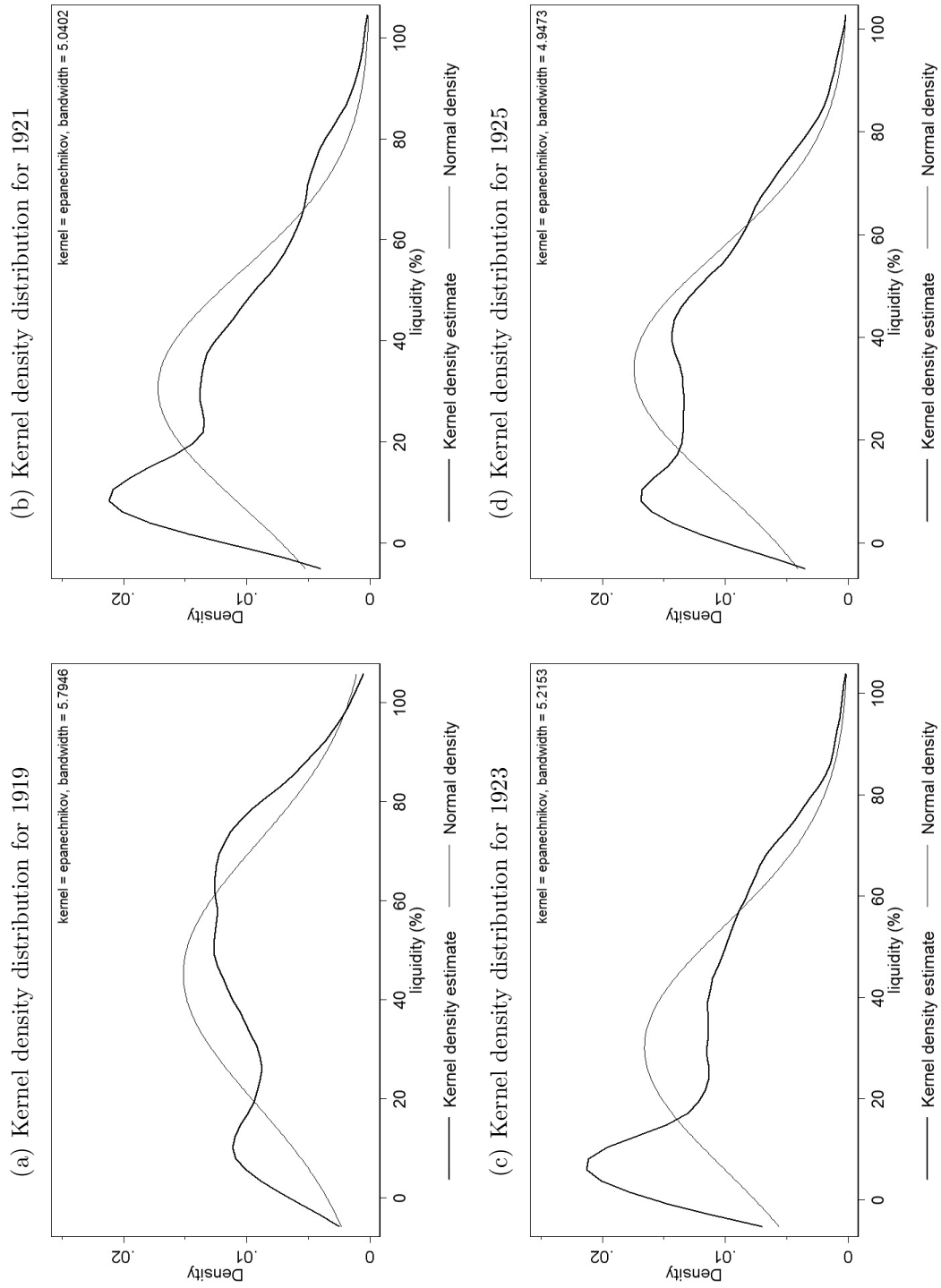
relationships. The results of two regressions are reported for each year, one without and one with fixed effects. These fixed effects correspond to 83 agricultural regions as defined by Directie van den Landbouw (1923), a report published by the agricultural directorate of the Dutch government and based on the results of a national agricultural survey which classified the country into distinct regions by the type of farming carried out there. These regions are plotted onto a map of the Netherlands in Figure 4.3.[49] The results of each regression are discussed concurrently.

The two explanatory variables which form the core of the working hypotheses on measuring the degree of competition between *boerenleenbanken* are not statistically significant at standard hypothesis-testing levels of significance for 1919 or 1925 under either specification (without and with fixed effects). This suggests that the location of potential rivals did not matter, whatever their religious persuasion; if agriculturalists were switching to competitors during non-crisis years, this had little to do with their bank's location relative to others. The 1921 and 1923 specifications without fixed effects yield different results, however: the distance to the nearest bank in another clearinghouse network is statistically significant, at least at the five percent level. The coefficient takes the value of 0.17 for 1921, and 0.30 for 1923. This means that the growth in deposits was 0.17 and 0.30 percentage points higher for every kilometre separating a bank with its closest rival in another network and affiliated with an alternative Christian denomination. At the mean values for each, banks saw their growth rates rise by 2.76 percentage points in 1921 and 4.46 percent in 1923; agriculturalists switched less to banks of a rival religious bent because they found this too costly to do during a financial crisis year. These effects are washed away by the fixed effects in the alternative specifications, however, suggesting that the relationship differed significantly by agricultural region, something which Appendix 4.A attests to.

Other explanatory variables also vary in size and significance by year. The interest rate percentage set by clearinghouse networks on excess deposits is the minimum interest that a local cooperative can pay out to depositors. It differed by clearinghouse network, with the neutral (*de facto* Protestant) CCRB-Utrecht paying out consistently more (see Figure 4.2). The interest rate appears to be particularly important – economically and, in 1919, 1921 and 1925, also statistically. It changes sign from

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[49]Note that the cluster analysis of Appendix 4.A reveals that a high degree of clustering of business performance results within these distinct survey regions, and thus provides support for the use of these regions as regional fixed effects in the regression analysis which follows.

Figure 4.6: Epanechnikov kernel density distribution functions of distance to nearest bank, pooled, 1919-1925

(a) Kernel density distribution for distance to the nearest bank in the same clearinghouse network
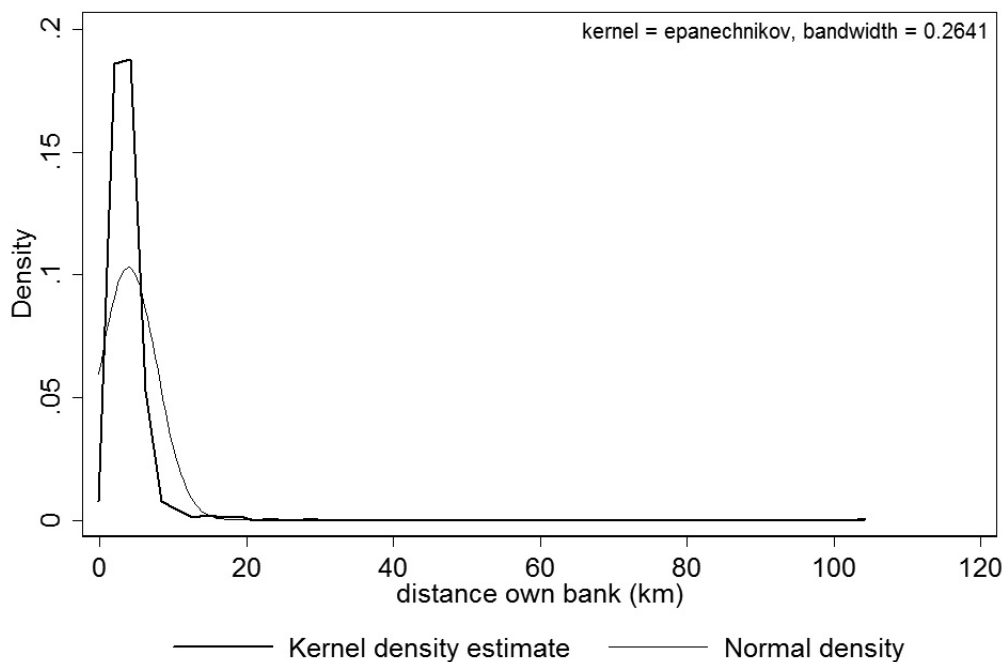
(b) Kernel density distribution for distance to the nearest bank in another clearinghouse network
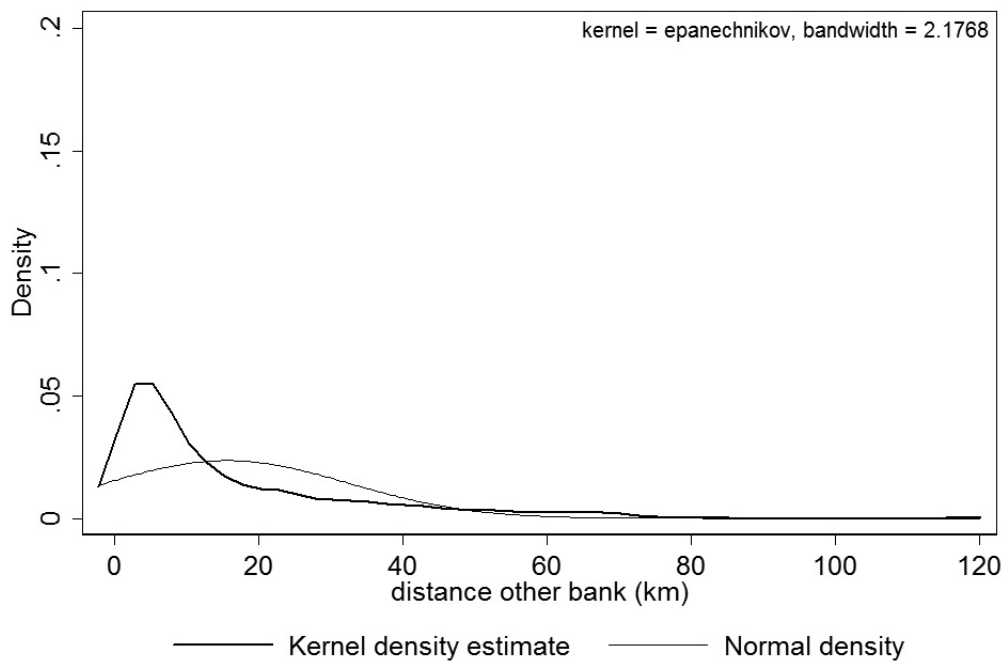
negative in 1919 through 1923, to positive in 1925. For negative values, this means that banks attracted lower growth rates in savings for every percentage point increase in the interest rate, a counter-intuitive result which may be due to clearinghouse policies other than the interest rate set; the interest rate doubles as a quasi-clearinghouse dummy because these interest rates were the same for all banks within a network, but different between networks. The implication is then that membership of the Catholic CCB-Eindhoven network appears to have resulted in higher deposit growth rates than the others, controlling for other factors, except in the last year of the sample.

The total stock of guilders deposited and the number of deposit account holders at a bank are important (statistical and economic) explanatory variables, but work in opposite directions for all years of this sample; every additional one thousand guilders in deposits lowers the deposit growth rate percentage by between 0.01 (for 1925) and 0.08 (for 1919) points, and every additional one hundred depositors raises it between 1.20 (for 1925) and 5.93 (for 1921) points, for the specification without fixed effect. For the mean bank in 1919 (with 176.70 thousand guilders in deposits and 217 accounts), the growth rate is 14.14 points lower due to the stock of deposits and 11.20 points higher due to the number of depositors. The intuition for this result could be: that banks with higher stocks of deposits have a lower growth potential because they have already experienced their core period of growth; and the greater the number of depositors at a bank, the more customers this bank can attract deposits from.

The number of depositors over the number of members – included to take account of potential principal-agent problems – appears consistently to be an important (statistical and economic) explanatory factor in the specifications with fixed effects, apart from the year 1921, at the start of the deflationary crisis period. For 1919, 1923 and 1925, the effect is positive, statistically significant at the five percent level and large; the more depositors versus members at a bank, the higher the ratio and the larger the principal-agent problem – depositors who were not members had no voting power over management decision-making – and the lower the percentage growth rate in savings held by the bank. The effect direction switches to being positive for 1921, but is not economically important, despite remaining statistically so. The economic intuition for this is unclear, but the summary statistics reveal that the ratio had a higher standard deviation for this year than for the others sampled.

Leverage appears to have significantly (both statically and economically) affected deposit growth negatively in all years but 1925, when this factor is not statistically

Table 4.3: Cross-sectional OLS regressions of the percentage growth rate in savings held by banks, 1919-1925

(a) OLS regression of the percentage growth rate in savings, 1919

Variable (unit)	1919 (a)			1919 (b)		
	Coeff.	(P-value)	[95% Conf. Int.]	Coeff.	(P-value)	[95% Conf. Int.]
distance own bank (km)	0.40	(0.23)	[-0.25 , 1.05]	0.27	(0.45)	[-0.43 , 0.96]
distance other bank (km)	0.05	(0.48)	[-0.08 , 0.19]	0.05	(0.75)	[-0.26 , 0.36]
interest rate (%)	-10.94	(0.19)	[-27.11 , 5.23]	-11.69	(0.10)	[-25.42 , 2.03]
deposits (thousands)	-0.08	(<0.01)	[-0.10 , -0.05]	-0.07	(<0.01)	[-0.10 , -0.04]
accounts (hundreds)	5.16	(<0.01)	[2.78 , 7.54]	5.36	(<0.01)	[2.54 , 8.18]
depositors/members (ratio)	-6.61	(<0.01)	[-9.70 , -3.51]	-4.82	(<0.01)	[-7.96 , -1.68]
leverage (%)	-0.06	(0.04)	[-0.12 , >-0.01]	-0.06	(0.03)	[-0.12 , 0.01]
age of bank (years)	-2.02	(<0.01)	[-2.76 , -1.27]	-2.07	(<0.01)	[-2.78 , -1.36]
corporate form (dummy)	-2.61	(0.40)	[-8.71 , 3.49]	-0.07	(0.98)	[-6.66 , 6.53]
overtly Christian (dummy)	0.80	(0.88)	[-9.64 , 11.25]	-1.79	(0.73)	[-11.98 , 8.40]
Catholic population (%)	0.05	(0.35)	[-0.05 , 0.15]	0.05	(0.63)	[-0.16 , 0.27]
horticultural farming (%)	-0.33	(0.02)	[-0.61 , -0.05]	-1.22	(<0.01)	[-1.97 , -0.48]
owner-occupied farms (%)	0.14	(0.12)	[-0.03 , 0.30]	0.50	(0.06)	[-0.03 , 1.02]
constant	92.57	(<0.01)	[35.57 , 149.56]	95.97	(<0.01)	[51.10 , 140.85]
fixed effects?	no			yes		
n	1,081			1,081		
Adjusted-R²	0.14			0.16		
$\sqrt{MSE}$	41.42			41.00		

Notes: See Table 4.1 for description of variables and Table 4.2(a) for summary statistics. Fixed effects correspond to the 83 agricultural regions as defined by Directie van den Landbouw (1923). P-values (in parentheses) are the statistical probabilities of obtaining a result at least as extreme as the ones observed, and are obtained from Huber-White robust standard errors to reduce the effect of heteroskedasticity. Confidence intervals [in square brackets] are the bounds between which the estimated coefficient lies at a 95% level of statistical significance, again calculated from Huber-White robust standard errors.

(b) OLS regression of the percentage growth rate in savings, 1921

Variable (unit)	1921 (a)			1921 (b)		
	Coeff.	(P-value)	[95% Conf. Int.]	Coeff.	(P-value)	[95% Conf. Int.]
distance own bank (km)	-0.06	(0.70)	[-0.40 , 0.27]	-0.05	(0.80)	[-0.39 , 0.30]
distance other bank (km)	0.17	(0.09)	[-0.03 , 0.36]	0.07	(0.51)	[-0.15 , 0.30]
interest rate (%)	-3.93	(0.35)	[-12.23 , 4.37]	-5.64	(0.31)	[-16.55 , 5.28]
deposits (thousands)	-0.08	(<0.01)	[-0.10 , -0.06]	-0.08	(<0.01)	[-0.11 , -0.06]
accounts (hundreds)	5.93	(<0.01)	[4.15 , 7.71]	6.50	(<0.01)	[4.53 , 8.46]
depositors/members (ratio)	0.01	(<0.01)	[<0.01 , 0.02]	0.02	(<0.01)	[0.01 , 0.03]
leverage (%)	-0.07	(<0.01)	[-0.11 , -0.02]	-0.09	(<0.01)	[-0.13 , -0.05]
age of bank (years)	-0.92	(<0.01)	[-1.30 , -0.54]	-1.02	(<0.01)	[-1.39 , -0.65]
corporate form (dummy)	-1.91	(0.46)	[-6.95 , 3.13]	-2.52	(0.35)	[-7.79 , 2.76]
overtly Christian (dummy)	-10.22	(0.03)	[-19.34 , -1.11]	-11.52	(0.02)	[-21.20 , -1.84]
Catholic population (%)	-0.21	(<0.01)	[-0.27 , -0.13]	-0.19	(<0.01)	[-0.30 , -0.08]
horticultural farming (%)	0.05	(0.63)	[-0.17 , 0.27]	0.09	(0.74)	[-0.46 , 0.64]
owner-occupied farms (%)	-0.26	(<0.01)	[-0.36 , -0.16]	-0.30	(0.01)	[-0.51 , -0.09]
constant	78.51	(<0.01)	[41.85 , 115.18]	90.94	(<0.01)	[44.07 , 137.81]
fixed effects?	no			yes		
n	1,089			1,089		
Adjusted-R^2	0.19			0.29		
$\sqrt{MSE}$	30.90			28.78		

Notes: See Table 4.1 for description of variables and Table 4.2(b) for summary statistics. Fixed effects correspond to the 83 agricultural regions as defined by Directie van den Landbouw (1923). P-values (in parentheses) are the statistical probabilities of obtaining a result at least as extreme as the ones observed, and are obtained from Huber-White robust standard errors to reduce the effect of heteroskedasticity. Confidence intervals [in square brackets] are the bounds between which the estimated coefficient lies at a 95% level of statistical significance, again calculated from Huber-White robust standard errors.

(c) OLS regression of the percentage growth rate in savings, 1923

Variable (unit)	1923 (a) Coeff.	(P-value)	[95% Conf. Int.]	1923 (b) Coeff.	(P-value)	[95% Conf. Int.]
distance own bank (km)	-0.17	(0.36)	[-0.53 , 0.19]	-0.21	(0.33)	[-0.62 , 0.21]
distance other bank (km)	0.30	(<0.01)	[0.15 , 0.45]	0.23	(0.27)	[-0.17 , 0.63]
interest rate (%)	-39.02	(<0.01)	[-54.25 , 23.78]	-24.87	(<0.01)	[-35.90 , 13.84]
deposits (thousands)	-0.03	(<0.01)	[-0.04 , -0.01]	-0.03	(<0.01)	[-0.04 , -0.01]
accounts (hundreds)	2.39	(<0.01)	[1.20 , 3.57]	2.36	(<0.01)	[0.78 , 3.94]
depositors/members (ratio)	-0.94	(0.36)	[-2.95 , 1.06]	-2.79	(0.03)	[-5.36 , -0.22]
leverage (%)	-0.04	(0.04)	[-0.07 , >-0.01]	-0.04	(0.13)	[-0.09 , -0.01]
age of bank (years)	-0.11	(0.49)	[-0.43 , 0.20]	-0.21	(0.10)	[-0.46 , 0.04]
corporate form (dummy)	-1.18	(0.71)	[-7.42 , 5.07]	-3.60	(0.37)	[-11.44 , 4.24]
overtly Christian (dummy)	0.91	(0.80)	[-6.21 , 8.03]	-1.64	(0.59)	[-7.63 , 4.35]
Catholic population (%)	-0.11	(<0.01)	[-0.17 , -0.05]	-0.06	(0.09)	[-0.12 , 0.01]
horticultural farming (%)	0.03	(0.77)	[-0.17 , 0.22]	0.62	(0.02)	[0.09 , 1.14]
owner-occupied farms (%)	-0.10	(0.25)	[-0.28 , 0.07]	-0.13	(0.01)	[-0.24 , -0.03]
constant	174.24	(<0.01)	[103.42 , 245.06]	108.54	(<0.01)	[65.44 , 151.64]
fixed effects?	no			yes		
n	1,078			1,078		
Adjusted-R^2	0.07			0.07		
$\sqrt{MSE}$	33.18			33.18		

Notes: See Table 4.1 for description of variables and Table 4.2(c) for summary statistics. Fixed effects correspond to the 83 agricultural regions as defined by Directie van den Landbouw (1923). P-values (in parentheses) are the statistical probabilities of obtaining a result at least as extreme as the ones observed, and are obtained from Huber-White robust standard errors to reduce the effect of heteroskedasticity. Confidence intervals [in square brackets] are the bounds between which the estimated coefficient lies at a 95% level of statistical significance, again calculated from Huber-White robust standard errors.

(d) OLS regression of the percentage growth rate in savings, 1925

Variable (unit)	1925 (a)			1925 (b)		
	Coeff.	(P-value)	[95% Conf. Int.]	Coeff.	(P-value)	[95% Conf. Int.]
distance own bank (km)	-0.04	(0.55)	[-0.17 , 0.09]	-0.13	(0.20)	[-0.34 , 0.07]
distance other bank (km)	-0.02	(0.61)	[-0.08 , 0.05]	0.05	(0.44)	[-0.08 , 0.18]
interest rate (%)	17.36	(0.01)	[4.86 , 29.87]	10.30	(0.19)	[-5.19 , 25.79]
deposits (thousands)	-0.01	(<0.01)	[-0.02 , -0.01]	-0.02	(<0.01)	[-0.03 , -0.01]
accounts (hundreds)	1.20	(<0.01)	[0.52 , 1.88]	7.77	(<0.01)	[1.01 , 2.534]
depositors/members (ratio)	-0.52	(0.24)	[-1.38 , 0.34]	-1.47	(<0.01)	[-2.48 , -0.46]
leverage (%)	0.01	(0.64)	[-0.03 , 0.05]	>-0.01	(0.92)	[-0.05 , 0.04]
age of bank (years)	-0.12	(0.28)	[-0.33 , 0.09]	-0.15	(0.18)	[-0.38 , 0.07]
corporate form (dummy)	-2.02	(0.10)	[-4.41 , 0.37]	-2.30	(0.07)	[-4.79 , 0.19]
overtly Christian (dummy)	4.31	(0.26)	[-3.26 , 11.88]	4.20	(0.28)	[-3.41 , 11.82]
Catholic population (%)	-0.02	(0.21)	[-0.06 , 0.01]	-0.04	(0.10)	[-0.09 , 0.01]
horticultural farming (%)	0.31	(<0.01)	[0.17 , 0.45]	0.16	(0.22)	[-0.10 , 0.42]
owner-occupied farms (%)	<0.01	(0.92)	[-0.05 , 0.05]	-0.20	(<0.01)	[-0.33 , -0.07]
constant	-62.91	(0.03)	[-119.14 , -6.68]	-9.93	(0.78)	[-80.21 , 60.34]
fixed effects?	no			yes		
n	1,050			1,050		
Adjusted-R^2	0.05			0.08		
$\sqrt{MSE}$	14.54			14.23		

Notes: See Table 4.1 for description of variables and Table 4.2(d) for summary statistics. Fixed effects correspond to the 83 agricultural regions as defined by Directie van den Landbouw (1923). P-values (in parentheses) are the statistical probabilities of obtaining a result at least as extreme as the ones observed, and are obtained from Huber-White robust standard errors to reduce the effect of heteroskedasticity. Confidence intervals [in square brackets] are the bounds between which the estimated coefficient lies at a 95% level of statistical significance, again calculated from Huber-White robust standard errors.

Table 4.4: Tobit panel regression of banks' liquidity, 1919-1925

Variable	dy/dx	(P-value)	[95% Conf. Int.]		
distance own bank (km)	-0.08	(0.59)	[-0.37	,	0.21]
distance other bank (km)	0.12	(<0.01)	[0.08	,	0.16]
interest rate (%)	5.49	(<0.01)	[3.07	,	7.91]
deposits (thousands)	0.02	(<0.01)	[0.01	,	0.03]
accounts (hundreds)	-2.46	(<0.01)	[-3.26	,	-1.66]
depositors/members (ratio)	-0.02	(0.98)	[-1.58	,	1.54]
leverage (%)	-0.14	(<0.01)	[-0.51	,	-0.07]
age of bank (years)	-0.12	(0.11)	[-0.27	,	0.03]
corporate form (dummy)†	-1.90	(0.04)	[-3.71	,	-0.10]
overtly Christian (dummy)†	-2.69	(0.27)	[-7.32	,	1.95]
Catholic population (%)	0.05	(<0.01)	[0.03	,	0.07]
horticultural farming (%)	-0.19	(<0.01)	[-0.28	,	-0.11]
owner-occupied farming (%)	0.07	(<0.01)	[0.03	,	0.11]
d1921†	-13.59	(<0.01)	[-15.75	,	-11.42]
d1923†	-9.64	(<0.01)	[-12.40	,	-6.88]
d1925†	-10.29	(<0.01)	[-12.65	,	-7.93]
Observations (groups)	4,292 (1,092)	Censored observations	57 (left)		
St. error of RE estimate	16.56	Variance due to RE	0.34		
Log-likelihood	-18,550	Wald Chi^2	1,222.42		

Notes: See Table 4.1 for a description of variables and Table 4.2 for summary statistics. Panel constructed using data for four years: 1919, 1921, 1923 and 1925. A tobit model is used because the dependent variable is observed only at or above the interval zero and at or below the interval 100, i.e. the data are censored. An OLS regression would therefore generate biased estimators. The panel regression is unbalanced, as some banks enter or leave the sample. A random-effects (RE) specification is used because tobit does not permit fixed-effects. Marginal effects of variables on the expected value, conditional on being uncensored (dy/dx), are calculated from the mean. For variables marked with the † symbol, the marginal effect is for a discrete change of the dummy variable from zero to one. Clustered bootstrap P-value estimates (in brackets) are calculated from 500 replications. These P-values are reported because the conditional distribution of the dependent variable is complicated; bootstrap P-values are distribution-independent. Null hypotheses that effects cannot be rejected at a ten percent level of significance occur with P-values less than or equal to 0.1. Confidence intervals [in square brackets] are the bounds between which the estimated coefficient lies at a 95% level of statistical significance.

significant at any standard levels. For 1919, 1921 and 1923, the effect ranges between -0.04 and -0.09, or a reduction in the savings growth rate between 0.04 and 0.09 percentage points for every additional percent that a bank is leveraged by. This result is theoretically expected; highly leveraged banks should prove unattractive propositions for potential depositors. The 1925 result could be explained by the fact that banks deleveraged significantly in the latter part of the crisis (compare Table 4.2(c) with Table 4.2(d)).

Three (institutional) attributes of banks themselves affected growth as follows: (1) banks' age affected it negatively (the older the bank, the less it grew); (2) legal corporate form had little impact; and (3) banks which advertised themselves as overtly Christian experienced significantly (both statistically and economically) lower growth rates in 1921 (at the very beginning of the crisis period), but this had no impact for the rest of the sample. Three factors relating to the regions in which banks serviced are correlated with savings as follows: (1) farmers in areas with numerous Catholics may have had a lower propensity to save in the crisis years (1921 and 1923), but acted no differently from areas with numerous Protestants in non-crisis years; (2) farmers in areas with high proportions of capital-intensive horticultural farmers may have saved less in non-crisis years (1919 and 1925), but probably acted no differently from other types of farmer in crisis years; and (3) farmers in areas with high levels of owner-occupied farms (rather than rented farms) probably saved more than others pre-crisis (in 1919), less than others during the crisis (1921 and 1923), but no differently from others post-crisis (1925).

The second regression exercise, the results of which are reported in Table 4.4, is a panel regression of banks' liquidity over the full 1919-1925 sample. Separate regressions were run for each year, but the results remain relatively stable for each, and so only the results of the panel regression are reported. A tobit specification is used because the dependent variable is censored between zero and 100; a bank cannot be observed to have a level of liquidity which is negative, nor can it have more liquid assets than total assets and be above 100. Reported values are marginal effects calculated at the mean. Test statistics are derived from a clustered bootstrapping exercise; some explanatory variables are not normally distributed and so standard test statistics would prove biased.

The two explanatory variables which form the core of the working hypotheses on the competition-stability relationship behave as follows: (1) distance to the closest bank in

the same clearinghouse network is unimportant; but (2) distance to the closest bank in another network is both statistically and economically important. The percentage growth for every additional kilometre separating banks in rival networks raises a bank's level of liquidity by 0.12 percentage points, at a one percent significance level. This result is much in line with that found in the first savings growth regression exercises, where distance to the closest bank in another network also proved important for crisis years. The implication of this relationship is that cooperatively-owned rural banks which were more distant from their rivals – and therefore faced fewer competitive pressures due to the presence of high switching costs – chose to operate more liquid balance sheets throughout a sample period which included a severe deflationary shock to the rural economy.

The interest rate on deposits set by central clearinghouses, which, as discussed, also doubles as a quasi-clearinghouse dummy, affected liquidity positively and was (statistically and economically) important; the effect is significant at the one percent level and is large. This is theoretically intuitive: banks which enjoyed higher interest rates on savings deposited at their central clearinghouses chose to invest higher proportions of their liabilities in this way. The total stock of guilders deposited and the total number of accounts affect liquidity in opposite directions, in much the same way as in the regressions of deposit growth. The number of depositors over the number of members is not at all important. Leverage, however, is: for every additional percentage point a bank is leveraged, it is less liquid by 0.14 points – a result which is in the theoretically-expected direction.

Unlike the first set of regressions, corporate form appears to have been an important explanatory variable for banks' level of liquidity: banks which chose the *Wet van 1876* corporate form were less liquid than their *Wet van 1855* rivals by 1.90 percentage points. Chapter 5 explains that the *Wet van 1876* forced more corporate transparency and managerial liability on cooperatives' managers, and so the legal ramifications of bad decisions were greater; cooperatives did not need to stockpile liquidity to insure against a lack of transparency since they enjoyed alternative means of keeping managerial risk-taking under control. Overtly Christian banks behaved no differently from their rivals.

Three factors relating to the areas in which banks were established are correlated with liquidity as follows: (1) banks in areas with numerous Catholics appear to have (chosen to operate with) more liquid balance sheets; (2) banks located in areas with

more horticultural farming appear to have (chosen to operate with) less liquid ones; and (3) banks in areas with high proportions of owner-occupied farms appear to have (chosen to operate with) more liquid ones. Banks were less liquid in all years versus 1919, with 1921 in particular being least liquid. Interestingly, banks appear to have not fully "recovered" to pre-crisis levels by 1925.

4.6 Conclusion

The existing literature on the competition-stability relationship in banking comes to different conclusions on its nature and direction. The principal problem faced by this literature is how to measure interbank competition, for markets with few players can be very competitive if customers can easily switch between them, and markets with many uncompetitive if they cannot. A second problem is that the way in which stability is conventionally measured does not permit the full spectrum of stability possibilities to be identified, as covert rescues and other interventions do not show up in simple binary indicators, and bank- or branch-level data are in any case usually non-existent or not (publicly) accessible.

This chapter studies the historical case of Dutch rural banking markets in which switching costs can be identified and measured, in which bank stability during the deflationary financial crisis of the early 1920s can be gauged at the individual bank level, and in which stability is in any case a relative phenomenon which has to be measured differently; no cooperatively-owned *boerenleenbank* failed outright, although many would probably have failed had it not been for the continued support from their central clearinghouses. Indeed, the whole rural cooperative sector may have been lucky to survive the crisis, saved by the upturn in the Dutch rural economy rather than by any conscious action on the part of individual banks or their centrals; the survival of the sector as a whole may have had more to do with farmers' ability to hold out for a little longer during hard times compared with other types of business.

Two alternative hypotheses on the degree of competition between *boerenleenbanken* are derived from the literature on their origins: (1) members of a religious denomination did not bank with *boerenleenbanken* which were affiliated with another denomination; and (2) denomination mattered little in agriculturalists' choice of bank, interest rate and other factors being substantially more important determinants of *boerenleenbank* choice. This chapter finds evidence in favour of (1), but only when the banking system

is under the extreme strain of a debt-deflationary crisis; the explanatory power of the distances between neighbouring banks in the same and different socioreligious groups for the percentage growth in deposits suggests that customers faced switching costs between banks in different groups, but not within the same group. This chapter also finds evidence in favour of (2), in that other factors also had large effects on deposit growth, in particular interest rates, stock of savings deposits, level of balance sheet leverage and various regional control variables.

Three alternative hypotheses on the relationship between competition and stability are derived from the banking literature: (1) increased interbank competition results in less stability; (2) increased competition results in more stability; or (3) increased competition results in less stability in an extreme industrial organisation or under an extreme (temporary) market condition, but in more stability otherwise. This chapter finds evidence in favour of (1) – the traditional wisdom – in that those banks which were subject to least competitive pressures were found to have the most liquid balance sheets. It finds that this relationship is relatively stable over the period investigated, before, during and after a deflationary crisis. Although the size of the effect suggests that it is economically important, other determinants of liquidity were perhaps more so, including interest rates, level of balance sheet leverage and most of all the financial year dummy variables – banks were substantially less liquid in some years than others, a consequence of the business cycle.

What are the implications of these findings for the wider literature on the competition-stability relationship? Boyd et al. (2009) (and others) argue that older studies of the relationship find in favour of the traditional wisdom only because they focus on banks' liabilities rather than assets. This study also has this focus, but for good reason: the liabilities of Dutch cooperative microfinance banks (small-scale rural deposits) were the crucial source of funding for their assets (advantageously-priced loans to members). Boyd et al. also criticise the assumption in the traditional wisdom that bankers are able to influence their exposure to risk. But given that these are cooperatively-owned banks, this is a fair assumption to make; like the rest of the banking literature on this subject, Boyd et al. assume that shareholders enjoy only limited liability in the case of failure, whilst member-shareholders of *boerenleenbanken* – who also formed these banks' customers, voted in their managers and monitored one another's behaviour – suffered unlimited liability in such cases. This is likely to have changed the incentive structure somewhat, rendering the revisionist view not

applicable.

What are the implications for the literature on the origins of *boerenleenbanken*? This literature presents three possible origin stories, or myths, for this sector: (1) to meet untapped demand; (2) as an organisational response to structural change; and (3) as part of a wider confessionalisation phenomenon. The evidence analysed in this chapter suggests that these banks responded to market conditions, that the customers of these banks chose to use those which offered the best terms for their deposits, be it thanks to an advantageous interest rate or religious affiliation – which in itself can provide an economic advantage, in terms of the superior information available about peers within the same religious community, and the informal enforcement possibilities which these bring. *Boerenleenbanken* performed very well during the period investigated here, a period which includes probably the most serious banking crisis to hit the country before the world financial crisis which started in 2007. Their organisational form persisted through this crisis and their clearinghouse structure in particular prevented less stable banks from going under. Confessional politics – evidenced by the presence of different religiously-affiliated clearinghouse networks and the inter-network switching costs estimated in this chapter – was an important driving force behind the cooperative movement and may have been what permitted these banks to survive the crisis so well; banks that "should" have failed were rescued by their network, and individual depositors refrained from running on their bank *en masse.*

Appendix to Chapter 4

4.A   Spatial analysis of the rural market for savings

Figure 4.7 plots the spatial density of bank locations in 1919. It uses the ArcGIS spatial analyst tool to calculate the number of banks per square kilometre using kernel density estimation. It shows that banks were clustered in specific regions of the Kingdom. Using the ArcGIS average nearest neighbour analysis tool, the Z-score on the nearest neighbour ratio is -9.06, which has a P-value of <0.01, thus implying that the null hypothesis that the geographic locations of *boerenleenbanken* are randomly distributed can be rejected at the one percent level.

Four areas stand out in particular as having high concentrations of *boerenleenbanken*: (1) the north of Noord-Holland, especially the area known as West-Friesland; (2) the areas around the tulip bulb growing and horticultural Westland region along the coast of Zuid-Holland; (3) the fruit growing Betuwe region around Nijmegen and Tiel; and (4) the entire province of Limburg in the south. The first three regions are agriculturally credit intensive, and therefore the number of banks could be expected to be higher. The reason for the last is less obvious. The map of the location of *boerenleenbanken* at five-yearly intervals from 1899 to 1914 in Figure 4.1 (p.149) shows that banks were first established in the Kingdom in the Noord-Holland and Limburg clusters; a path-dependency explanation may help to explain the high clustering of banks in these two areas by 1919. The population density data depicted in the map in Figure 4.8 reveal that Limburg was densely populated, which also goes some way towards explaining the *boerenleenbank* cluster there.

Figure 4.9 depicts the level of liquidity of all banks in 1919, this sector's most stable year immediately before the crisis period. Banks located in the south of the country – the vast majority of which were affiliated with the *de facto* Catholic CCB-Eindhoven network – appear to have operated more liquid portfolios overall. This may suggest differences in the advice or scrutiny given by the three clearinghouses. It may also be the result of regional differences in the demand for liquidity, differences which are determined by agriculture-specific factors.

Figure 4.10 depicts the same liquidity data in another way to reveal any clustering in balance sheet liquidity. The ArcGIS Anselin Local Moran spatial statistics tool is used to calculate Moran's I, a measure of spatial autocorrelation developed in Moran

Figure 4.7: Spatial density of *boerenleenbanken*, 1919
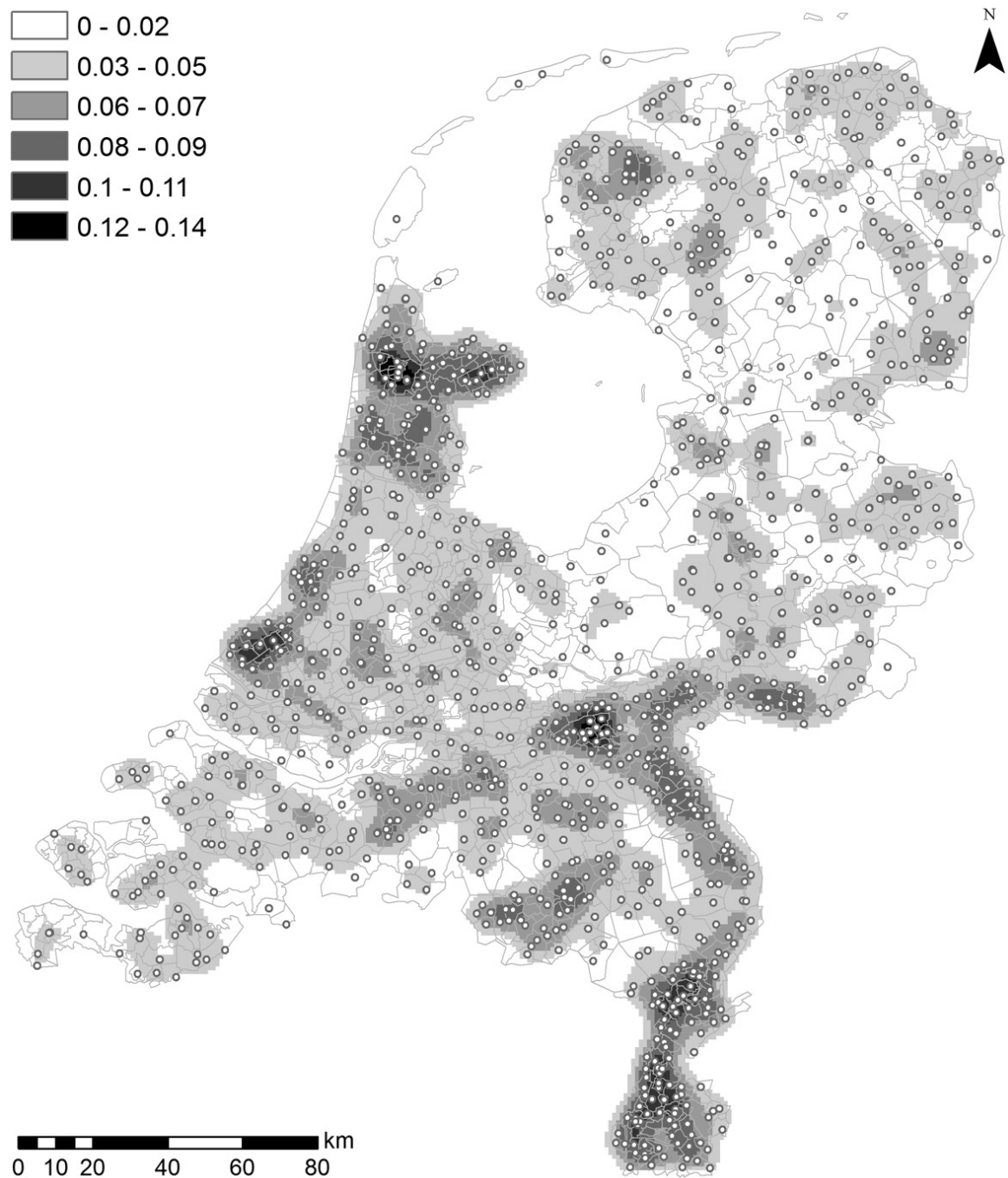
Note: Shaded according to the number of banks per square kilometre using a kernel function to fit a smoothly tapered surface.

Sources: NLKAART and the ArcGIS Kernel Density Spatial Analyst tool.

Figure 4.8: Population density, inhabitants per square kilometre, per *gemeente*, 1920
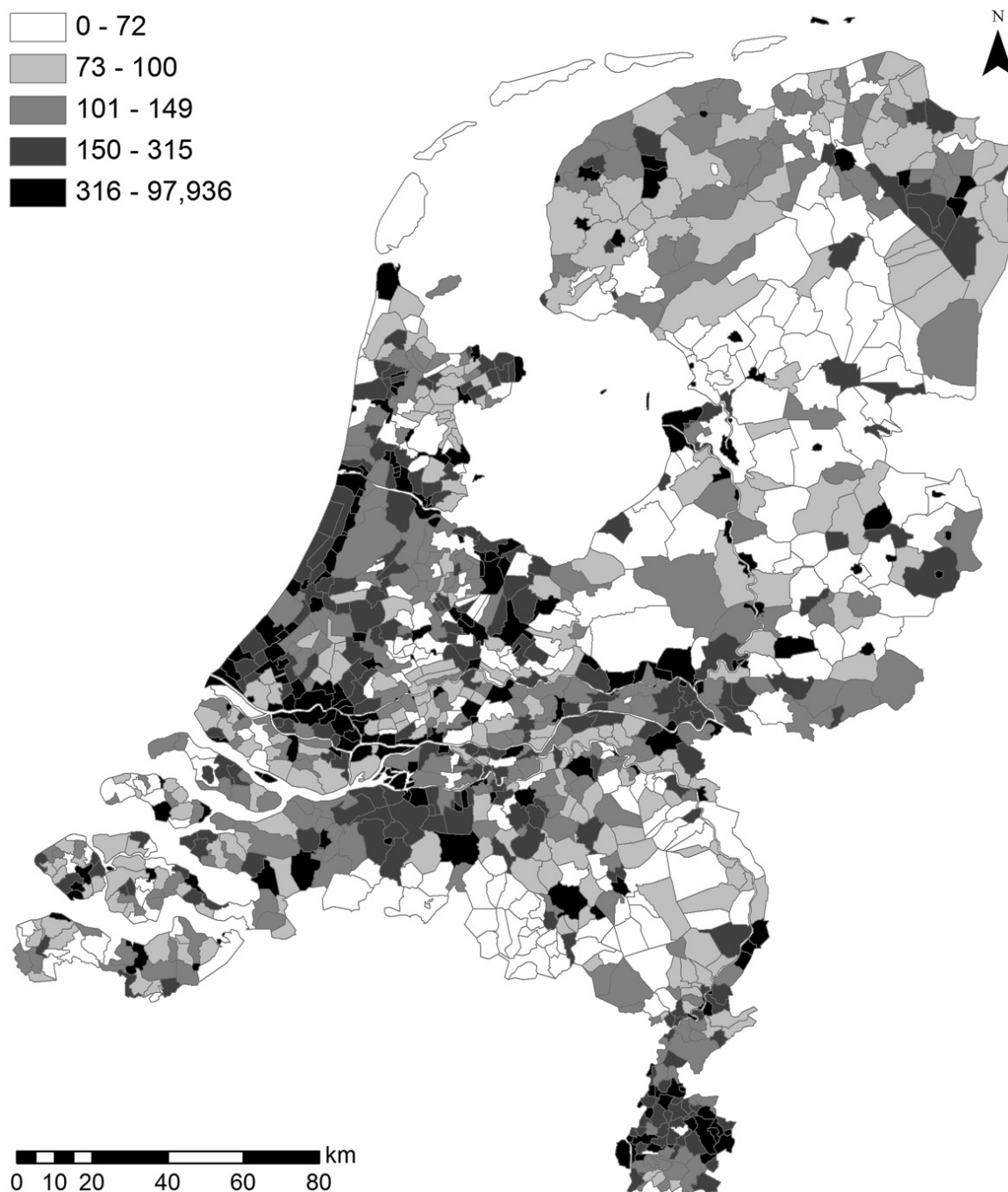
Notes: Shading of population per square kilometre is classified into quantile intervals, in five categories.

Sources: Own calculation, using NLKAART with the 1920 census.

(1950). Spatial autocorrelation would be characterised here by a correlation in liquidity among banks located nearby to one another. A positive value for Moran's I indicates that a bank is surrounded by other banks with similar levels of liquidity; such a bank is part of a cluster. A negative value for Moran's I indicates that a bank is surrounded by others with dissimilar levels of liquidity; such a bank is an outlier. The map categorises banks according to their P-value, derived from their computed Z-score. The legend distinguishes between banks with statistically high and low levels of clustering, and also identifies outliers, banks with low levels of liquidity in a sea of highly liquid neighbours, or vice versa – all calculated at the five percent significance level.

The analysis reveals a clustering pattern which is a little different from the locational clustering. The province of Noord-Brabant and the northern half of Limburg see a concentration of highly-liquid banks. These are also areas with a lower spatial density of bank locations. Clusters of less liquid banks are found in the northeast of Friesland, again where there is no spatial cluster. The cluster of less liquid banks in the Achterhoek (in Gelderland) bucks this trend in that this area also has a concentration of banks, at least for the most part. The provinces of Holland reveal a mixed correlation between the two; the working area of the ill-fated CCCB-Alkmaar network has a large cluster of less liquid banks that stretches across regions of high and low locational densities. A vast stretch of land from the southeast (in Zeeland) to the northwest (Groningen) of the Kingdom has no significant clustering at the five percent level. This band separates the main regions of high and low liquidity clusters from one another. Note that many of the clusters (or lack of clusters) appear to fall neatly within the borders of the 83 distinct Directie van den Landbouw (1923) survey regions (Figure 4.3, p.170), and thus provide support for the use of these regions as regional fixed effects in the regression analysis of this chapter. No obvious spatial correlation exists between the liquidity clusters and population density, depicted in Figure 4.8.

Figure 4.9: Liquidity of rural cooperative banks, defined as most liquid assets over total assets, 1919
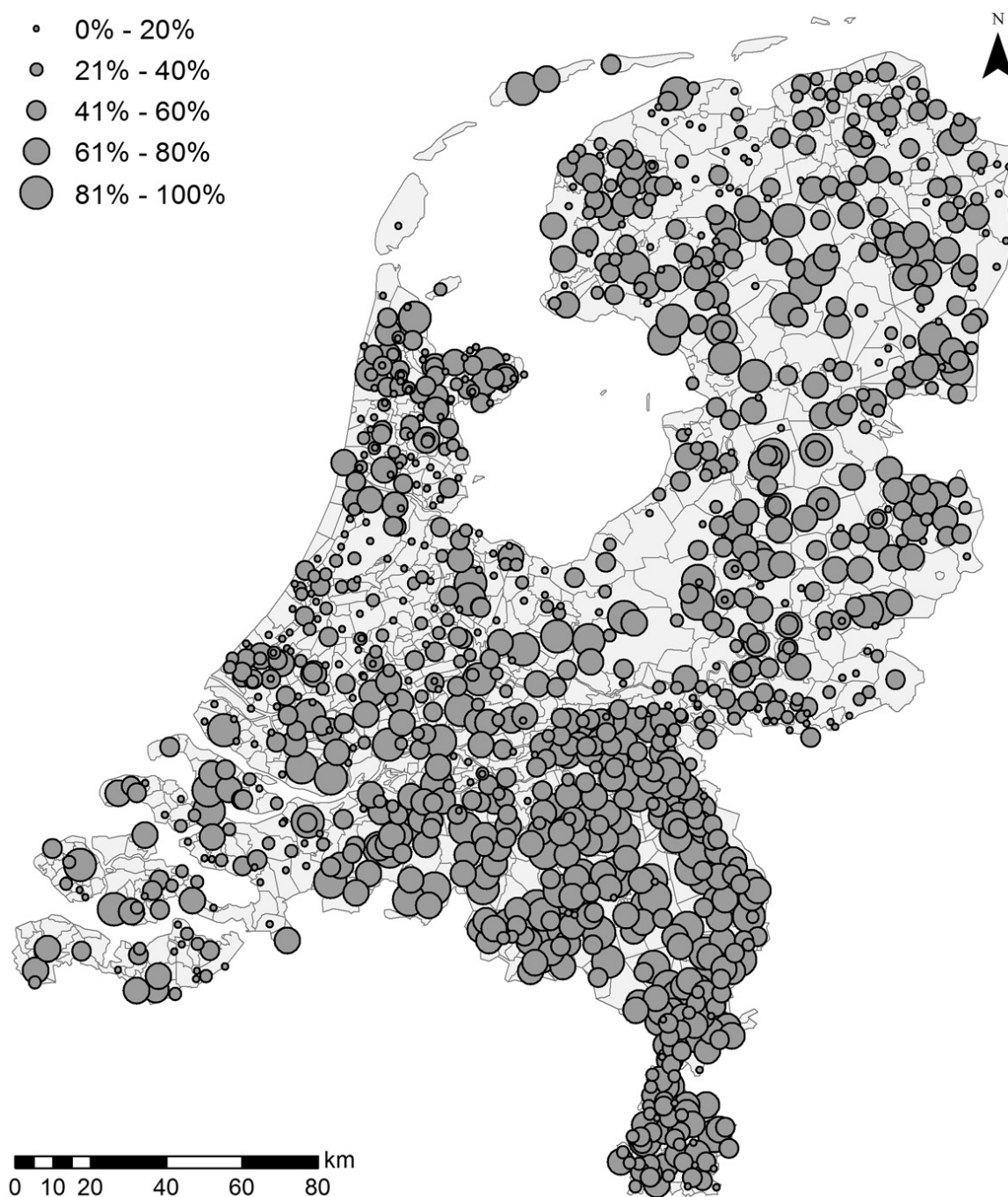
Note: Each point represents a different bank. Each is scaled according to level of liquidity, larger points indicating more liquid banks. Scale is classified into equal intervals, in five categories.

Sources: TOP250namen, NLKAART and own calculation (see text) using data from the annual reports of the three Raiffeisen networks.

Figure 4.10: Cluster analysis of liquidity of rural cooperative banks, 1919
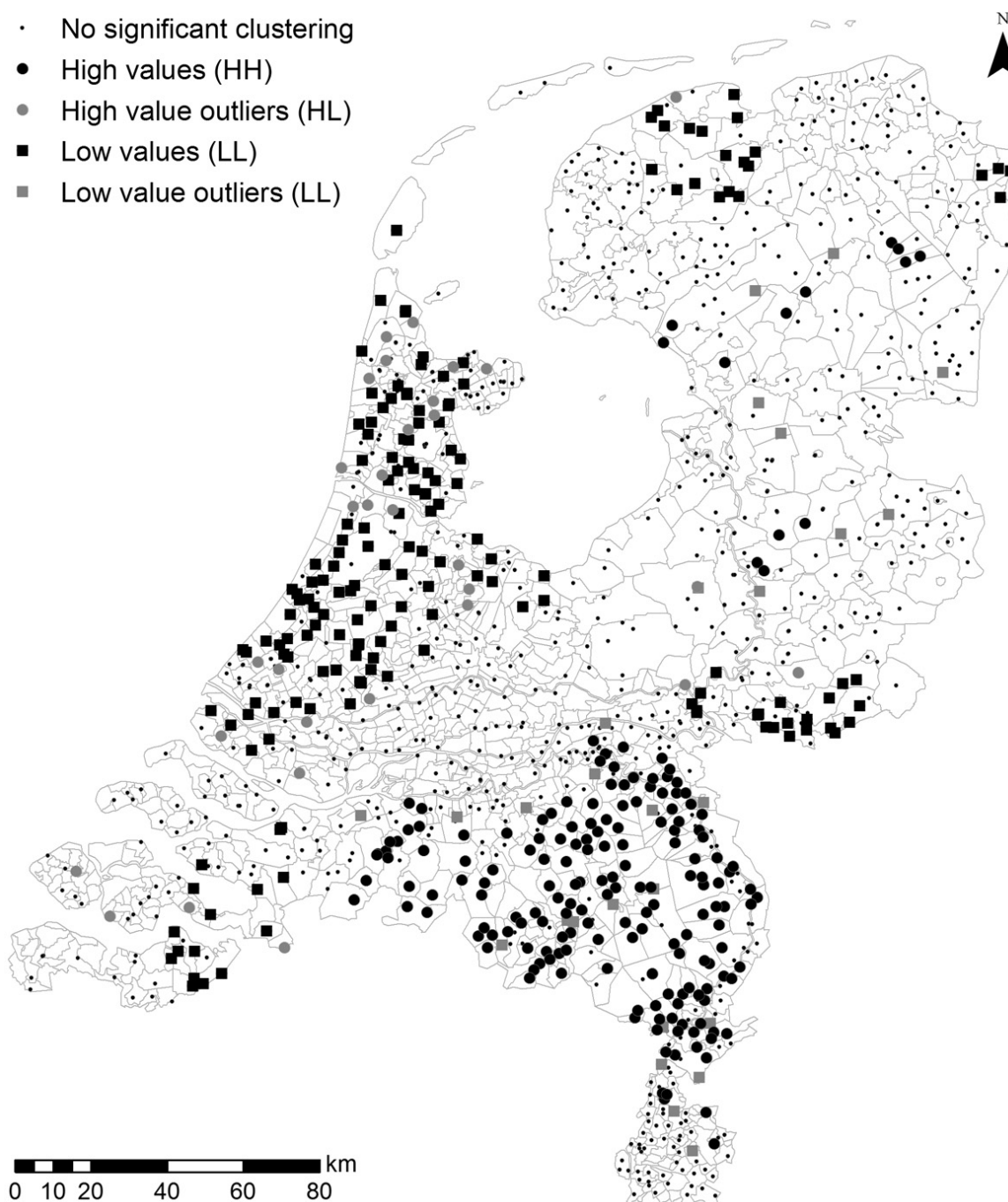
Note: Each point represents a different bank. Size and shape corresponds to a category of P-values associated with a Local Moran's I value. Significant clustering is defined at the 5 percent level. See text for further description.

Sources: Own calculation using ArcGIS Anselin Local Moran Spatial Statistics tool.

Chapter 5

Liability choice and bank survival

5.1 Introduction

The possibility of there being an increased shareholder incentive for risk-taking for limited liability banking has in some quarters been mooted as a contributing cause of the world financial crisis which started in 2007 (Sinn 2008, Goodhart 2009, Leijonhufvud 2010). If bank owners have only limited liability, they may be more inclined to vote in managers who promise to choose more volatile and risky business. This incentive is further increased if individual equity stakes are small and tenable as part of a liquid and diversified portfolio. This argument implies that the corporate governance dogma of recent decades – that the interests of bank managers should be aligned with those of shareholders, through remuneration in equity options or otherwise – may have made matters worse. Increasing the personal liability of bank executives – for instance, by giving them double liability – may make their decisions more conservative, and thus help to improve bank stability.

On the other side of the argument, proponents of limited liability argue that the functioning of efficient capital markets requires it (Rajan & Zingales 2003b). The act of restricting personal responsibility for an investment to some *ex ante* fixed amount may mobilise savings from individuals otherwise discouraged from investing by the large variance in possible financial outcomes experienced under unlimited liability regimes (Halpern et al. 1980). If the personal assets of individual shareholders are costly to verify, then permitting only unlimited liability may create a market for lemons where shareholding would be limited to individuals who, with "nothing to lose", were nearly insolvent already, thus rendering shareholdings *de facto* limited in any case. Indeed,

it has been argued that modern, liquid, capital markets might have failed to emerge without the financial innovation of limited liability shareholding (e.g. Noe & Smith 1997, Gelderblom & Jonker 2004, cf. Guinnane et al. 2007).

Despite the widely different interpretations of the efficacy of liability limitation in banking business, the applied industrial organisation bodies of research on corporate finance and banking largely ignore all liability regimes except limited ones. Tirole (2006) and Freixas & Rochet (2008), the principal graduate textbooks in these two fields, assume limited liability in all their models.[50] Wider academic research in banking is not much better: less than 0.02 percent of all banking-related entries on EconLit, a major database of academic economic research, relates to shareholder liability.[51] The absence of economic research on the relative merits of different bank liability regimes is probably explained by the fact that all major banks today limit the liability of their shareholders. But such a liability regime was not always predominant; bankers in the nineteenth and early twentieth centuries used a multitude of different liability options. Given the discussion of liability in the context of the recent financial crisis, it is perhaps time for economists and policymakers to re-examine the existing settlement. The only way to do so empirically is to look into the past, when other arrangements were more common.

Aside from a tiny amount of theoretical literature (e.g. Woodward 1984, 1985, Gollier et al. 1997), the economic research on the arguments surrounding shareholder liability in banking has for the most part been applied in nature, making use of "natural experiments in history". Two such experiments have proved popular: (1) anomalies in the liability regimes of Great Britain and Ireland in the nineteenth century (e.g. Carr & Mathewson 1988, Carr et al. 1989, Cowen & Kroszner 1989, White 1995, Acheson & Turner 2006, 2008, Turner 2009*b*, Acheson et al. 2010, Grossman & Imai 2010); and (2) interstate liability differences in the US in the late nineteenth and early twentieth centuries (e.g. Macey & Miller 1992, 1993, Esty 1998, Grossman 2001, 2007). These natural experiments come to different conclusions on the value of limited liability for bank stability; for example, Esty (1998) and Grossman (2001) argue that double liability reduces risk, whilst Carr & Mathewson (1988) point to the high failure rate

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[50]Freixas & Rochet (2008) compare liability regimes only once, and only implicitly, in the context of their explanation of the Bernanke & Gertler (1990) financial fragility model (see pp.205-207).

[51]A search of the EconLit database was carried out on 10 January 2011, looking for all entries which had "banks" or "banking" in the abstract. A search was then run for those which referred to "shareholder liability", "limited liability", "contingent liability", or "unlimited liability".

of unlimited liability banks, and White (1995) argues that liability differences had very little impact on banks' success. The nature of most extant natural experiments is that the choice of liability regime was generally not up to the owners of these banks; bankers' choice of shareholder liability rules was instead dictated by the law of the land. For instance, in the first half of the nineteenth century, new entrants to the Scottish market for banking services were not permitted to adopt forms of limited liability, and the liability regime of state-chartered banks in the US was entirely governed by the state in which these banks were founded. Even where choices could be made, such as the choice between private or public limited bank in England in the late nineteenth century, the menu of possibilities was severely limited – *table d'hôte* rather than *à la carte*.

Like much of the literature relating shareholder liability to bank stability, this chapter makes use of a natural experiment in history, namely, the fate of the *middenstandsbanken* – a class of bank which emerged in the Netherlands from the first decade of the twentieth century to provide savings and loans services to urban small- and medium-sized enterprises – in the early 1920s – a period of unprecedented financial turmoil. It nevertheless offers a new perspective, and has the potential for providing new insights, because: (1) Dutch bankers had many liability options, all arranged independently of their banks' corporate form (legal personality), even including the option to make up new arrangements; and (2) this was the only banking crisis to occur in the Netherlands, before the world crisis which started in 2007. The first point is interesting because the liability regime choice made by *middenstandsbanken* did not merely result from government diktat; the founders of these banks could choose freely, fine-tuning liability to the specific demands of shareholders and managers, incorporating such factors as their attitudes towards risk in their decision. This choice may have helped banks to raise capital from parts of society previously unwilling or unable to invest. However, Dutch legal flexibility may have had its drawbacks; as in the French case described in Lamoreaux & Rosenthal (2005), substantial variation in banks' choice of liability limitation regime may have increased information costs for investors because the choice of corporate form conveyed little information about the liability options chosen. The second point is what makes this case study a natural experiment; the Dutch crisis was triggered by the deflationary pressure of maintaining gold parity, combined with an expansion of bank credit necessitated by the Great War (Jonker & Van Zanden 1995). Hence, unlike other such experiments, in this one the

liability regime was endogenous, whilst the cause of the financial shock was exogenous.

The founders of *middenstandsbanken* took full advantage of the wide choice of liability regime open to them. Some banks took unlimited liability constructs. Others limited the liability of their shareholders in some way. The most popular method of doing so was through a system of unpaid (pledged) capital, where only a certain proportion of shareholder capital would be paid up front, the rest being a legal claim on shareholders. Some banks combined this system with double liability, where shareholders would be liable for double the value of their total stake, i.e. double the value of their paid and unpaid portions combined. Due to a feature unique to Dutch law, these liability arrangements could be made by banks whose legal personality came from either conventional public company legislation or the cooperative organisational form. This chapter exploits this heterogeneity and tracks the fate of the different types of *middenstandsbank* over the crisis period.

Initial regression analysis shows that, contrary to the standard view derived from financial economics, and taking account of other factors, banks with more limits to liability were no more likely to fail than those choosing fewer. This is despite the fact that in the build-up to the 1920s crisis limited liability appears to have gone hand-in-hand with riskier-looking balance sheets – as measured by banks' capital ratios, the percentage of loans covered by all the capital resources implied by their banks' choice of liability regime. However, stepwise regression analysis suggests that the structure of these balance sheets was itself determined by the choice of liability regime, and that increased liability does indeed affect survival chances, for the worse, through the size of shareholdings and the proportion of these which are paid up-front by investors. This overall conclusion of the "great *middenstandsbank* experiment" therefore runs contrary to alternative experiments involving exogenous liability diktat, such as the natural experiment of Grossman (2001), who finds that exogenously-determined bank shareholder liability rules had little effect on bank survival chances in US banking before the Great Depression. If bankers and their shareholders can themselves choose their liability regime, then the results of this chapter suggest that they self-select into groups of similar risk characteristics and buy into the bank which is most closely aligned with their level of risk aversion. Qualitative evidence on the Dutch case suggests that shareholdings in banks with less limited liability were not very liquid, a conclusion quite opposite to that of Turner and his co-authors (e.g. 2009*b*). But shareholder quality is likely to have been higher for unlimited liability banks than those which limited

liability, as Turner's view of British banking history somewhat endorses. Whether the free liability choice available to *middenstandsbanken* had an impact on competition is unfortunately difficult to ascertain from this case.

This chapter continues as follows. Section 5.2 discusses three heated scholarly debates on the relative merits of different shareholder liability regimes in banking. Section 5.3 provides a detailed historical context for the natural experimental setting used in the chapter, based on the extant (historical) literature combined with new (qualitative) research. Section 5.4 sets out the quantitative data and empirical methodology used here and summarises the three working hypotheses based on relationships proposed in the economics literature. Section 5.5 presents an empirical analysis. Section 5.6 concludes by discussing this chapter's implications for writings on Dutch financial history and the wider literature on shareholder liability in banking. Appendix 5.A summarises the legal analysis of the range of legislation used by *middenstandsbanken* to limit shareholder liability.

5.2 Liability and stability in theory and history

Nowadays entrepreneurs can secure legal personality for their business in various ways. All involve a decision on how far they are personally responsible for their venture's financial fate. With rare exception, banks today all enjoy limited liability. But this was not always the case; in the past, some jurisdictions permitted a wide range of different liability arrangements for banks to run concurrently within their borders and financial entrepreneurs actually made use of this choice. The Kingdom of the Netherlands in the early twentieth century is one such example.

The literature on the relative merits of different shareholder liability regimes can be classified into three debates: (1) the risk-taking behaviour of bank managers operating in limited versus unlimited and hybrid liability regimes; (2) differences between the quality of shareholders and the liquidity of shareholdings for limited versus unlimited and hybrid liability regimes; and (3) the ability of banks with different liability regimes to compete with one another. These are discussed in turn, focusing on their value for understanding the present study of *middenstandsbanken* and the way in which the present study contributes to this literature.

5.2.1   Asset pricing and risk-taking incentives

Limited liability means that debt holders have no recourse other than to a company's own assets. In financial economics, limited liability shareholdings can be valued as call options; shareholders can pay debt and keep the profits, or they can walk away leaving the assets and business of a company to its creditors. Limiting liability may therefore result in a conflict of interest between shareholders and debt holders, a principal-agent problem; by following a riskier but more profitable business strategy, shareholders can benefit at the expense of debt holders.

At the other extreme, unlimited liability means that debt holders have full recourse, not only to a company's own assets, but also those of its owners. Absent information asymmetries and other market distortions, unlimited liability disincentivises risk-taking because shareholders cannot then easily walk away from their business when it goes under; shareholders give equal weight to both tails of asset returns when evaluating investment decisions.

Hybrid liability regimes raise the size of the potential negative payoff to shareholders, and thus give greater weight to the lower tail of possible financial returns in their decision-making. If a company with e.g. double liability goes bust, then every shareholder is liable for the value of one additional multiple of the share's value – but usually only at par rather than market value. Shareholders in the case of uncalled capital – where only a certain proportion of par value was paid when the share was purchased – may be liable to several multiples of their initial stake. The contingent part of the share value can be considered a bond which is converted to equity only in the event of the company's failure.

The exposition above assumes that shareholders and debt holders are two separate stakeholders. But this is not always the case; the two constituencies may overlap in the case of cooperatively-owned business organisations. If they perfectly overlap, then liability may affect risk very little. However, if the shareholder-members of a cooperative with some form of liability limitation hold more of their cooperative's equity than debt – or if at least some members hold more equity versus debt than others – then this may induce risk-taking behaviour comparable to the conventional limited liability case described above. The converse may be predicted if shareholder-members hold more debt than equity.

Many papers in the literature on shareholder liability and bank risk-taking use asset

pricing financial economics – implicitly, as a rule rather than explicitly – as a starting point in their empirical analysis, to assess whether case studies from history provide evidence for its logic. Esty (1998) and Grossman & Imai (2010) are good examples of this. The former shows that banks with harsher liability regimes operating in the US between 1900 and 1915 had lower equity and asset volatility, held lower proportions of risky assets and were less likely to increase their investment in risky assets when their net worth declined. The latter finds that nineteenth-century British banks with larger amounts of extended liability tended to take on less risk.[52]

The asset pricing approach is complicated when asymmetric information is introduced. As noted, a principal-agent problem results from the act of limiting shareholder liability. If managers in limited liability banks are able to hide their actions from shareholders and debt holders (i.e. depositors), then the moral hazard created may encourage them to take excessive risks; shareholders, to whom managers are ultimately responsible, have fewer incentives than debt holders to monitor management because they stand to lose only the market value of their shareholding if the bank fails. The ability of debt holders to monitor bank managers' decisions is therefore crucial in ensuring that the interests of shareholders and debt holders are aligned.

A bank's choice of one liability regime over another is analysed by Evans & Quigley (1995) using an extension of the above logic: liability structure depends on whether it is cheaper to monitor the quality of the assets or the personal wealth of the guaranteeing investors. Unlimited liability is chosen when creditors are willing to compensate shareholders for bearing all the costs of monitoring management and the risk associated with the bank's activities. Limited liability is preferred when the information about the bank's financial position can be provided more cheaply than unlimited liability entails. Evans & Quigley test their logic on nineteenth-century Scottish banking markets, in which limited and unlimited liability banks fiercely competed for business. They conclude that widespread liability limitation was chosen only after new corporate governance rules were brought in to make decision-making more transparent by regularly publishing bank balance sheets and carrying out independent audits, arguably validating their hypothesis.

Like Evans & Quigley, Macey & Miller (1992) look at the transition from extended liability to present-day limited liability, this time using the case study of the US.

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[52]Note, however, that risk is measured by Grossman & Imai as stock price volatility, a less appropriate measure for bank stock which, as in the Dutch case, is not very liquid.

Objections to Macey & Miller's empirics in Jackson (1993) and Grossman (2001) aside, they argue convincingly that double liability was eventually abandoned in favour of limited liability, for three reasons: (1) it failed to protect bank creditors and shareholders, many of whom had little power over managerial decisions in any case; (2) it failed to maintain public confidence in the banking system during the Great Depression, since its original purpose was to prevent banks from going under; and (3) federal deposit insurance was seen as a more effective way of preventing bank runs. They conclude, however, that 'history shows that the nation took a wrong turn' when double liability was abandoned in favour of deposit insurance, for this fails to combat moral hazard.

Two further contributions by Grossman are relevant to the current discussion. Grossman (2007) looks at what determines the original decision by different US states in the nineteenth century to impose single or double liability regimes on bank shareholders and finds that double liability was adopted by the US states with more advanced economies and banking sectors, where bank failures would be more costly, or where the state had a history of failures. Single liability was adopted by states which were less developed and growing more rapidly, presumably to foster development through more expansive banking. Grossman (2001), although written earlier, can be considered the logical second step; it assesses, given the liability legislation chosen by different US states, whether banks chartered in the states requiring double liability undertook less risk than others operating in those with conventional limited liability. He finds that double liability did coincide with reduced risk-taking – measured by various balance sheet ratios – and also with lower failure rates, but only during times of relative financial calm. During severe financial disruptions, double liability banks were less stable than their conventional cousins.

The liability literature thus far contains very little analysis of the liability-risk relationship in cases where bank founders themselves can choose their liability regime rather than accepting government diktat. It also fails to consider how liability and risk might be related under alternative forms of business ownership, such as cooperative enterprises. The few notable exceptions are Hansmann (1996) and Snowden (2003), which look at the issue in passing during their analysis of mutual-type banks in the US context, and Banerjee et al. (1994), which examines joint-liability in the context of nineteenth century German Raiffeisen banks. The last mentioned work is, of course, the most relevant for the Dutch context in terms of the type of institution and the

historical period examined, and the geographical and social proximity of these banks to the Netherlands. The Ahlin & Townsend (2007*b*) critique of the direction of the relationship between liability and repayment risk aside, the problem with this study is that there is too little variation in the liability regime of the banks studied, and a total absence of a destabilising financial shock; the conditions for a natural experiment are not met.

5.2.2 Quality and liquidity

The previous sub-section discusses liability in terms of asset pricing financial economics, perhaps the most obvious approach to analysing banks' choice of liability regime. The current subsection discusses two other approaches. Whilst each follows from information economics, their early proponents predate the information economics revolution. The first concerns the quality of shareholders, the second the liquidity of shareholdings.

Turner (2009*a*) tracks the nineteenth-century debates on the merits of limiting liability in banking. Much of the opposition to unlimited liability was led by the parliamentarian Sir William Clay, who in the late 1830s suggested that unlimited liability attracted low-wealth individuals and repelled wealthy ones. This, he argued, eventually resulted in a *de facto* limitation of liability in any case. Clay was describing a market for lemons *à la* Akerlof (1970) *avant la lettre*, whereby a lack of information on the financial assets of shareholding peers results in wealthy shareholders selling their stakes because they stand to lose more in the event of failure – an argument modelled theoretically in Woodward (1985). Clay argued for the introduction of limited liability with significant quantities of paid-up capital and greater transparency in bankers' activities, in the form of more frequent auditing.

Clay's argument was not taken seriously until after the failure of the City of Glasgow Bank in 1878. The liquidation of this unlimited liability bank resulted in the bankruptcy of most of its shareholders. Much of the financial press – including *The Economist* – started to crusade against unlimited liability, arguing that limiting liability would bring a better class of investor and improve bank solidity (Turner 2009*a*). Most banks were subsequently re-founded as limited liability corporations, though with various hybrid liability regimes and not much improvement in corporate transparency.

Recent scholarship has shown that nineteenth century concerns about shareholder quality were probably unfounded. Acheson & Turner (2006), a study of changes in the composition of bank shareholders following the Ulster Bank's limitation of shareholder liability in the last quarter of the nineteenth century, suggests that liability limitation if anything increased the proportion of equity-holders with low wealth. Turner's (2009*b*) subsequent study of the same problem uses shareholder data for 14 English banks and largely confirms this earlier finding. Acheson & Turner (2008), moreover, find little evidence that shareholdings were diffused to individuals of "modest means" in the case of the City of Glasgow Bank. Finally, Acheson & Turner (2011) show that female investors, traditionally viewed in the literature as one of the most risk averse shareholder constituencies (e.g. Jianakoplos & Bernasek 2007, c.f. Rutterford & Maltby 2007), held sizeable portions of bank stocks with extended liability by the second half of the nineteenth century.

Woodward (1984, 1985) has an alternative, theoretical, explanation for the popularity of the limited liability corporate form – the liquidity of shareholdings. It has been adopted by many scholars of liability, including Carr & Mathewson (1988), and can be considered the standard view. Woodward argues that limited liability legal constructs incur lower information and transaction costs than unlimited liability because they allow for the free transferability of shares in an active secondary market. Selling shares makes projects more desirable because it permits investors to: (1) accommodate their intertemporal consumption plans; (2) revise their portfolios to achieve desired risk; and (3) react to changes in belief about project performance. And all without interfering with the management of the enterprise.

Hickson et al. (2005) and Acheson et al. (2010), however, find little support for the Woodward view. The first tests the hypothesis on data concerning all share ownership transfers before and after liability was limited at the Ulster Banking Company in 1883. It finds no significant increase in trading following limitation. However, the problem with this case study is that it is unclear whether its trading activity was higher or lower to begin with than other banks'. Acheson et al. (2010) argue that, from the perspective of stock tradability and liquidity, liability rules were irrelevant. Their findings are based on the trading data of 13 banks – a much larger sample – before and after the City of Glasgow Bank failure. They note that there was nearly always a way to sell unlimited liability shares: if managers of unlimited liability banks rejected share transfers on the grounds that new owners had insufficient assets, then managers would themselves be

obliged to purchase the shares – albeit at a slightly reduced price – thus ensuring that investors could always sell their stakes.

The two issues discussed in the present subsection – shareholder quality and shareholding liquidity – are important for the current investigation of *middenstandsbanken* because they potentially affect the ability of these financial institutions to survive a financial shock. For instance, depositors may have a high propensity to run on unlimited liability banks, perceiving a poor quality shareholder constituency. Besides, shareholdings in banks which cannot be easily sold during crises probably lead to behaviour very unlike that associated with those which can.

5.2.3   Market entry and competition

The third academic debate on the consequences of liability regime choice concerns barriers to entry, and therefore relates to the more widely debated relationship between interbank competition and bank stability, which is reviewed in some depth in Chapter 4 of this thesis. The issue of competition was raised following the publication of White's thesis (1984) on so-called "free banking" in Britain. Included in White's tract on the merits of permitting banks to issue their own paper currency, his characterisation of the early nineteenth century Scottish banking market irritated a number of his colleagues. Despite recognising that the compulsory liability rules imposed on new entrants to the Scottish market potentially deterred optimal risk-sharing, he argued that the unlimited liability requirement was not important in practice. He noted that few banks chose to limit shareholder liability after the Companies Act of 1862 made this possible – they converted to limited liability only following the 1878 failure of the City of Glasgow Bank described in the previous subsection. White concludes that the Scottish case reveals no meaningful barriers to entry, a key requirement of his model of free banking.

This view was challenged in Carr & Mathewson (1988), Carr et al. (1989) and Cowen & Kroszner (1989), who argue that unlimited liability was imposed on new entrants, not because policymakers thought this would increase these banks' long-term safety, as suggested in Section 5.2.1, but rather to reduce competition and protect the rents of the politically-connected incumbents. Unlimited liability banks, they argue, were more failure-prone and unable to compete with the three large limited liability incumbents (Bank of Scotland, Royal Bank of Scotland and the British Linen

Company), resulting in a sub-optimal level of credit availability in Scotland. This argument is echoed by Rajan & Zingales (2003*a*), whose interest group theory of financial development explains why incumbents in general oppose financial innovations. Carr & Mathewson (1988), in particular, make the case that the unlimited liability requirement posed a barrier to entry, and resulted in inefficiently small firms.

White responded to his critics in the second edition of his thesis published in 1995. In it, he argues that new entrants were well equipped to compete with the three chartered incumbents, even though they could not choose their own liability regime. He notes that unlimited liability did not prevent new entrants from raising capital on the same large scale as that of incumbents. He also calculates that the survival of unlimited liability banks was the same as the incumbents', if corrected for the size of their shareholder constituencies, branch networks and note issue.

The implication of the market entry debate is important for the subject of the present chapter, because entry barriers have been shown to reduce competition and the nature of the relationship between interbank competition and financial stability remains controversial (Berger et al. 2009). The traditional view is that competition encourages bankers to take on high-risk projects, whilst bankers with market power are more risk averse as they stand to lose their monopoly rents (Keeley 1990). The revisionist view is that competition drives up the interest paid out on deposits, reducing bankers' moral hazard and increasing stability (Boyd et al. 2004, Boyd & De Nicolò 2005). A new view proposes that a U-shaped relationship exists between the two, whereby traditional and revisionist relationships operate at different extremes of the market (Martinez-Miera & Repullo 2008). Empirical studies of the relationship have thus far failed to clarify which model best explains the real world, partly because measuring competition in banking is so difficult (see Chapter 4).

The great *middenstandsbanken* experiment of the early 1920s could allow further scrutiny of the relationship between entry barriers, competition and stability. Given the historical context, this chapter could hypothesise that liability should not create a significant barrier to entry, because bank founders could themselves choose their liability regime. However, the barriers to market exit for cooperative banks with unlimited liability, discussed in the next section, may also act as disincentives to entry in the first place, or at least disincentivises choosing the cooperative form. Unfortunately, this hypothesis remains untested in this thesis, at least quantitatively, as a good measure of competition for urban cooperatives is unavailable; the distance

proxies used in the case of *boerenleenbanken* in the previous chapter cannot simply be transferred to the study of their urban cousins, as *middenstandsbanken* did not only compete among themselves; they also, even primarily, competed with other types of financial services.

5.3 Middenstandsbanken in their historical context

The term *middenstand* translates literally to "middle class". It was used by the Dutch to denote small (urban) business-owners in the retail trade and handicraft sector. Perhaps the closest business classification available to English-speakers is small- and medium-sized enterprise (SME), but this does not quite cover it; the *middenstand*, composed of *middenstanders*, was thought of almost as a social or political class or rank with which certain segments of the population self-identified. By the early twentieth century, the *middenstand* had its own trade associations, social clubs and political pressure groups. Soon it would have its own banks, specifically geared towards meeting its financial needs. These banks – known as *middenstandsbanken* – are the focus of the current chapter. The first part of this section explores their emergence, proliferation and institutional attributes in more detail.

By 1919, on the eve of a financial crisis which ravaged the Dutch financial services industry, the Netherlands contained just under 100 *middenstandsbanken*, some with extensive regional branch networks. Their proliferation was not nearly as impressive as that of the *boerenleenbank*, the Netherlands' other financial institution to emerge in the *fin de siècle*. But these business organisations are nevertheless an interesting and important subject of study because they adopted a very diverse range of organisational forms – with differences in ownership, management and control structures, in branching and networking strategies and in legal liability regimes – whilst all claiming to serve the same type of customer. The crisis of the early 1920s – treated here as an exogenously-caused shock which affected all *middenstandsbanken* – is an event in history which may reveal the best form of specialist business organisation for the provision of financial services to SMEs, or at least the best of a bad bunch. It is unfortunate, then, that relatively little is known about their past. The second part of this section pieces together a new narrative of the *middenstandsbank* crisis by combining extant academic

research with newly found archival material in an attempt to highlight what this chapter contributes to further understanding their turbulent past.

5.3.1   Emergence, proliferation and institutional attributes

Much in common with the reasons for the emergence of rural cooperative banks discussed elsewhere in this thesis, three factors can be suggested for the emergence of *middenstandsbanken* in the 1900s: (1) as a response to untapped market demand for financial services from SME business; (2) as a specific way of dealing with the new industrial organisation of SMEs and other businesses, following recent changes in technology and consumer preferences; and (3) as an extension of the influence of Dutch socioreligious institutions. A discussion of these three factors helps to understand the heterogeneity of the institutional attributes of *middenstandsbanken*, and hence each is explored in turn.

(1) Stoffer (1985) and Dekkers (1992) argue that small independent businesses were priced out of financial services in the late nineteenth century; they were too small for general banks and too large for provincial banking houses. This is very much the line taken by propagandists of the *middenstandsbanken*, e.g. Brabander et al. (1926). The evidence for this assertion is mixed. The market for SME finance was not a new one *per se.* The financial services sector already included the savings houses of the Maatschappij tot Nut van 't Algemeen (friendly savings societies) and the Rijkspostspaarbank (the post-office savings bank). In the market for loans, there were (municipal) *credietvereenigingen* (mutual credit unions) and *hypotheekbanken* (mortgage banks), not to mention the new strategy adopted from the 1910s by many conventional banks – the Rotterdamsche Bankvereeniging in particular – to create branch networks which transcended the large commercial and industrial centres (Colvin 2007).

Of these incumbents, the history of *credietvereenigingen* is perhaps the most interesting. By the turn of the century, these credit unions were dying out after being bought up by conventional banks (Jonker 1996*b*). It is possible that, as the SMEs which they had initially supported matured, these banks changed their business model to one very similar to a conventional bank; better-capitalised larger concerns may not have required the same intensive personal monitoring typical of mutual societies, thus eliminating their business advantage. Alternatively, they died out because there was no

sustainable market for SME finance of this type. It is clear that the near-elimination of these "*middenstandsbanken avant la lettre*" left a perceived gap in the market. But, given the sector's semi-philanthropic origins and its continued reliance on state subsidy, whether there was a real, sustained and profitable demand for SME-targeted financing – and thus a real need for the services of the new *middenstandsbanken* – is doubtful. Indeed, Korthals Altes (1909), a prominent lawyer and accountant asked to investigate the possibility of establishing new *middenstandsbanken* by a national SME trade congress, concluded that such an exercise would be folly; a separate business which served SMEs to the exclusion of others could make no profit and would find it difficult to cover its costs, he argued, and would therefore serve little economic function.

A letter exchange in March, April and May of 1911 between De Nederlandsche Bank (DNB), the Dutch bank of issue and *de facto* central bank, and Jan Evert Scholten, a prominent member of the Eerste Kamer (Upper Chamber of Parliament) for the province of Groningen and vocal supporter of the *middenstand*, on the subject of permitting *middenstandsbanken* to re-discount their bills of exchange at DNB – a form of discount window called the *disconto* which DNB offered conventional banks – includes a heated discussion of why *middenstandsbanken* were suddenly being established all over the country (NA 2.06.001: 4569). A DNB official notes that he asked managers of DNB's branch network across the country whether the services of these specialist SME banks were needed. Many replied that there was already ample credit available for *middenstanders* from existing financial institutions and that their entry into the market had only created excessive competition. Scholten defends these banks, arguing that *middenstandsbanken* were being founded out of a deep-seated conviction that *middenstanders* had nowhere to turn for reasonably-priced loans. He concludes that the proof of their need would be found in these new banks' financial results, which he argues were not bad at all, considering their age. DNB remains unconvinced, and does not permit them access to the *disconto* at this early stage in their existence.

Moreover, the opinion that *middenstandsbanken* were not needed did not go away; *De Kroniek van Dr. A. Sternheim*, a respected and influential financial newspaper of the period, still believed this in 1923 (No. 22, 12 September 1923, p. 160). One editorial argued that: (1) loans to *middenstanders* were seldom backed by sufficient collateral; (2) there was insufficient monitoring of debtors; (3) credit was too often rolled-over and not paid back; (4) profits were very meagre compared to costs; (5) loans were

insufficiently liquid; (6) the ratio of own to outside capital was unfavourable; (7) there was in any case little opportunity for the *middenstand* to expand, irrespective of their financing; and (8) much of this credit was used for consumption rather than for business purposes.

The question is then whether *middenstanders* faced "credit rationing" or "redlining" behaviour on the part of conventional banks and other financial intermediaries before the emergence of *middenstandsbanken*. Freixas & Rochet (2008) explain that credit rationing occurs when borrowers' demand for credit is turned down, even if these borrowers are willing and able to pay both the price element (interest rate) and nonprice element (collateral) of prevailing loan contracts. Red-lining, in contrast, occurs when complete categories of borrower are totally excluded from the credit market because they are unable to pay the price and/or nonprice elements of the contract. Credit rationing implies that banks could increase their market share still further even if they raised the price and/or nonprice elements of loan contracts, but were unwilling to do so because such creditors' projects might be too risky, or because of some information asymmetries which could, for example, make *ex post* state verification too costly. Red-lining, however, implies that banks could increase their market share only by reducing the price and nonprice elements of their loan contracts, but were unwilling to do so because returns were too low. Given that the interest rates here were lower than those of conventional banks, and the collateral requirements less stringent, incumbent banks were perhaps engaging in red lining behaviour. Therefore, market entry would be successful only on the condition that new entrants lowered costs, for instance by using alternative forms of screening and monitoring. The (crisis-period) heterogeneity in performance of *middenstandsbanken* may be partly explained by this – perhaps some were more successful than others at using these alternatives.

(2) The Netherlands underwent an industrial revolution sometime in the second half of the nineteenth century, either right at its end (Brugmans 1961), or in the mid-1870s (Griffiths 1996, Smits et al. 1999). Whatever the exact date, by the early twentieth century the country had fully begun a new chapter in its industrial development, rapidly catching up with industrial leaders Britain and Germany (De Jong 2003). The second argument for the creation of *middenstandsbanken* is that these new banks were an organisational response to these new industrial conditions. Unlike the first explanation, the presence of viable substitute financial service providers does not count against this argument. Instead it goes that *middenstandsbanken* were an organisational

innovation which helped align the incentives of owners and users of capital in SME business, thus permitting a better functioning credit and loans market.

Not many academic studies look at the new *middenstanders* movements which emerged with the twentieth century. Van Driel (1984) is perhaps the only serious attempt; it argues that the organised *middenstand* may have been a reaction to the increasing feeling of many SME business-owners that their way of life was under threat; squeezed by the large capitalists, they worried that they would soon be forced into the ranks of the proletariat. The wide-scale political organisation of SME businesses followed closely the similar organisation of agriculturalists the decade before. Perhaps *middenstanders* were taking the lead from their rural cousins.

Middenstandsbanken took their inspiration from the German Schulze-Delitsch cooperative banking movement described in Guinnane (2001). Franz Hermann Schulze-Delitzsch (1808-1883), a Prussian Saxon politician, set up a string of cooperative banks for urban SMEs in the 1850s, which by 1861 totalled 364, with nearly 40,000 members. Germany's Schulze-Delitsch-style cooperatives usually granted loans for periods of up to three months, had limited liability for shareholder-members, collected valuable share capital and paid non-trivial dividends. They differed from the Raiffeisen-style cooperatives which had emerged in the mid-1860s; these granted long-term loans, all chose unlimited liability, had no share capital to speak of, and paid all dividends into a reserve fund.

The Dutch had already flirted with the idea of Schulze-Delitsch cooperatives in 1869, in the form of the Coöperatieve Voorschotvereeniging en Spaarbank in Goes in the province of Zeeland (Goeman Borgesius 1872). But Goes was very much an outlier; on a wider scale, banks for SME businesses began to be founded along cooperative lines only towards the end of the first decade of the twentieth century. These new *middenstandsbanken* were cooperative in nature – if not also legally cooperative in business form – in that their shareholder-members were also their customers. The new *middenstandsbanken* took one of three legal forms, as described in detail in Appendix 5.A: (1) a general-purpose association under the *Wet van 1855*; (2) a cooperative association under the *Wet van 1876*; or (3) a public company, called Naamloze Vennootschap (NV). Most chose the second or third option. Both permitted various mechanisms for limiting shareholder-member liability, including being limited only to the original price of the share, but also including systems of paid and unpaid capital, double liability and additional liability in proportion to the size of members'

loans (usually set at 20 percent).

The organisational form adopted by *middenstandsbanken* differed from the conventional banks they competed with, in that they were cooperative, or *de facto* cooperative. Significant numbers of shareholder-members were simultaneously the decision-makers, who voted in managers, and the customers, who deposited savings and took out loans. As such, their business objectives differed from other types of financial institution in being not necessarily profit maximising; banks sometimes decided to merely satisfice profits and instead provide members with advantageous interest rates on savings and loans. The varying success of this new type of bank may be explained by the degree to which the cooperative form was an advantage over other types of business. Douma (2001) and Douma & Schreuder (2008, pp.171-173) use transaction cost economics and the example of different organisational forms of Dutch dairy business in the late nineteenth century to defend the idea that the cooperative organisational form may be more appropriate in some circumstances than others. Perhaps this "appropriateness argument" can be applied to the varying success of *middenstandsbanken*, and any differences in the success of banks using one particular choice of liability regime or another can be seen to bear this out.

(3) By the late nineteenth century, most Dutch citizens identified themselves strongly with a particular religious denomination, primarily Roman Catholicism and the liberal *hervormde* (Dutch Reformed) or orthodox *gereformeerde* (literally "re-reformed") forms of Calvinism. Dutch enterprise and society became highly segregated along religious lines, with the different Christian denominations developing sophisticated parallel economies, each with its own schools, political parties, newspapers, trade unions, hospitals and even banks. This phenomenon, known as the *verzuiling* (pillarisation), reached its zenith in the interwar period, but persists even to this day. Its origins have been analysed, among others, by Kruijt (1974), Lijphart (1975), Stuurman (1983), De Rooy (1995), and Luykx (1996). The contributions of Stuurman and Luykx in particular are interesting in the present context. Both argue that the *verzuiling* was a Catholic-led phenomenon, but the former sees it as part of a wider political struggle for minority rights, whilst the latter argues that it was a form of social control by Catholic elites over the working classes, rather than a reaction to discrimination.

Whatever the causes, one of the tangible economic consequences of the phenomenon was that many of the *middenstandsbanken* were founded to serve the needs of

one particular religious denomination and exclude all others; the Hanzebanken were established as *middenstandsbanken* for Catholics, the Boazbanken were for Protestants, whilst a third class of bank was explicitly neutral. Each was organised in a different way, but there was also considerable heterogeneity within each type. Details of some of the banks belonging to each group are given below.

The origins of the Catholic Hanzebanken – named for the Hanseatic League – is probably the best researched of the *middenstandsbanken*. Dekkers (1992) writes that three banks shared the Hanzebank name, although they were linked only by ethos, not financially. The first was established in Den Bosch in the south of the country in 1908, with the explicit aim of serving the Catholic constituency of the diocese of Den Bosch, subsequently expanded to include also those of Breda and Roermond. The second was established in Delft in 1909, to cover the diocese of Haarlem, which at the time included both provinces of Holland. Finally, the third was founded in 1910 in Utrecht, to cover the archdiocese there.

The statutes of the Hanzebank Den Bosch reveal the organisation and liability structure adopted by these banks (NA 2.06.001: 4563). The bank, which was established as a cooperative using the *Wet van 1855*, aimed to raise 500 thousand guilders in share capital, to be spread over ten thousand shares (article 4), although the share capital goal was initially lowered to just ten thousand guilders when raising capital turned out to be difficult (Dekkers 1992). The bank's managers had to inform shareholders if more than 60 percent of share capital had to be written off (article 5). Members could sell back their share to the bank at any time, at the last listed price, but never above par (article 11). Bankrupts could not participate (article 14) and managers could confiscate the shares of an individual who had missed a loan repayment deadline by more than three months (article 15). Only member-shareholders could borrow money (article 17).

The issue of religion and the bank's religious motivation were controversial, even at the time. The Hanzebank Den Bosch had a spiritual advisor, a Norbertine canon by the name of Nouwens, who was very involved with the bank's day-to-day management. Like the *boerenleenbanken* before them, the *middenstandsbanken* successfully campaigned for government subsidies with which to cover the costs of their foundation. The Ministry of Trade and Industry holds detailed files on these subsidy requests (NA 2.01.001: 4558), and the Hanzebanken were initially viewed with much suspicion by The Hague's mandarins; whilst their directors accused the Ministry of discrimination,

these letters reveal that the real cause of the Ministry's concerns was their inadequate share capital and unqualified bank staff.

All three Hanzebanken developed complex branch networks of regional *bijbanken* (sub-banks) and sub-regional *correspondenties* (correspondents) over their designated diocesan territories. Member-shareholders were members of the whole bank, collectively liable for all its business, not only that of their local branch. This was very different from the way in which the Protestant Boazbanken were organised, where member-shareholders were members of their local bank only, and not liable for other banks in their network. The banks – named for either Ruth's husband or one of the two pillars at the entrance of Solomon's Temple – were independent cooperatives serving a single town, but could choose to join a national network through a cooperative central clearinghouse, based in Utrecht. By the 1917-1918 financial year, they numbered 20, of which five were independent and operated in single towns or cities, and 15 joined in the network. Most in this network consisted of cooperatives established under the *Wet van 1876* and chose unlimited liability, but there was some internal dissent about this corporate form and liability choice in the early 1920s; one of the banks' founders, a Mr Enklaar, argued that poorer members would be hit hardest if a Boazbank called on its members' assets for an equal portion, as per the rules (Stoffer 1985).

It is unclear from the historical literature why different banks chose to adopt different liability regimes; why the Boazbanken chose a different regime from the Hanzebanken; and why the Boazbanken themselves chose different arrangements from one another. Archival evidence relating to the case of the Boazbanken perhaps shines a meagre light on this issue: A commission was established to look into changing the central clearinghouse – and any willing local member banks – from a cooperative into an NV with more limited liability. It concluded in March 1922 that the cooperative form should be maintained because a cooperative bank can just as easily act as a profit-making commercial enterprise and that the NV-form would bring only disadvantages in the form of having to raise expensive share capital to replace the unlimited liability provisions, something many members could ill afford (ING B.002: 327). Given this case, it can be hypothesised that a bank's choice of liability regime was (partly) determined by whether it wanted to attract shareholder-members who could afford to lay down capital, or instead serve those that could not. This would suggest, then, that the choice of liability regime may be some indicator of the affluence of members; that the global pool of potential bank shareholders forms itself endogenously into sub-pools by level

of liquid assets.

Of course, shareholders were not the sole stakeholder of interest in banks' choice of liability regime: the size of the (potential) customer constituency unwilling to buy into their bank also likely influenced this choice. A depositor who does not own a share in his bank has very different incentives to a depositor who does, probably being more willing than a shareholding customer to withdraw his savings following signs of trouble. Non-shareholding customers may therefore also have sorted themselves endogenously, perhaps preferring unlimited liability to limited liability banks along the lines of the call option asset pricing perspective discussed in the previous section, or preferring to bank with an institution where the vast majority of shareholders were also customers, irrespective of that bank's liability choice. Qualitative evidence of this possibility, however, has not been identified.

Last, overtly neutral banks were established all over the Netherlands north of the Rhine delta. These banks had a range of legal constructs and liability regimes. Most were linked to one of four regional clearinghouses which also audited their accounts annually. In 1914, the Algemeene Centrale Bankvereeniging voor den Middenstand (ACBM) was established to link up these regional clearinghouses; it later merged them into one institution, following a minor reorganisation of the *middenstandsbankwezen* (sector) in 1918 (NA 2.01.001: 4569). One example of a neutral local *middenstandsbank* was that of Leeuwarden in the province of Friesland, established in 1908. Its statutes make it a cooperative of the *Wet van 1876* variety (NA 2.06.001: 4563). Member-shareholders could leave at any time, but they would remain liable for any bank losses for a further financial year (article 5). Member-shareholders were liable for a further 100 guilders above their capital share pledge of 100 guilders – this bank chose double liability (article 9). Shareholders had to pay up at least 50 percent of their pledged capital (article 33). Member-shareholders of a similar bank in Coevorden in the northeastern province of Drenthe established in the same year could transfer the ownership of their share with the approval of fellow members at their annual general meeting (article 33). If members died and the next of kin was unwilling to take on the share, then the bank was compelled to buy it back at 75 percent of par value.

Overall, then, *middenstandsbanken* varied a great deal, with various sociopolitical aims, organisational forms and liability structures. Whilst all types emerged at roughly the same time, their business conduct and structure were not consistent. The state and the central bank also treated them differently. Although intending to serve a similar

class of customer, they chose to do so with different structures. Which of the three factors analysed in this section best points to the reason for their foundation? The different shape and size of each bank suggests that the answer is a mixture of all three and varied place-by-place, depending on: (1) the pre-existing credit situation within an area; (2) the industrial focus of an area, and any recent changes to this; (3) the presence and strength of sociopolitical organisations, Catholic ones in particular; and (4) the perceived potential for opening a branch in that particular area, given the possible customer and shareholder bases resident there.

5.3.2   Success and failure in the early 1920s

Between 1920 and 1927, the Netherlands underwent a financial crisis which affected hundreds of banks and financial institutions of different types all over the country. They faced problems of different levels of seriousness, appearing as depositor runs, share price crashes, bankruptcies and state interventions. The types of bank affected included large national joint stock public listed banks, smaller provincial banks, national and municipal savings houses and urban and agricultural cooperative banks. The story for each type of bank appears to differ and for many types of bank is unstudied or under-researched and remains opaque. This is especially so for the *middenstandsbanken*, about which very little is written beyond Stoffer (1985), an amateur business history of the origins of the Nederlandsche Middenstandsbank (NMB) written by a retired bank functionary,[53] and Dekkers (1992) and Jacobs & Van Erp (2006), two academic histories of the Hanzebank in Den Bosch, probably the most famous *middenstandsbank* to fail during the crisis period. Additionally, Weenink (2005), an academic biography of Johan Willem Beyen – a banker installed to sort out the *middenstandsbanken* in 1925 – includes much interesting material. Together with various archival sources, these works are used in this section to construct a brief narrative of the crisis period.

The existing literature on the causes of the 1920s financial crisis in general is dominated by the work of Jonker (e.g. 1991, 1995, 1996*a*), the definitive restatement of which is found in Jonker & Van Zanden (1995) and Van Zanden (1997). It holds that the

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[53]This work sketches an overview of the early stages of this bank's existence, which was a new institution established by the government to unify all the remaining *middenstandsbanken* after the crisis in 1927. Stoffer focuses primarily on the personal histories of the key decision-makers rather than the workings of the banking business. Although the book provides a good narrative of the events in some of the main predecessors of the NMB during the crisis period, it is thin on analysis and unfortunately uses archival sources without referencing what they are or where they come from.

1920s crisis was a result of banks' over-exuberance during the Great War and the period immediately after. Large and sustained declines in aggregate demand and prices in the early 1920s – declines largely due to international factors, but arguably aggravated by (expectations of) the Dutch guilder's return to pre-war gold parity – put pressure on business and hence on its banking system. In short, Dutch banks were over-exposed to sectors of the economy which had suffered most from debt-deflation *à la* Fisher (1933). To what extent this explanation works for *middenstandsbanken* in particular is unclear, for these institutions have thus far escaped systematic economic analysis; the contribution of the various institutional attributes of individual *middenstandsbanken* described in the previous subsection – in particular the variation in liability – remains unexplored.

The history of the Hanzebank in Den Bosch in the crisis period, however, is relatively well researched. Dekkers (1992) describes how Brabant's SMEs made great profits in the Great War, some of which ended up in this Hanzebank's coffers. The bank decided to lend money to new types of customer, such as local government. But by 1917 the local DNB branch was complaining that the bank's loans were too large, its interest rate on deposits was too high, and that it lacked liquidity overall. In 1919, DNB was worried about the political character of the bank, that religious criteria were perhaps considered more important than customers' financial solidity. For these reasons, the bank was not permitted to use DNB's *disconto* facility. Instead, the bank secured loans from the Coöperatieve Centrale Boerenleenbank in Eindhoven (CCB-Eindhoven), the cooperative clearinghouse of the Catholic rural Raiffeisen cooperatives.

When the post-war boom turned to bust, the bank faced falling revenues and increasing numbers of customers could no longer afford to service their loans. However, it failed to write off its bad debts and continued to pay exorbitant dividends to shareholders and managers. For 1921, the bank had only 3.5 million guilders' worth of liquid assets to 24 million guilders of illiquid ones. Many of the loans had little or no collateral. The bank's directors had used up its share capital in its daily financial activities and kept this hidden from shareholders. They awarded themselves large preferential loans and high salaries. One set of loans to the firm of Meuwse-van Gerve, the owner of a chain of wholesalers, totalled some eight hundred thousand guilders. The bank's internal accountant had too little clout to force change; by not revealing the mismanagement in the bank's annual reports to shareholders, he let these practices continue for a further year. On top of this, Jacobs & Van Erp (2006) describe various

fraudulent-sounding dealings between the Hanzebank and CCB-Eindhoven.

On 16 June 1923, the bank applied for *surséance* – a court order to suspend any outstanding payments. The Hanzebank in Utrecht filed for *surséance* on the same day, although there was no financial link between these two banks. News of the *surséance* spread through an official Hanzebank communiqué, which blamed the situation on 'the unprecedented malaise experienced by the economy of the southern Netherlands', and sought to reassure customers that the government would probably rescue them. Newspapers appeared largely unsurprised by this turn of events, considering the recent public speculation concerning the banks' fate (see e.g. *De Telegraaf*, 17 June 1923). Soon, media speculation turned to the future of the Hanzebanken, with predictions including a take-over by the ACBM and the establishment of a central Hanzebank to consolidate existing ones (*De Telegraaf*, 18 June 1923).

A series of telephone conversations between DNB officials in Amsterdam and their regional branch managers describe the reaction from depositors (DNB: 13.258): Hanzebank branches were forced to close following runs across their network in the weekend immediately after the *surséance* application, and many other *middenstandsbanken* were also worried that the crisis might affect them; they made sure that DNB was prepared to lend them additional funds at short notice. The public soon called the affair the "Hanze débâcle" (see e.g. Algemeen Handelsblad, 23 June), and it provided songwriters and cartoonists with great material for mockery (see Figure 5.1).

The Hanzebank in Delft initially tried to escape the problems in Den Bosch and Utrecht by sending out public communiqués that it was a 'separate institution' with no links other than in name to its Catholic cousins (DNB: 13.258). But secret discussions between Delft and DNB in early June reveal problems there too: DNB did not like the approach to banking business taken by Delft's management, who were apparently too unwilling to write off losses and therefore operated inflated balance sheets (DNB: 13.25). Eventually, Delft was also affected and met the same fate as its Catholic cousins. It had no help from CCB-Eindhoven, which ignored it; the Catholic Raiffeisen cooperative appears to have secretly picked off any gems remaining in the Den Bosch business beforehand. Nor did the government help; parliamentarians were unwilling to support one socioreligious *zuil* over the others and DNB was totally uninterested (NA 2.01.001: 4564). By 1924, all three Hanzebanken were wound up; their shareholders lost everything and its depositors most of their savings.

Figure 5.1: Popular portrayals of the *middenstandsbanken* in the crisis

(a) In song, 1924

(b) In cartoon, 1923

Notes: (a) Text of popular song about a man who has lost everything (including his wife) to the Hanzebank failure; (b) cartoon of coins with leporid-shaped features fleeing from a branch of the Hanzebank, here intentionally re-spelt as "Hazen Bank", or Hares Bank

Sources: (a) http://www.geheugenvannederland.nl (Koninklijke Bibliotheek / Meertens Instituut); (b) *De Amsterdammer*, 30 June 1923

The story at the ACBM and the Boazbanken was similarly disastrous, but with a very different outcome. That the central clearinghouse for neutral banks was in difficulties at the time was increasingly plain. The bank, which by the early 1920s had decided to open its own network of branches and conduct banking business directly with customers rather than merely act as the central clearinghouse for the independents, was the subject of a scathing editorial in *De Kroniek van Sternheim* (1 August 1924, No. 64, pp. 526-528). Sternheim notes that, even if DNB were to help maintain the ACBM's liquidity, the ratio between own and borrowed money would remain very unhealthy. He argues that the bank failed to uphold the norms of banking business in its recent past and asks how this institution can continue in its current form without being thoroughly restructured. He hopes that DNB is on the case, since the bank cannot be saved without government aid, but notes that if government help is being offered, then ministers are being very quiet about it. He reckons that most of the bank's share capital and retained profits should be used to help to write off bad debt.

The bank continued to do business throughout the Hanzebank débâcle, seeming at first to be relatively unaffected, at least from the outside. Johan Willem Beyen – a 28-year-old banker at the Javasche Bank, a colonial banking house which funded trade with the Dutch East Indies – was parachuted in 1925 into the role of *commissaris* (non-executive director) of this bank. He was recommended for the post by Hendrikus Colijn, the Dutch prime minister and minister of finance, as a letter exchange shows (NA: 2.01.001: 4571). With little knowledge of the goings-on in the *middenstand*, as an outsider he seemed the perfect neutral candidate. Weenink (2005) argues that when he was asked to take on the role, he was unaware how dire the situation at the ACBM was. He was soon put on the bank's *Raad van Toezicht* (oversight committee) and, at the urging of Colijn, charged with getting to the bottom of the institution's ills. When, in December 1925, he felt his position was untenable, following the opposition of the bank's senior managers and a visible lack of support from DNB, he threatened to resign and warned that his departure would cause a run on the bank. He was calmed down, given *carte blanche* to sort the bank out and assured by the minister that a ten million-guilder state guarantee would be provided if things went badly for the bank, government support which would remain secret for some time; the guarantee was revealed in parliament only as part of the 1927 budget, two years after it was initially granted, to the apparent surprise of many parliamentarians (Bijlage A, Handelingen

der Staten-Generaal, 1926-1927, pp. 9-10).[54]

Beyen commenced his new role by dismissing the bank's two directors, Messrs Loeff and Post, who had apparently been responsible for a catalogue of failures – Beyen even suggested that they leave the banking profession entirely. He then brought in his contemporary, W. C. Posthumus Meyjes, formerly of DNB, as the bank's principal director. Meanwhile, the government set up a working committee – named the Commissie Van Doorninck after the parliamentarian who chaired it – to look into the future of the *middenstandsbankwezen*, but this committee did not report for over a year. If the ACBM was being seriously restructured in the meantime, then it was not apparent to many outside observers, at least for a while. Sternheim called the ACBM's 1925-1926 annual report 'deliberately misleading' (*De Kroniek*, 1 September 1926, No. 114, pp. 143-144): he argued that the reported loss of 17 million guilders could not be enough. He criticised the argument of the annual report that the bank's woes were merely due to extending credit to businesses too big to be considered SMEs; if this were true, why did it not break down its balance sheet by type of customer? He concluded that the bank should be considered no more than a branch of DNB, it was still alive only because the Netherlands' *de facto* central bank was sustaining it.

Sternheim's assessment was nearly accurate; help came from the government, not DNB, whose staff remained uninterested in events in the *middenstand*. A secret report from Beyen to Colijn dated 29 October 1926 describes the problems in more detail (ING B.002: 327). Beyen argues that the business was in such a state when he arrived that he considered liquidating it, but concluded that this would be even more costly, since it would have greatly affected the network of independent *middenstandsbanken* which relied on it. He has decided instead to put the bank in a better bargaining position with its creditors, and proposes that the best way to do so would be a merger between the ACBM, the Boazbanken and any banking business that had survived from the Hanzebanken. He argues that this would make it fairer also for any potential future government subsidy of the sector and that otherwise one *zuil* (social pillar) might be seen to be unfairly favoured. But this plan was rejected by DNB. Instead Beyen looks at the bank's balance sheet item-by-item – the report has vast appendices detailing individual client histories – and concludes that four things should be done:

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[54]This method of rescuing banks appears to have become the norm by this time; the Dutch government also used covert support in 1924 to rescue the Rotterdamsche Bankvereeniging, which was revealed to parliament in a similar way (De Vries 1989).

(1) cleaning the credit portfolio (he reckons an additional five million must be written off); (2) an internal reorganisation of the business, including the control apparatus over local independent *middenstandsbanken*; (3) improving the way in which credit dossiers are written and maintained; and (4) some retraining of bank personnel.

Meanwhile, the Boazbanken were also experiencing problems, but not on the same scale as their Catholic cousins. An internal communiqué dated 30 June 1923 reveals that local Boazbanken also suffered large withdrawals of savings during the Hanzebank débâcle (ING B.002: 327 & B.009: 170). It asks local banks to wind back their loans books. Stoffer (1985) argues that the Boazbanken were badly managed from the outset, with in-fighting between member banks in Utrecht and Assen and constantly changing management at the central clearinghouse. Moreover, the clearinghouse had decided to take on its own banking customers, and therefore became more than just a clearinghouse. It did this apparently to help finance local member banks, but it was not very good at it, taking on large risky customers rejected by local Boazbanken, and in consequence suffered large losses. The bank was never forced to close, however, and management at the central bank was in constant communication with Beyen about the possibilities of working together more closely, exploring options for a possible merger.

In the end, following Beyen's successful efforts to restructure the ACBM, the government decided to follow Beyen's earlier proposal of a mega-merger, which the Commissie Van Doorninck also concluded would be the most expedient solution. The NMB was established in 1927 through a merger between the central Boazbank, the Middenstandsbank voor Limburg – a large multi-branch *middenstandsbank* largely unaffected by the crisis – and the ACBM with its own branches; most of the independent *middenstandsbanken* remained so, at least to begin with. The Dutch government appeared to learn from the Hanzebank failures, and chose to rescue the entire sector by instigating, coordinating and financing this merger instead of letting any (more) *middenstandsbanken* fail.[55] This final reorganisation of the *middenstandsbank* sector and the planning that led up to it in 1926 and 1927 are not part of the empirical analysis which follows. There, the focus is principally the problem of understanding the heterogeneity in the sector's chosen liability arrangements and

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[55]The NMB would later merge with the Postbank and then the insurer Nationale Nederlanden to form ING Groep N.V., by some measures the twelfth largest corporation in the world today (CNN Fortune Magazine, 2010). However, following the difficulties suffered by this bancassurance firm during the world financial crisis which started in 2007, ING is now likely to be divided into separate banking and insurance businesses.

the influence of banks' choices on their performance during the crisis years of the early 1920s. The decision to form the NMB was ultimately a political one made during the endgame of the crisis, albeit for sound commercial reasons. This paper concerns the failures and forced mergers which occurred in the lead-up to this final reorganisation. These were the result of market forces rather than government intervention and therefore potentially reveal information about the relative efficacy of the different institutional attributes found among *middenstandsbanken,* including their choice of liability regime.

5.4   Data and empirical strategy

The previous sections describe three approaches to a possible relationship between liability and bank stability and subsequently discuss the turbulent history of the Dutch *middenstandsbanken,* a class of banks established for SME customers whose founders chose a variety of different shareholder liability regimes. These banks are used in the current and next sections in a natural experiment to explore the relationship between liability and bank stability. In this case, the liability regimes are treated as endogenously determined by the banks' founders, whilst the financial shock is treated as exogenously caused by a Great War debt overhang combined with price deflation. No such natural experiment has been conducted before, as liability regimes have often been treated as exogenously allocated by state diktat, and bank failures as endogenous to the liability regime. As discussed in Appendix 5.A, Dutch law gave *middenstanders* an exceptionally wide remit to tailor their bank's liability regime to their own individual demands, as endorsed by the heterogeneity of the liability arrangements found in the course of the current research.

The primary empirical strategy employed in this chapter is a bankruptcy prediction model. The idea is to see whether, and to what extent, data pertaining to the institutional characteristics of *middenstandsbanken* before the crisis can predict *ex post* crisis-period performance. Relying exclusively on summary statistics is dangerous; without measuring the predictive power of factors relating to banks' liability regime choice in relation to other possible determinants of banks' failure, a relationship between liability and stability remains only speculative. Ravi Kumar & Ravi (2007) review the current state-of-the-art of the techniques used in the bankruptcy prediction literature. The principal method employed here is discrete regression analysis. This is

rather simple compared to many of the methods reviewed by Ravi Kumar & Ravi. However, given the available data, the sample size and complexity of the problem, the chosen method is arguably the most appropriate.

It is important to stress here that the purpose of this chapter is in many respects quite narrow: to discover only whether there is a relationship between bank liability choice and bank failure; its purpose is not to determine the actual causes of *middenstandsbank* failure *per se*, nor is it to discover the reasons for bankers' choice of liability regime in the first place. That banks failed during the crisis and that they had chosen a certain liability regime by its start are here treated as inputs. The questions why they failed and why they chose the liability regime they did cannot be directly answered with the methodology used, although a suggested, or speculative, answer is nevertheless provided.

In summary, the three working hypotheses derived from the extant literature on shareholder liability in banking are as follows: (1) banks which choose to limit shareholder liability may be more risky; (2) the shareholders of banks which choose to limit liability are of better quality and their shareholdings are more liquid; and (3) a wide choice of liability regimes may lead to excessive competition and financial instability. The first is explored using discrete regression analysis – more specifically multinomial regression. The second is discussed using a combination of qualitative evidence and simple OLS regression analysis. The third cannot be examined with the present data. The remainder of this section sets out the data used in these exercises and provides and compares summary statistics of various sub-samples.

The data used in the current experiment concern a sample of 77 *middenstandsbanken* out of the 95 which have been found to operate in the Netherlands in 1917-1918, a year selected because the maximum proliferation of this class of bank occurred then, and because it is distant enough from the financial turmoil of the 1920s.[56] This sample includes 75 of the 80 banks which were affiliated with the ACBM in 1917-1918, and two which remained unaffiliated.[57] Although available, data concerning five *middenstandsbanken* were excluded because they acted as regional or

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[56]One problem with this chosen year is that it lies during the Great War. However, as the Netherlands remained neutral throughout this conflict, largely managed to escape becoming a planned war economy, and enjoyed an active trade with all belligerents (De Jong 2005), this choice is less of a problem than might be expected.

[57]A number of banks renounced their ACBM affiliation in the years between 1918 and 1920. This was especially so in the case of the religiously-motivated Hanzebanken and Boazbanken. See Section 5.3.1 for further explanation.

religiously-motivated central clearinghouses and hence their shareholders were local *middenstandsbanken* rather than individuals.[58] Data concerning five ACBM-affiliated local banks were excluded because they were incomplete for the chosen year. Data concerning eight of the ten banks which remained unaffiliated are unavailable.

De Vries (1989) and De Nederlandsche Bank (2000) list all banks which failed or merged during the Dutch financial crisis of the early 1920s. Of the 77-bank sample collected for the present analysis, 13 banks are coded as having failed. Five were rescued – they were bought up by the ACBM to become wholly-owned branches managed from Amsterdam rather than independent local *middenstansbanken.* Eight were bankrupted and liquidated. Much of the sector was consolidated following the conclusion of the crisis, from 1927. This mega-merger is left out of consideration in the present analysis, for two reasons: (1) it took place outside the crisis period proper, by which time the economy was recovering and the press no longer made reference to there being a crisis in the banking sector; and (2) it was principally the result of a political decision agreed and financed by the Dutch government, rather than one purely motivated by business reasons, as a final reorganisation for the sector.

Table 5.1 defines and describes every variable used in the regression analysis of the next section, outlining why each is included in the models used. Two indicator variables are constructed to describe the fate of banks during the early 1920s and function as the dependent variables in the analysis. Dummy variables describe banks' choices of liability regime, which are classified into four groups: (1) unlimited liability; (2) additional liability; (3) double liability; and (4) single liability. The working hypothesis for the survival analysis is that the more liability limitation a bank chooses, the higher is the probability of it failing during the 1920s. Implied capital is the total capital available to banks, given the liability regime. For unlimited liability banks, this is approximated as the sum of all pledged capital, the total reserve and also all deposits; this is therefore a lower-bound estimate, because theoretically, shareholders' non-banked personal assets could also have been seized. For the additional liability regime, this is calculated as the sum of all pledged capital, the total reserve and 20 percent of the value of the loan book, as per the rules. For double liability banks, this is the addition of twice the pledged capital and the total reserve. Finally, for single liability, this is the sum of the pledged capital and the total reserve.

A dummy variable describes banks' corporate form – either a cooperative or a

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[58]Four of these regional clearinghouses merged into the ACBM in 1918-1919 in any case.

Table 5.1: Definitions and descriptions of variables used in Chapter 5

Variable (unit)	Definition	Description
fail (dummy)	= 0 if survived, = 1 if failed	binomial indicator variable describing fate of bank during crisis of early 1920s
fate (dummy)	= 0 if survived, = 1 if rescued through merger, = 2 if bankrupted & liquidated	multinomial indicator variable describing fate of bank during crisis of early 1920s
age of bank (years)	age of bank in 1917	control for first-mover advantages and life-cycle effects
corporate form (dummy)	= 0 if bank is a cooperative, = 1 if a public company	control for the corporate form used to gain legal personality
shareholders (number)	number of shareholders or liable members	control for the size of the shareholder constituency
total capital (guilders)	total value of all pledged capital, incl. unpaid portion	measure of bank's charter value; size of first resources available in the event of failure
capital/shareholding (guilders)	average value of each shareholding	measure of shareholders' average stake in their bank
capital paid (%)	percentage of paid-up pledged capital	portion of capital which is most liquid
unlimited liability (dummy)	= 1 if unlimited liability	measure of a bank's liability regime choice
additional liability (dummy)	= 1 if shareholders required to pay back 20% of their loans as additional capital	measure of a bank's liability regime choice
double liability (dummy)	= 1 if shareholders are liable for double their pledged capital	measure of a bank's liability regime choice
single liability (dummy)	= 1 if shareholders are liable only for their pledged capital	measure of a bank's liability regime choice

Table 5.1: Definitions and descriptions of variables used in Chapter 5 (*continued*)

Variable (unit)	Definition	Description
implied capital (guilders) †	total resources at bank's disposal when liquidated	measure of bank's capital implied by chosen liability regime
loans (guilders)	size of loan book and outstanding overdrafts	measure of the size of a bank's principal assets
deposits (guilders)	size of short- and long-term deposits	measure of the size of a bank's principal liabilities
leverage ratio (%)	percentage of bank's deposits used to finance loans	measure of bank risk: a ratio higher than 100% means a bank is relying on external funds
capital ratio (%)	percentage of loans covered by implied capital	measure of bank risk: the lower the ratio, the more the bank's loans are unfunded

Notes: † For banks with unlimited liability, the implied capital includes all deposits. Not all depositors were members, but the qualitative evidence suggests that many were. Furthermore, liability could technically extend much further than this, to include members' personal non-banked assets, and so this should be treated as a lower bound estimate.

public company. Given the legal analysis of Appendix 5.A, this should have little or no explanatory power; liability is arranged separately from corporate form. Banks' age is included to control for potential first-mover advantage and business life-cycle factors, the hypothesised direction of the relationship being positive; older, more established, banks having more chance of survival. The number of shareholders reveals how many votes can be cast and describes the size of the shareholding constituency. The expected direction of this relationship is negative: the larger the shareholding constituency, the more difficult it is for members to monitor one another's' behaviour, the higher the potential for shirking, free riding and adverse selection, and thus the higher the probability of failure. Total capital, capital per shareholding and the percentage of capital paid (called) are measures of banks' size, shareholding size and shareholding liquidity. They relate directly to the core hypotheses of this chapter, and the expected directions of their relationships with failure are negative; more capital, more capital per shareholding and more immediate availability of capital means more resources to call on in times of crisis and a lower probability of failure.

The higher the level of implied capital, the more resources available to bankers in times of crisis, and thus the expected direction of the relationship between this variable and the incidence of bank failure is negative. The sizes of banks' loan and deposits books are included as a measure of their principal assets and liabilities. No firm expectation on the direction of the relationship for these variables is taken; it is their ratio which is potentially more revealing. Indeed, the next variable, the leverage ratio, measures exactly this; it calculates what proportion of banks' deposits which are used to finance loans, and hence indicates what proportion is financed by (more costly) external borrowing. Finally, the capital ratio is the percentage of the loan book covered by the implied capital. The higher this ratio, the less risky is the balance sheet, and the lower is the probability of failure.

Tables 5.2, 5.3 and 5.4 report summary statistics for the sample split in three different ways: (1) by fate of bank in the 1920s crisis; (2) by corporate form and fate in the crisis; and (3) by liability choice. Summary statistics for the full sample reveal that only about half of pledged capital is actually paid in; that the most popular liability choice (at 45 percent of the sample) is an additional liability regime of 20 percent of the value of shareholders' loans on top of pledged capital; and that, on average, banks in this sample had to resort to external borrowing to finance their loan book, but that this last result is probably driven by an outlier since the average size of the loan

book is smaller than total deposits. Comparing banks which survived with those which did not, it is interesting to note that failed banks had approximately 20 percentage points less of their capital paid up-front; that many more public companies failed than cooperatives; that no banks with double or single liability were rescued through mergers and no banks with unlimited liability were bankrupted and liquidated; that the size of the implied capital is significantly lower for survivors than for those which failed, through rescue or bankruptcy (by a factor of 100); that the size of the loan book for bankrupted banks was significantly higher than for survivors or rescued ones; that rescued banks could comfortably finance their loan books with internal savings from depositors; and that the average capital ratio is significantly higher (by approximately 30 percent) for rescued banks and significantly lower (by approximately 50 percent) for bankrupted banks.

Comparing the three failed cooperatives with the 43-bank sub-sample of all cooperatives, it is interesting to note that no bank which chose an additional liability regime failed, though this class of liability regime made up nearly 50 percent of the full cooperative sub-sample; that the size of the implied capital and loan and deposit books was significantly higher than the average for all cooperatives (by an order of magnitude of 100); and that the loan book could be comfortably financed internally, using deposits. These results are largely driven by one bank, the Hanzebank Den Bosch, which was large because it was organised as a branch network rather than a series of independent banks (see discussion in Section 5.3.1). Comparing the ten failed public companies with the 34-bank sub-sample of all public companies, it is interesting to note that public companies chose either the additional liability or single liability regime; that their percentage of paid-up capital is relatively low (at approximately 23 percent); that the average implied capital for failed public companies is double; and the capital ratio for failed public companies is approximately two thirds that of the full sample; but that otherwise the averages of failed banks do not look particularly different from the full sub-sample. Note also that the capital ratio is significantly lower for public companies in general than for cooperatives, something to be expected given the liability arrangement chosen by much of this class of bank.

Finally, comparing banks in the different liability categories, it is interesting to note that the total pledged capital is significantly lower for unlimited liability than for other liability regimes; that no unlimited or double liability bank chose the public company corporate form; that the implied capital of unlimited and limited liability

Table 5.2: Summary statistics for *middenstandsbank* sample, by fate of bank in the early 1920s

Variable (unit)	Full sample (n=77)		Survivors (n=64)		Rescued through merger (n=5)		Bankrupted & liquidated (n=8)	
	Mean av.	Std. dev.	Mean av.	Std. dev.	Mean av.	Std. dev.	Mean av.	Std. dev.
age of bank (years)	4.55	2.48	4.78	2.32	1.80	1.30	4.38	3.38
shareholders (number)	186.42	515.64	109.08	93.00	179.20	112.62	809.63	1,517.59
total capital (guilders)	90,552	569,346	16,556	21,471	62,840	50,939	699,844	1,743,240
capital/shareholding (guilders)	172.34	166.73	135.87	94.80	324.47	188.10	368.96	357.58
capital paid (%)	51.82	33.67	56.18	34.57	27.65	12.62	32.04	20.59
corporate form (dummy)	0.44	0.50	0.38	0.49	0.80	0.45	0.75	0.46
unlimited liability (dummy)	0.22	0.42	0.25	0.44	0.20	0.45	0	0
additional liability (dummy)	0.45	0.50	0.41	0.50	0.80	0.45	0.63	0.52
double liability (dummy)	0.29	0.45	0.33	0.47	0	0	0.13	0.35
single liability (dummy)	0.04	0.19	0.02	0.13	0	0	0.25	0.46
implied capital (guilders)	136,224	572,265	64,383	91,1336	1,184,422	92,151	648,999	1,644,867
loans (guilders)	174,086	550,255	82,698	97,895	224,870	243,249	873,457	1,590,622
deposits (guilders)	247,252	868,408	97,730	115,923	334,079	440,712	1,389,166	2,501,149
leverage ratio (%)	259.84	936.73	284.92	1,025.40	71.88	48.94	176.72	152.99
capital ratio (%)	101.89	101.00	104.44	93.11	153.51	223.28	55.41	25.49

Notes: See Table 5.1 for definitions and descriptions of variables. Financial data for cross-section concern the financial year 1917-1918. Data collected from various sources described in the text. Banks defined as "Survivors" survived the crisis intact. Banks defined as "Rescued through merger" were forced to merge with the ACBM during the crisis period. Banks defined as "Bankrupted & liquidated" disappeared due to the crisis.

Table 5.3: Summary statistics for *middenstandsbank* sample, by corporate form and fate of bank in the early 1920s

Variable (unit)	All cooperatives (n=43)		Failed cooperatives (n=3)		All public companies (n=34)		Failed public companies (n=10)	
	Mean av.	Std. dev.	Mean av.	Std. dev.	Mean av.	Std. dev.	Mean av.	Std. dev.
age of bank (years)	5.77	2.54	5.33	5.13	3.00	1.23	2.80	2.10
shareholders (number)	196.67	644.16	1,471.67	2,436.42	173.44	289.70	295.80	509.03
total capital (guilders)	125,485	761,161	1,672,333	2,881,845	46,373	74,591	89,595	124,787
capital/shareholding (guilders)	113.62	181.96	474.67	600.14	246.60	108.21	315.00	171.11
capital paid (%)	74.53	28.17	55.03	22.05	23.10	8.93	22.95	5.93
unlimited liability (dummy)	0.40	0.49	0.33	0.58	0	0	0	0
additional liability (dummy)	0.47	0.21	0	0	0.97	0.17	0.90	0.32
double liability (dummy)	0.51	0.51	0.33	0.58	0	0	0	0
single liability (dummy)	0.05	0.21	0.33	0.58	0.03	0.17	0.10	0.32
implied capital (guilders)	189,636	760,941	1,695,754	2,875,949	68,673	94,053	122,349	143,531
loans (guilders)	193,226	694,362	1,541,701	2,641,653	149,880	287,405	348,690	471,456
deposits (guilders)	266,248	1,026,721	2,301,119	3,890,508	223,228	627,750	587,136	1,101,370
leverage ratio (%)	279.09	1,124.50	40.93	23.68	235.50	640.59	165.04	137.67
capital ratio (%)	124.78	125.50	238.56	273.21	72.95	43.65	50.05	15.78

Notes: See Table 5.1 for definitions and descriptions of variables. Financial data for cross-section concern the financial year 1917-1918. Data collected from various sources described in full in the text. Banks defined as "All cooperatives" took the cooperative form, either under the *Wet van 1855* or *Wet van 1876*. Banks defined as "Failed cooperatives" were either forced to merge with the ACBM or disappeared during the crisis period. Banks defined as "All public companies" took the *Naamloze Vennootschap* corporate form. Banks defined as "Failed public companies" were either forced to merge with the ACBM or disappeared during the crisis period.

Table 5.4: Summary statistics for *middenstandsbank* sample, by liability choice

Variable (unit)	Unlimited liability (n=17, fail=1)		Additional liability (n=35, fail=10)		Double liability (n=22, fail=1)		Single liability (n=3, fail=2)	
	Mean av.	Std. dev.	Mean av.	Std. dev.	Mean av.	Std. dev.	Mean av.	Std. dev.
age of bank (years)	4.82	2.56	2.97	1.01	6.32	2.34	8.33	2.52
shareholders (number)	77.76	61.02	122.51	98.95	122.86	103.77	2,013.67	2,137.71
total capital (guilders)	2,826	2,824	33,563	36,659	15,152	15,486	1,805,467	2,774,217
capital/shareholding (guilders)	41.65	37.57	240.12	110.24	122.69	88.05	486.15	597.24
capital paid (%)	82.34	34.81	24.40	13.85	73.25	19.02	41.62	7.16
corporate form (dummy)	0	0	0.94	0.24	0	0	0.33	0.58
implied capital (guilders)	142,316	139,568	54,951	68,248	31,534	32,475	1,817,609	2,778,739
loans (guilders)	80,955	70,556	104,284	161,110	103,087	127,462	2,036,854	2,331,246
deposits (guilders)	138,865	138,300	116,130	215,598	101,483	113,122	3,460,183	3,385,345
leverage ratio (%)	69.10	58.78	233.87	631.08	474.80	1,563.26	67.34	25.25
capital ratio (%)	222.20	131.68	77.52	49.51	54.94	63.64	48.81	53.38

Notes: See Table 5.1 for definitions and descriptions of variables. Financial data for cross-section concern the financial year 1917-1918. Data collected from various sources described in full in the text. Banks defined as "Unlimited liability" had shareholdings which were completely unlimited in liability. Banks defined as "Additional liability" demanded that all shareholders were liable for an additional 20% of the value of their loans on top of their pledged shareholding. Banks defined as "Double liability" demanded that each shareholder was liable up to an amount double the value of his pledged shareholding. Banks defined as "Single liability" limited the liability of shareholders to the total value of their pledged shareholding.

banks was significantly higher than those enjoying additional or double liability; that unlimited and single liability cooperatives could, on the whole, much better finance their loan books through deposits than could additional and double liability ones; that the loan and deposit books for single liability banks was significantly higher than other categories (again, driven by the Hanzebank); and that, whilst the average capital ratio was above 200 percent for unlimited liability banks, for all other types of liability regime, this ratio was less than 100 percent, the lowest being those with a single liability regime.

The summary statistics described above suggest that there were some significant differences between the constituents of the 77-bank sample. For the first two working hypotheses introduced above, the most striking are: (1) unlimited liability banks enjoyed relatively large pools of implied capital and (therefore) very high capital ratios, compared to those with additional or double liability regimes, and also higher capital ratios than single liability banks, despite having less implied capital at their disposal than these; and (2) the most liquid percentage of share capital, in that it is immediately callable (i.e. of a better quality), is highest for unlimited liability banks, second highest for double liability banks, third highest for single liability banks and lowest for those with the additional liability regime. Again, the competition hypothesis, the third hypothesis popular in the liability literature, cannot be directly addressed with these data. How these differences relate to the failures of *middenstandbanken* in the early 1920s is the subject of the next section.

5.5   Empirical analysis

This section reports the results of four regression exercises: (1) it analyses the predictive power of banks' liability regime choice three years before an exogenously-caused crisis on the probability of bank failure during such a crisis; (2) it looks at the relationship between banks' capital ratios – a measure of balance sheet risk – and liability regime choice for a financial year three years before the crisis; (3) it looks at the relationship between the percentage of capital that is paid (called) – a measure of shareholding quality – and liability regime for the same financial year; and (4) it explores the route through which liability affects bank survival for the eventuality that other bank-specific variables are themselves determined by liability choice. The idea of the first exercise is to discover which liability regime was more "crisis-prone", correcting for other factors.

Figure 5.2: Histogram distributions of banks' capital ratios, by liability type

(a) Unlimited liability

(b) Additional liability

(c) Double liability

(d) Single liability
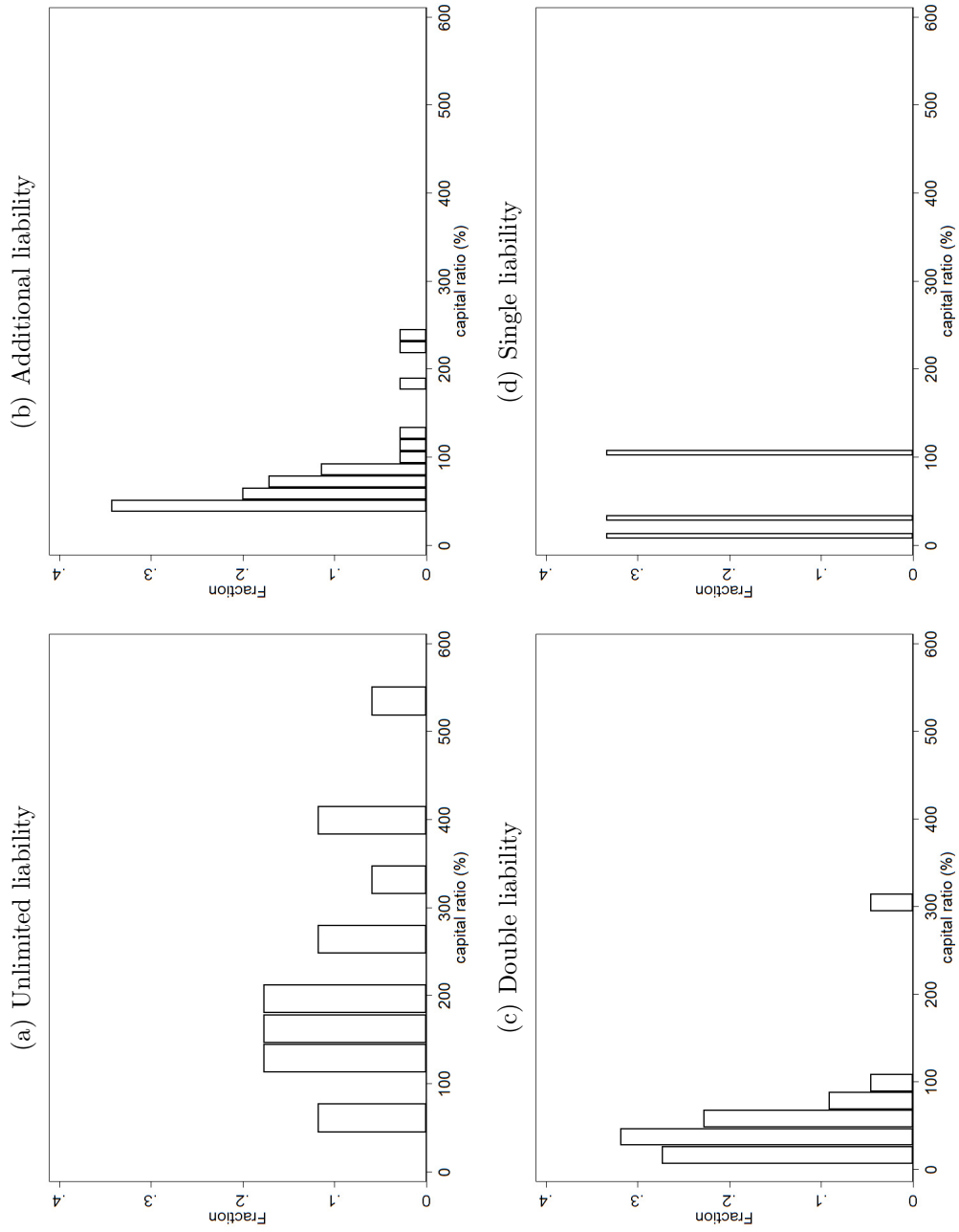
Notes: Data divided into 15 bins. Fraction of banks lying within range of histogram bar can be read off axis.
Source: Computed from data described in Section 5.4.

In other words, it analyses whether limiting liability led to more or less risk-taking behaviour, assuming that the banks which failed must therefore have engaged in more risky activity *ex post*. The second exercise looks at the way in which the liability regime choice might have influenced the balance sheet composition in a relatively stable non-crisis year. The third exercise looks at the way in which liability influenced the willingness of shareholders to part with their assets and pay off their pledged share, or possibly, the demands of bank managers – who for cooperatives were in any case installed by shareholder-customers from amongst themselves – on shareholders to pay their share. Together, these exercises primarily address the first two working hypotheses of this chapter discussed in the previous section. The results of the three regression models are presented in turn.

The first regression, the results of which are reported in Tables 5.5 and 5.6, is a multinomial logit analysis which measures the impact of liability choice in 1917-1918 on bank survival during the early 1920s financial crisis. Banks had three fates during the crisis period: (1) they survived intact; (2) they were forced to merge to survive; and (3) they were bankrupted and liquidated. The results reported in the first table show that the liability type differentiates only between banks which survived and those which merged, and apply only to additional liability versus unlimited liability (the chosen base liability category). Other factors included in the analysis were more influential; banks' age, the number of shareholders, the average capital per shareholding and the capital ratio in particular were more "economically significant".

The right panel of the first table shows the change in the predicted probabilities of falling into one of the three categories for an increase from the minimum to the maximum value of each independent variable, while holding all other independent variables constant at their means. If a bank moved from being very new to being well established, the probability of survival was significantly higher, of being merged significantly lower and of being liquidated only a little lower; older banks had a higher probability of survival. If a bank moved from having few to having many shareholders, the probability of survival was reduced significantly, the probability of being merged reduced only marginally and that of being liquidated increased significantly; banks with many shareholders had a higher probability of failure. If a bank moved from having very small to very large shareholdings, then the probability of survival reduced significantly and the probability of being liquidated increased significantly; banks with large individual shareholdings were more likely to fail during the crisis. Finally, if a

Table 5.5: The impact of liability choice on bank survival in the early 1920s

Variable (unit)	Multinomial logit estimates^a			Change in predicted probabilities^b		
	Merged vs. Survived	Liquidated vs. Survived	Merged vs. Liquidated	Survived	Merged	Liquidated
additional liability (dummy)	-20.23 (0.08)	8.24 (0.99)	28.47 (0.99)	-0.01	0.01	-0.01
double liability (dummy)	-23.38 (0.99)	16.57 (0.99)	39.94 (0.99)	-0.45	0.45	-0.01
single liability (dummy)	-57.67 (0.99)	17.55 (0.99)	75.22 (0.99)	-0.99	0.99	-0.01
age of bank (years)	-3.74 (0.01)	-3.44 (0.01)	0.31 (0.81)	0.97	-0.97	-0.01
shareholders (hundreds)	3.73 (0.04)	0.70 (0.08)	-3.04 (0.08)	-0.99	-0.01	0.99
capital/shareholding (hundreds)	3.55 (0.07)	0.54 (0.52)	-3.01 (0.10)	-0.99	-0.01	0.99
capital paid (%)	-0.04 (0.43)	-0.06 (0.45)	-0.02 (0.82)	0.01	-0.01	-0.01
leverage ratio (%)	-0.06 (0.20)	0.01 (0.05)	0.06 (0.19)	-0.19	0.19	-0.01
implied capital (thousands)	-0.05 (0.12)	-0.01 (0.91)	0.05 (0.13)	0.01	-0.01	-0.01
capital ratio (%)	-0.04 (0.09)	-0.09 (0.04)	-0.05 (0.24)	0.03	-0.03	-0.01
n = 77	Chi^2 (df=20) = 58.11		Pseudo-R^2 = 0.64			

Notes: See Table 5.1 for definitions and descriptions of variables. Tables 5.2, 5.3 and 5.4 provide summary statistics. Financial data for cross-section concern the financial year 1918. a = The top entries are multinomial logit coefficients (p-values in parentheses). b = Change in the predicted probabilities of falling into one of the three categories for an increase from the minimum to the maximum value of each independent variable, while holding all other independent variables constant at their means. Banks denoted as "Survived" survived the crisis intact. Banks denoted as "Merged" were forced to merge with the ACBM during the crisis period in order to survive. Banks denoted as "Liquidated" disappeared due to the crisis. *Total capital* and *corporate form* were omitted from the reported regression because their inclusion resulted in high levels of multicollinearity. A robustness regression run without data pertaining to the Hanzebank Den Bosch, which was identified as a potential outlier in Section 5.4, reveals very little difference to the statistical or economic significance of any of the explanatory factors.

Table 5.6: Predicted probabilities of failure in the early 1920s, by liability choice

Liability choice	Survived	Merged	Liquidated
unlimited liability	0.99	0.00	0.01
additional liability	1.00	0.00	0.00
double liability	0.99	0.01	0.00
single liability	0.97	0.03	0.00

Notes: Predicted from the multinomial logit results presented in Table 5.5, while holding other variables in the model constant at their means.

bank moved from having a very low capital ratio (i.e. unfunded and therefore risky) to a very high capital ratio (funded and less risky), then the probability of survival increased by a small amount and the probability of being merged reduced by a small amount; *ex ante* risky banks were more likely to fail, but only by a small amount.

When accounting for all other factors in the regression, the predicted probability of survival during the 1920s crisis given the 1917-1918 cross-sectional data is 0.99 for unlimited liability banks, 1.00 for banks with additional liability regimes, 0.99 for banks with double liability and 0.97 for banks with single liability. The probability of being merged was 0.00 for both unlimited and additional liability regime banks, 0.01 for double liability ones, and 0.03 for single liability ones. The probability of being liquidated was 0.01 for unlimited liability banks and 0.00 for all other liability choices. This is despite the fact that 5 out of 77 banks were forced to merge and 8 out of 77 liquidated (see Table 5.2). Overall, then, controlling for other factors, liability regime choice appears to have had very little effect on the survival chances of *middenstandsbanken*. Other factors had a much larger impact, but perhaps in counter-intuitive directions; banks with less risky balance sheets were more likely to survive, but the actual percentage of capital paid up-front (called capital) was totally unimportant.

Moving to the second regression exercise, the results of which are reported in Table 5.7, the impact of a bank's liability choice on its capital ratio is both statistically and economically significant. When compared to the unlimited liability base category, banks with additional, double and single liability regimes had ratios which were significantly lower, i.e. they were more risky. Comparing the limited liability options with one another, additional and double liability regimes had quite similar effects (approximately reducing the ratio by 100 percent on average), but the single liability

Table 5.7: The impact of liability choice on banks' capital ratios

Variable (unit)	OLS coefficient	(P-value)	[95% Conf. Int.]	
additional liability (dummy)	-92.32	(0.07)	[-193.75 ,	9.10]
double liability (dummy)	-131.93	(<0.01)	[-185.03 ,	-78.82]
single liability (dummy)	-202.09	(0.01)	[-338.67 ,	-65.51]
corporate form (dummy)	-105.01	(0.04)	[-206.23 ,	-3.79]
age of bank (years)	-19.51	(<0.01)	[-28.73 ,	-10.31]
shareholders (hundreds)	16.04	(0.15)	[–5.74 ,	37.83]
capital paid (%)	-0.30	(0.45)	[-1.10 ,	0.49]
implied capital (thousands)	0.06	(0.34)	[-0.07 ,	0.19]
loans (thousands)	-0.31	(<0.01)	[-0.53 ,	-0.08]
deposits (thousands)	0.09	(0.19)	[-0.04 ,	0.23]
leverage ratio (%)	0.01	(0.77)	[-0.01 ,	0.02]
constant	331.91	(<0.01)	[255.09 ,	408.73]

n = 77
F (11, 65) = 9.80
Adjusted-R^2 = 0.56

Notes: See Table 5.1 for definitions and descriptions of variables. Tables 5.2, 5.3 and 5.4 provide summary statistics. P-values (in parentheses) of less than or equal to 0.1 imply the null hypothesis that effect cannot be rejected at a ten percent level of significance. Confidence intervals [in square brackets] are the bounds between which the estimated coefficient lies at a 95% level of statistical significance.

banks enjoyed a greater risk still (by approximately 200 percent). Some other results in the OLS regression analysis are as follows: older banks had higher capital ratios (by approximately 20 percent per year); public companies had lower ratios (by 100 percent); and each additional thousand guilders loaned to customers reduced the ratio ("increased riskiness") by 0.3 percent.

The third regression exercise reported in Table 5.8 suggests that, correcting for factors including banks' age and corporate form, liability choice had an important impact on shareholders' decisions to pay in their pledged capital. As before, when compared to the unlimited liability base category, banks with additional, double and single liability regimes had significantly lower percentages of paid-in capital. Single and additional liability banks in particular had lower portions of their pledged capital paid in; limited liability banks made greater use of uncalled capital regimes. Perhaps this functioned as a *de facto* form of liability limitation, a substitute for double or additional liability regimes.

Finally, the fourth regression exercise, the results of which are reported in Table 5.9,

Table 5.8: The impact of liability choice on shareholders' paid capital portion

Variable (unit)	OLS coefficient	(P-value)	[95% Conf. Int.]	
additional liability (dummy)	-32.73	(0.04)	[-63.93	, -1.53]
double liability (dummy)	-17.39	(0.07)	[-36.23	, 1.46]
single liability (dummy)	-41.60	(0.06)	[-85.51	, 2.31]
corporate form (dummy)	-25.97	(0.11)	[-57.72	, 5.79]
age of bank (years)	2.65	(0.10)	[-0.51	, 5.80]
shareholders (hundreds)	−1.61	(0.64)	[-8.47	, 5.24]
implied capital (thousands)	-0.01	(0.60)	[-0.05	, 0.03]
loans (thousands)	0.01	(0.73)	[-0.06	, 0.09]
deposits (thousands)	0.01	(0.79)	[-0.04	, 0.05]
leverage ratio (%)	-0.00	(0.30)	[-0.01	, 0.00]
capital ratio (%)	-0.03	(0.45)	[-0.11	, 0.05]
constant	77.20	(<0.01)	[48.02	, 106.38]

n = 77
F (11, 65) = 12.26
Adjusted-R^2 = 0.62

Notes: See Table 5.7 for notes.

explores the possibility that banks' liability choice affects other bank-specific variables, which in turn affect survival. It is a binomial regression, with no distinction made between exit through merger or liquidation. In a stepwise process, it adds only one of the non-liability regime variables to the regression at a time in order that the impact of this variable on a baseline regression can be ascertained. The baseline regression (1), which includes only liability regime dummies as explanatory variables, is effectively a recapitulation of the summary statistics reported in Tables 5.2 to 5.4; it does not correct for other bank-specific factors, such as balance sheet ratios. In this model, additional liability is borderline significant and the marginal effect is positive and large; banks which chose to adopt the additional liability regime were 21 percent more likely to fail than those with unlimited regimes. The single liability regime dummy is statistically and economically significant; banks which chose this regime were 61 percent more likely to fail.

The question that this regression exercise is addressing is the possibility that other bank-specific variables are themselves endogenous to the liability regime choice. Models (2) to (8) add the other explanatory variables found in the first regression exercise (Table 5.5) one at a time, to see whether the statistical and economic significance of

Table 5.9: The impact of liability choice on bank survival, stepwise regression

Variable (unit)	Marginal effects (dy/dx) of binomial logit analysis							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
additional liability (dummy)	0.21	0.11	0.20	0.04	0.07	0.19	0.29	0.29
	(0.12)	(0.31)	(0.15)	(0.79)	(0.60)	(0.16)	(0.12)	(0.12)
double liability (dummy)	-0.03	0.04	-0.04	-0.09	-0.02	-0.06	0.03	0.05
	(0.84)	(0.81)	(0.80)	(0.44)	(0.88)	(-0.06)	(0.90)	(0.83)
single liability (dummy)	0.69	0.91	0.26	0.40	0.56	0.69	0.55	0.78
	(<0.01)	(<0.01)	(0.37)	(0.37)	(0.10)	(<0.01)	(0.16)	(<0.01)
age of bank (years)		-0.05						
		(0.01)						
shareholders (hundred)			0.02					
			(0.37)					
capital/shareholding (thousands)				0.07				
				(0.06)				
capital paid (%)					-0.01			
					(0.17)			
leverage ratio (%)						<0.01		
						(0.25)		
implied capital (thousands)							<0.01	
							(0.38)	
capital ratio (%)								<0.01
								(0.43)
Chi² (df=4)	10.46	16.16	12.41	16.38	12.10	11.50	12.46	11.02
Pseudo-R²	0.15	0.23	0.18	0.23	0.17	0.16	0.18	0.16

Notes: Dependent variable (*fail*) is a dummy variable that = 1 if, and only if, a bank failed (either merged or liquidated) during the early 1920s. See Table 5.5 for further notes.

the liability regime dummies changes. If they do, and if the additional bank-specific variable is then itself important, it may be hypothesised that the additional factor is itself a function of liability choice.

The models of interest in Table 5.9 are (4) and (5), discussed as follows. In (4), the addition of the average value of each shareholding to the regression renders the additional and single liability regimes statistically and economically not significant within standard bounds. The marginal effect of this balance sheet ratio is 0.07; for every additional thousand guilders in capital per shareholding, a bank has 7 percent more chance of failure. Interpreting this marginal effect in the light of the altered liability regime effects, this suggests that investors in banks with more liability limitation choose to purchase larger shareholdings, and that this in turn negatively influences their survival chances during the 1920s crisis; the size of shareholdings is determined by the liability regime, and the size of the shareholdings itself influences survival.

In (5), the addition of the percentage of paid-up pledged capital renders the additional liability regime dummy statistically and economically not significant within standard bounds, and also affects the statistical significance of the single liability regime. That liability choice affects paid-up capital in particular suggests that such a capital structure functioned as an alternative to choosing less liability limitation. In banks where unpaid capital is used heavily, shareholders pay only a portion of their shareholding up-front, and are tapped for more of their promised stake if a crisis event occurs; fully paid-up shareholdings in unlimited liability regimes are *de facto* systems of paid and unpaid capital, where the unpaid portion is yet to be determined. Note, however, that the interpretation of the coefficients here is then that the use of unpaid capital is not a perfect substitute for less liability limitation; banks with higher levels of liability limitation choose to demand lower portions of their capital paid up-front, and this in turn reduces their chances of survival during the 1920s. Having *ex ante* defined limits to extended liability is worse for survival chances than having no such limits.

In summary, unlimited liability banks appear to have been the least risky and single liability ones the most, much in line with the predictions of the standard asset pricing view discussed in Section 5.2.1. The results suggest that there was an element of *ad hoc* liability-substitution by banks with more limited liability, through systems of uncalled capital. However, liability choice itself is found to have next to no predictive power for banks' fate during a financial crisis; if it does have an impact, it is by affecting

other balance sheet items, in particular the size of shareholdings and the percentage of pledged capital paid-up.

5.6 Conclusion

The existing literature on liability in banking makes use of natural experiments in history in which the liability regime is the result of government diktat. In this chapter, liability was instead the result of a choice by banks' founders, and could even be tweaked year-to-year through systems of uncalled capital. In this natural experiment, the crisis event is treated as exogenous, and the liability regime as endogenous. This natural experiment in history is therefore unique in that banks' liability regimes have the potential to reveal some information about the risk-taking incentives of their founders and shareholders.

The three hypotheses on the relationship between liability regime and bank stability introduced in Section 5.4 and based on the literature reviewed in Section 5.2 are: (1) banks which choose to limit shareholder liability may be more risky; (2) shareholders of banks which choose to limit liability are of better quality and their shareholdings are more liquid; and (3) a wide choice of liability regime may lead to excessive competition and financial instability. The first two are addressed with the data collected; the third is unfortunately not testable here as the data collected do not easily permit this.

Regarding the first hypothesis, this chapter finds some evidence that liability choice affects banks' ability to survive a financial crisis, but only because banks' balance sheets are themselves endogenous to liability choice. Indeed, in explaining balance sheet risk, this chapter finds a relationship generally in agreement with that proposed in this working hypothesis for a non-crisis year. This conclusion differs from that of Grossman, who finds (exogenously-determined) liability influences balance sheet risk, but not the chance of survival, using pre-Great Depression data for the US.

Regarding the second hypothesis, this chapter finds some evidence that the shareholders of limited liability banks were more risky in that they consented to managers who presided over riskier balance sheets. Banks with more limited liability attract shareholders who pledge larger amounts of capital, but do not pay this up-front. In times of crisis, having such a balance sheet structure proves not to be the best way of avoiding failure; calling on shareholders to pay their outstanding balance was probably seen as a sign of weakness. This chapter also finds some qualitative evidence

supporting the idea which underlies much modern writing on the liquidity benefits of limited shareholdings. Both conclusions largely contradict the work of Turner and his coauthors on British banking in the nineteenth century.

Despite inferences drawn from summary statistics, initial regression analysis suggests that liability regime choice is unrelated to bank failure. If the risk-taking incentives which accompany liability regime choice were not an important predictor of bank failure during the Dutch financial crisis of the early 1920s, then what was? This chapter finds a bank's age to be by far the most powerful predictor of bank failure; the younger the bank, the more likely it was to be liquidated. The number of shareholders is also important; the more numerous the shareholding constituency, the lower the probability of survival. Finally, balance sheet risk does help a little in predicting failure; banks with higher capital ratios – which therefore enjoyed a higher proportion of funded loans – had a higher probability of surviving, but only marginally so. Of course, the aim of this chapter has been only to look at the predictive power of liability choice, not to determine the actual causes of banks' individual failures. For this, a panel of performance measures spanning the whole crisis period must be analysed, an entirely different exercise.

When comparing the survival analysis with the second and third regression exercises, it is apparent that an alternative interpretation of the results must be considered: the absence of a crisis liability effect may imply that the act of choosing a liability regime enabled banks' founders and investors to compensate exactly for their risk type by their liability regime. In this interpretation, no liability effect means that little of the heterogeneity in crisis-period survival can be picked up by liability choice, since this choice exactly compensates for risk *ex ante*; banks with high-risk stakeholders compensate for this risk by choosing unlimited liability, whilst banks with low-risk ones choose to limit their liability and act more riskily, perhaps in order to compete with their unlimited counterparts. Perhaps the endogenous risk choice therefore works perfectly, ascribing all the heterogeneity in survival to other factors.

Indeed, the stepwise regression exercise tests exactly this. By considering the impact of one non-liability related variable at a time, the results of these regressions suggests that a banks' liability regime choice influences both the amount which individual shareholders choose to hold in their banks, and the proportion of their shareholding which they choose to pay up-front. The more liability is limited, the larger are the shareholdings and the smaller is the proportion of shareholdings paid up-front; the

balance sheet structure is endogenous to the liability regime. The implication is that liability risk is not compensated for by other balance sheet items; it is instead amplified by them. Lamoreaux & Rosenthal (2005) suggest that providing firms with flexible rather than fixed organisational rules may have negative consequences, in particular in terms of corporate governance. This chapter can be considered a test of their hypothesis; the flexibility in the Netherlands' business liability regime itself may have resulted in, or at least contributed towards, the bank failures of the early 1920s.

The existing literature blames the Dutch *middenstandsbank* crisis on a combination of poor management and an overly complex industrial organisation of the sector, both of which led to weak balance sheets. When hit by a contraction in demand and sustained price deflation, this left those banks with the weakest balance sheets and/or those with most precarious corporate processes and structures with the most problems. The empirical results of this chapter add to this literature by finding that shareholder liability rules probably also had an impact on survival chances, although the evidence is not immediately obvious. Initially, it appears that liability had little to do with this crisis, either because it did not matter, or because the ability of bankers to choose their regime allowed them to compensate for their risk type well in advance of the events of the crisis period. This is despite the findings that *middenstandsbanken* used a multitude of liability regimes, and that these differences provoked vigorous discussions among contemporary observers of the sector.

However, a final exercise suggests that liability does have an impact, by affecting other items on banks' balance sheets, i.e. balance sheet structure is endogenous to liability choice. The narrative history of the crisis presented in this chapter suggests that the choice of liability regime should have been important. It was, because it affected banks' balance sheet structure. Giving bank shareholders a choice over their liability regime, or at least a choice over which liability regime to invest in, permitted them to self-select into groups with similar risk characteristics. Those who were the most risk averse chose unlimited liability; those who were least risk averse chose to limit their liability in some way.[59]

The introduction to this chapter reports a new-found interest in alternative liability regimes in view of the world financial crisis which started in 2007. This chapter finds

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[59]Note also that the narrative history suggests that the concern of some contemporaries of the crisis that a separate type of bank for the *middenstand* was unnecessary – a worry which seems to be totally absent from the (modern) economic histories of this sector – may also have some power to explain its crisis, but this chapter does not test this empirically.

that enabling shareholders to choose their liability regime changes the fate of banks in crisis situations, for the worse. The balance sheets of banks with less limitation are generally less risky. If policymakers wish to redraft existing liability rules to incentivise risk averse decision-making by banks, then giving them a choice of regime is not a good idea. Imposing a new one-size-fits-all regime for banks, with less liability limitation than they currently enjoy, may yield superior outcomes.

Appendices to Chapter 5

5.A Liability in Dutch law

No special corporate form or liability regime for banks existed in Dutch law for the historical period analysed in this chapter. Instead, the founders of banking institutions could choose to gain corporate personality through a variety of existing legal arrangements. The two most popular in the case of *middenstandsbanken* were the cooperative form, of which there were two types, and the public company. This appendix uses legal analysis of the acts of parliament which governed cooperatives, combined with some case histories, to show that cooperators had at least as much scope to limit the legal liability of their shareholder-members as bankers who established public companies. This unusual feature of Dutch cooperative law provoked much debate during the 1920s crisis and resulted in some important changes to Dutch cooperative law. These are considered in the second subsection.

5.A.1 Pre-crisis legal regime

Middenstandsbanken could gain corporate personality using one of three acts of parliament. Two different options for establishing a cooperative business were; (1) the 'Law of 22 April 1855, governing and restricting the practice of the rights of associations and meetings' (henceforth the *Wet van 1855*);[60] and (2) the 'Law of 17 November 1876, governing cooperative associations' (henceforth the *Wet van 1876*).[61] *Middenstanders* could also choose to establish their bank as a public company – *Naamloze Vennootschap* (NV)[62] – which, providing shareholders were also customers of the bank, amounted to a *de facto* cooperative.

The first of the two cooperative options was a general law governing associations (or meetings) of any type and was widely adopted by cooperators; it permitted only the completely unlimited liability of member-shareholders. The second – which was specifically drafted to govern organisations under cooperative ownership – was a little more stringent and costly, but gave member-shareholders freedom to limit

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[60] *Wet van den 22sten April 1855, tot regeling en beperking der uitoefening van het regt van vereeniging en vergadering* (Staatsblad 1855, No. 32).

[61] *Wet van den 17den November 1876, tot regeling der coöperatieve vereenigingen* (Staatsblad 1876, No. 227).

[62] Included in the *Wetboek van Koophandel*, 1838.

their liability in the case of failure. Unlike the second cooperative form, where the default liability arrangement remained unlimited unless stated otherwise, the NV-form's default liability arrangement was always limited, but could be modified a little to increase liability to e.g. multiple liability. All three arrangements permitted systems of paid and unpaid capital. Each act is considered in turn below, with most focus on the legalistically-intriguing second cooperative form.

The important sections of *Wet van 1855* are as follows. Article 5 states that associations which abide by all the law's rules gain corporate personality, i.e. they may act as independent legal entities permitted to carry out business. Article 6 holds that an association must seek official approval of its statutes and that these statutes must contain every rule governing its purpose and membership. Article 7 states that the authorities may decline to approve an association only if it goes against the "general interest", and should give specific reasons when it does so. Article 9 states that these statutes must be made public in the *Nederlandsche Staatscourant*, the Dutch state's official newspaper.

Articles 10 to 12 of the *Wet* are the main ones which deal with the situation when associations are declared to be illegal in a court of law. At the time it was these which governed cases of bankruptcy. Associations declared illegal lose corporate personality (article 10). A judge then appoints administrators who use the illegal association's assets (including property) to settle any outstanding bills (article 11). Beyond this, creditors can take members through the courts to recover additional assets, using standard bankruptcy procedures outlined in other legislation (article 13).[63] All remaining assets are divided among the association's members according to the share which they contributed in their initial purchase. Individuals who signed agreements on behalf of the association are themselves liable for their execution should the association be declared void (article 12).[64]

To establish a cooperative association using the *Wet van 1876*, founders had to

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[63] These standard bankruptcy procedures are in two parts: (1) for the association itself using company law as outlined in 'Van faillissementen, van de rehabilitatie, en verzoeken om surcheance' in *Wet van den 23sten Maart 1826, inhoudende den eersten titel van het derde boek van het Wetboek van Koophandel* (Staatsblad 1826, No. 46); and (2) for individual members (after the first procedure is exhausted) using civil law in 'Van de vergoeding van kosten, schaden en interessen, voortspruitende uit het niet nakomen eener verbindtenis' in *Wet van den 1sten Maart 1925, inhoudende den eersten titel van het derde boek van det Burgelijk Wetboek* (Staatsblad 1825, No.14). A reading of this legislation suggests that all assets belonging to members can, with little limit, be pursued in bankruptcy procedures.

[64]Using the second bankruptcy procedure described in the footnote above, if necessary.

meet a series of additional demands. Articles 5 and 6 are equivalent to articles 5, 6 and 9 in the old law, with the addition that associations must publish their statutes in local newspapers and seek permission from the Dutch Justice Department. Article 7 of the *Wet van 1876* is totally new and sets out nine requirements for cooperative associations. These include a prior agreement concerning the liability of members, deciding methods of overseeing the association's day-to-day management and rules regarding joining and leaving. Articles 8 and 9 govern the choice of management and a non-executive oversight committee (*commissarissen*), which members must choose from among themselves. Article 10 provides rights for members to call general meetings. Articles 11 to 13 govern record keeping of the member ledgers.

Articles 17 to 21 of the *Wet van 1876* state the conditions in which cooperative associations will cease to exist, and are equivalent to articles 10 to 12 of the old law. If a cooperative cannot meet its financial obligations, it will be declared bankrupt (article 17). Members are liable in such situations, as are ex-members who have left in the year before bankruptcy (article 19). The act then prescribes a default liability regime which applies if none has been arranged in a cooperative's statutes: if members have unequal shares in the cooperative, then they can be made liable in proportion to their initial outlay (article 20). Otherwise, every member is liable to an equal portion (article 19). Members are also liable for each other's share if some members are unable to pay. Members are required immediately to pay up to one hundred times their share of the cooperative – or another factor if the administrator deems this to be necessary – to meet the interim demands of the cooperative's creditors (article 19).[65] Of course, cooperators could choose to adopt another liability regime, as discussed in more detail below.

Finally, the new law includes demands on cooperative associations' management. Such provisions were totally absent from the old law. First, a clause in article 11 states that a cooperative's directors are personally responsible and liable in the case that it loses corporate personality (i.e. during bankruptcy). Second, article 22 sets out fines of up to 50 guilders if member ledgers are not kept up to date or for failing to organise and register general shareholder meetings.

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[65]Again, it appears that members can subsequently be pursued by the courts to recover any additional funds. This time, however, no mention is made of the second stage, the civil proceedings as described in Footnote 63. Liability was therefore likely more limited, being confined to the levels set out in the *Wetboek van Koophandel*, which implicitly splits personal from business interests and, for instance, does not put members' personal future income at stake.

There were very few alterations to these two legal codes in the years between their introduction and the creation of the first cooperative banks in the *fin de siècle*. The most interesting alteration was the new clause added to article 14 (the exemption article) of *Wet van 1855*, introduced in 1866.[66] Indeed, it is the absence of banks from the list which makes it interesting. The original text prohibited partnerships, shipping companies and trading companies from using cooperative liability structures as laid out in the act, and from from 1866 the list was expanded to the insurance industry. Whilst much of the financial services sector was now explicitly excluded from adopting the 1855 cooperative structure – and was therefore forced to use the more stringent 1876 version – credit-giving institutions were not.

The legal principle of *numerus clausus* – literally "closed number" – concerns the general principle in property rights law that the number of rights is limited and that these rights cannot be expanded or modified by individual parties to match their specific wishes and needs (Struycken 2007). It is a legal principle which applies to many legal systems today (Merril & Smith 2000). However, this principle was not followed by the drafters of cooperative law in the Dutch case, where the *Wet van 1876* explicitly permitted cooperators to choose their own liability regime, a freedom which was unsuccessfully challenged in court in 1908 (Deking Dura 1913). Whilst the *Wet van 1855* permitted only completely unlimited liability and was thus *numerus clausus*, the *Wet van 1876* permitted cooperators to tailor their liability regime to suit their own needs. The new cooperative act prescribed only a standard default liability arrangement, as described above. In practice, then, it was left to individual cooperative organisations to decide on their own liability arrangements, a point posited as early as 1883 by Quarles van Ufford. Cooperators could therefore chose to have a (more) limited form of liability if they so desired, and this chapter shows that many *middenstandsbanken* made use of this provision.

Finally, *middenstandsbanken* could choose to become NVs. This corporate form was used widely by conventional banks, but could also be adopted by mutual banks wishing to completely limit their liability in the case of bankruptcy. This act has as its default a limited liability arrangement, which *middenstanders* could choose to modify using company statutes. Another, easier, option for modifying liability was through introducing a system of paid and unpaid capital: shareholders could be required to

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[66] *Wet van den 14den September 1866, houdende uitbreiding van art. 14 der wet van 22 April 1855 tot wederkeerige verzekerings- of waarborgmaatschappijen* (Staatsblad 1866, No. 123).

pay only a (small) fraction of their shareholding up front on purchase, the rest to be called on in times of need. The law did not insist on the payment of a standard portion of pledged capital, but, according to Greup (1923), a ten percent minimum was considered normal. Many company statutes included requirements to increase the portion of paid capital after a pre-defined time. For instance, in the case of *middenstandsbanken*, some statutes required shareholders to increase their paid portion if they wanted to take out a (large) loan. Greup (1923) discusses a legal debate in the Netherlands on whether unpaid capital should be treated as a loan on balance sheets; it was treated as an asset by all *middenstandsbanken* in the sample collected for this paper. Regarding the liability of an NV's managers, the *Wetboek van Koophandel* is quite lenient (Meyers 1923); providing they conduct their business legally, they cannot be pursued by shareholders for bad management decisions. There is some talk (in article 47) that, in any concern losing 75 percent of its share capital, the managers would become personally liable. However, Meyers finds little evidence that this was implemented.

5.A.2 Post-crisis legal settlement

Dutch law concerning both cooperative societies and public companies was reformed during – or indeed because of – the crisis. Two new laws replaced existing legislation: (1) the 'Law of 28 May 1925, concerning the new legal rules of cooperative societies'[67] (henceforth the *Wet van 1925*) replaced previous legislation concerning cooperative associations; and (2) the 'Law of 2 July 1928, concerning the alteration and addition of provisions governing public companies and the rules governing their legal liability'[68] (henceforth the *Wet van 1928*) replaced that concerning public companies. The changes in (1) relating to liability are discussed in some detail; those in (2), only briefly.

(1) There are a number of key differences between the *Wet van 1925* and its previous incarnation, the *Wet van 1876*. First and foremost, it is far more prescriptive and requires more transparency in the liability arrangement of cooperatives' members following liquidation, also introducing a new transparent limited liability construct.

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[67] *Wet van den 28sten Mei 1925, houdende nieuwe wettelijke regeling van de coöperatieve vereenigingen* (Staatsblad 1925, No. 204). It is important to note that the *Wet van 1925* replaced the *Wet van 1876* only. Technically, therefore, *middenstandsbanken* could still use the *Wet van 1855*.

[68] *Wet van den 2den Juli 1928, tot wijziging en aanvulling van de bepalingen omtrent de naamlooze vennootschap en regeling van de aansprekelijkheid voor het prospectus* (Staatsblad 1928, No. 216).

Second, it increases members' oversight over their cooperatives' management. Finally, it introduces more stringent financial and other punishments for mismanagement and fraud.

The *Wet van 1925* is set out as follows. Article 5 outlines what an association has to do to gain corporate personality. The major change here from the *Wet van 1876* is that the liability arrangement must always be explicitly incorporated into the cooperative's statutes. Moving then to the articles governing liability, if it appears that a cooperative has insufficient assets to meet its obligations (e.g. if it is forced into bankruptcy, as article 34 specifies), then the default liability arrangement set out in article 17 of the act holds that creditors can call on all members' private assets (and those of recent ex-members). The funds outstanding are divided equally among (ex-) members, and if one or more cannot afford to pay then the remaining (ex-) members are instead equally liable for his share. This continues until the creditor is paid or a judge says otherwise.

The level of liability prescribed in the law is one hundred times members' initial outlay (article 35). As the earlier *Wet van 1876*, this liability was designed only to meet immediate shortfalls, and the same bankruptcy procedures could be used to recover additional funds if necessary. Like the older law, the new *Wet* makes provision for cooperators to choose other liability structures, this time more explicitly still, but on condition that any deviation from the norm is transparent to all outside observers. This liability-transparency tradeoff is something its predecessor did not contain. If the standard unlimited liability arrangements of the standard act is adopted, then the cooperative must use the initials WA in its legal name, standing for *wettelijke aansprakelijkheid*, or legally liable (article 3). If a different liability arrangement is made (permitted by article 18), then the cooperative must use the initials GA in its legal name, standing for *gewijzigde aansprakelijkheid*, or modified liability. One such alteration would be to limit liability to some multiple of the initial inlay, or to make members liable for losses, even when the society is not bankrupted *per se* and merely has a shortfall for one year which management has decided should be met early (Vink & van Haastert 1949). Finally, if the cooperative chooses that members should not be liable for their cooperatives' losses beyond their initial outlay – a very limited form of liability permitted in article 18 – even if this outlay is zero, then it must use the initials UA – *uitgesloten aansprakelijkheid*, or absence of liability.

Previous legislation granted cooperative members the right to hold general

members' meetings. The 1925 act expands this part of cooperative law substantially, putting additional demands on cooperatives' management regarding the conduct of these meetings and strengthening their power over the cooperatives' management. The legislation clarifies the basic voting power of members in choosing their managers and, if they desire to have one, in choosing a standing oversight committee made up of so-called *commissarissen*. Every member is now deemed to have equal voting rights on these matters, unless arrangements otherwise are clearly outlined in the statutes (articles 21 and 26). Members are now able to elect a committee to represent them at meetings if they so desire, providing their total membership exceeds 200 persons (article 22). General meetings can be called at any time providing one fifth of members so desire, and members can even have meetings if the managers do not want them and remain absent (article 24). The oversight committee is now also permitted to have a limited number of external members who are therefore not liable for the cooperative's losses (article 26). The oversight committee – or if there is no standing oversight committee, then a temporary group of three chosen by members – must annually audit the cooperative's books on behalf of the membership (article 27). Cooperative legislation has not included this compulsion to audit before.

As punishment for (mis-) management, managers and *commissarissen* can now be dismissed by general members at any time on a simple majority (article 28). Furthermore, they can be pursued by members during bankruptcy proceedings if evidence exists that they either totally mismanaged the business or committed fraud (article 31), for a sum to be decided by a judge (article 23). Finally, there were large fines (up to 1,000 guilders, compared with just 50 guilders in the previous acts) for failure to publish annual reports with adequate accounts, failure to deposit an up-to-date list of members at the local chambers of commerce and the failure of cooperatives to keep records for up to thirty years (article 38).

(2) Briefly, regarding the *Wet van 1928*, which is described in more detail in De Jong & Röell (2005), NVs continued to be businesses in which shareholders were not personally liable for the conduct of any business, but clarified the legal uncertainties which had arisen in court regarding paid and unpaid capital, the legal responsibility of management, and the transfer of share ownership. NVs had to openly declare the number of shares and the par value of each share in their statutes (article 36d), and were permitted to have different classes of share with different denominations and liability arrangements (article 38). Only fully paid-up shares could be exchanged on

secondary markets (article 38a), and anonymous shares must be fully paid (article 38c). A register of shareholders must be kept if shareholdings are only partly paid (article 39). Some new rules increasing the liability of managers are included (article 47), which at the time proved quite controversial (Meyers 1923).

5.B Full middenstandsbank sample

Table 5.10: List of *middenstandsbanken* in the sample, and their fate during the early 1920s

Statutory name	Place	Est.	Fate
Credietvereeniging "De Hanzebank"	Den Bosch	1907	Liquid.
Coop. Coevorder Credietbank voor den Middenstand	Coevorden	1908	
Cooperatieve Middenstands-Credietbank te Groningen	Groningen	1908	
Cooperatieve Leeuwarder Credietb. voor den Middenstand	Leeuwarden	1908	
Coop. Spaar- en Voorschotb. der Ver. "Boaz" afd. Sneek	Sneek	1908	
Coop. Spaar- en Voorschotb. "Boaz" v. Assen en Omstr.	Assen	1909	
Coop. Spaar- en Voorschotb. "Boaz" v. Groningen en Omstr.	Groningen	1910	
Coop. Spaar- en Voorschotb. "Boaz" v. Stadskanaal en Omstr.	Stadskanaal	1910	
N.V. Middenstands-Credietver. "De Hanzebank" te Utrecht	Utrecht	1910	Liquid.
Dedemvaartsche Cooperatieve Middenstands-Credietbank	Dedemvaart	1911	
Coop. Credietbank vd Handelsdrijv. en Industrielen Middenst.	Den Haag	1911	
Coop. Spaar- en Cred.b. v.d. Middenst. v. Deventer en Omstr.	Deventer	1911	
Coop. Spaar- en Voorschotb. "Boaz" v. Dordrecht en Omstr.	Dordrecht	1911	
Cooperatieve Emmer Middenstands-Credietbank	Emmen	1911	
Coop. Middenstands-Crediebank voor Gouda en Omstr.	Gouda	1911	
Cooperatieve Middenstands-Credietbank te Hilversum	Hilversum	1911	
Coop. Purmerender Credietbank voor de Middenstand	Purmerend	1911	
Cooperatieve Sneeker Middenstands-Credietbank	Sneek	1911	
Cooperatieve Middenstands-Credietbank te Vlissingen	Vlissingen	1911	
Coop. Zaanlandsche Middenstands-Credietb. te Zaandam	Zaandam	1911	
Coop. Spaar- en Voorschotb. "Boaz" v. Amsterdam en Omstr.	Amsterdam	1912	
Coop. Spaar- en Voorschotb. "Boaz" v. Leeuwarden en Omstr.	Leeuwarden	1912	
Cooperatieve Oosterbeeksche Middenstands-Credietbank	Oosterbeek	1912	
Coop. Spaar- en Voorschotb. "Boaz" te Utrecht	Utrecht	1912	
Coop. Spaar- en Voorschotb. "Boaz" v. Amersfoort en Omstr.	Amersfoort	1913	
Cooperatieve Middenstands-Credietb. te Stad-Hardenberg	Hardenberg	1913	
Coop. Hoornsche Credietbank voor den Middenstand	Hoorn	1913	

Continued overleaf...

Table 5.10: List of banks in sample and their fate during the crisis (*continued*)

Statutory name	Place	Est.	Fate
Coop. Spaar- en Voorschotb. "Boaz" v. Schoonhoven en Omstr.	Schoonhoven	1913	
Cooperatieve Middenstands-Credietbank te Zeist	Zeist	1913	
Cooperatieve Middenstands-Spaar- en Credietbank te Aalten	Aalten	1914	
Middenstands-Credietbank voor Amersfoort en Omstreken	Amersfoort	1914	
Apeldoornsche Middenstands-Credietbank	Apeldoorn	1914	
Cooperatieve Middenstands-Credietbank te Bodegraven	Bodegraven	1914	
Middenstands-Credietbank voor den Helder en Omstreken	Den Helder	1914	
Cooperatieve Middenst.-Credietb. Hoogezand-Sappemeer	Hoogezand	1914	
Naaml. Venn. Middenstands-Credietbank "Neede"	Neede	1914	
Cooperatieve Middenstands-Credietbank te Noordbroek	Noordbroek	1914	
Cooperatieve Middenstands-Credietbank te Renkum	Renkum	1914	
Schiedamsche Middenstands-Credietbank	Schiedam	1914	
Coop. Middenstandsbank voor Steenwijk en Omstr.	Steenwijk	1914	Liquid.
Cooperatieve Middenstands-Credietbank te Veendam	Veendam	1914	
Coop. Spaar- en Voorschotb. "Boaz" v. Vlissingen en Omstr.	Vlissingen	1914	
Alkmaarsche Middenstands-Credietbank	Alkmaar	1915	
Coop. Spaar- en Voorschotb. "Boaz" v. Almelo en Omstr.	Almelo	1915	
Middenst.-Cred.b. v.d. 3 gem. Oudshoorn, Alphen, Aarlanderv.	Alphen	1915	
Centr. Credietb. v. Koffieh.-, Rest.h. en Slijters te Amsterdam	Amsterdam	1915	
Andijker Middenstands-Credietbank	Andijk	1915	Liquid.
Coop. Spaar- en Voorschotb. "Boaz" v. Bunnik en Omstr.	Bunnik	1915	
Credietb. Voor den Middenstand te Doesburg en Omstr.	Doesburg	1915	
Credietbank voor Handel en Industrie te Dordrecht	Dordrecht	1915	
Enschedesche Middenstands-Credietbank	Enschede	1915	
Middenstands-Credietbank voor Gorinchem en Omstreken	Gorinchem	1915	
Middenstands-Credietbank voor Haarlem en Omstreken	Haarlem	1915	Merged
De Harlinger Middenstands-Credietbank	Harlingen	1915	
Hillegomsche Middenstands-Crediet- en Spaarbank	Hillegom	1915	
Hoogeveensche Middenstands-Credietbank	Hoogenveen	1915	
Coop. Spaar- en Voorschotb. "Boaz" v. Kampen en Omstr.	Kampen	1915	
Middenstandsbank "Maassluis"	Maassluis	1915	Liquid.
Maastrichtsche Centrale Middenstands-Credietbank	Maastricht	1915	Merged
Midenstands-Credietbank "Noordwolde"	Noordwolde	1915	
Middenst Spaar- en Credietbank voor Schagen en Omstr.	Schagen	1915	
Sliedrechtsche Middenstands-Credietbank	Sliedrecht	1915	
Middenstands-Credietbank voor Terneuzen en Omstreken	Terneuzen	1915	Merged
Middenstands-Credietbank "Tiel en Omstreken"	Tiel	1915	

Continued overleaf...

Table 5.10: List of banks in sample and their fate during the crisis (*continued*)

Statutory name	Place	Est.	Fate
Vlaardingsche Middenstands-Credietbank	Vlaardingen	1915	
Weesper Middenstands-Credietbank	Weesp	1915	
Zwolsche Middenstands-Credietbank	Zwolle	1915	
N.V. Middenstands-Credietb. v. Nw.-Amsterdam en Omstr.	Nw.-Amsterd.	1916	Liquid.
Middenstands-Credietbank voor Uithoorn en Omstreken	Uithoorn	1916	
Middenstands-Credietbank voor de gem. Rheden te Velp	Velp	1916	Merged
Coop. Spaar- en Voorschotb. "Boaz" v. Zwagerveen en Omstr.	Zwagerveen	1916	
Coop. Spaar- en Voorschotb. "Boaz" v. Zwartsluis en Omstr.	Zwartsluis	1916	
Haarlemmermeersche Middenst.-Credietb., gev. te Hoofddorp	Hoofddorp	1917	Liquid.
Coop. Middenst.-Credietb. te Siddeburen, Hellum en Omstr.	Siddeburen	1917	Merged
Middenstands-Credietbank voor Zaltbommel en Omstr.	Zaltbommel	1917	
Cooperatieve Centrale Nutscredietbank te Breda	Breda	1918	
Middenstands-Credietbank voor Delft en Omstreken	Delft	1918	Liquid.

Notes: Sorted by year established. 77-bank sample constructed from the 95-bank population using criteria set out is Section 5.4.

Sources: Described in Section 6.

Chapter 6

Conclusion

The literature on the reasons for the significant differences in the performance of banks in the Dutch financial crisis of the early 1920s has long been empirically and theoretically incomplete. This is especially so for the case of cooperatively-owned financial institutions. Why did some banks thrive whilst other failed? Why did rural *boerenleenbanken* do so well overall whilst urban *middenstandsbanken* fared so badly? And how did the macroeconomic factors which caused the financial crisis play out at a microeconomic business-level?

This thesis set out to answer these questions by applying methods from historical economics, business history and applied industrial organisation to newly-collected quantitative and qualitative historical evidence. It argues that the Dutch financial crisis of the early 1920s was caused by a series of macroeconomic shocks to the Dutch economy which had as their root causes things beyond the control of the Dutch, or at least beyond what contemporaries thought they could control: an economic and financial restructuring associated with the Great War; a post-war boom and bust cycle with causes abroad; and widespread international support for pre-war monetary ideals ill-designed for the new post-war reality. But this thesis finds that this chain of events is only part of the story; using a mixture of regression analysis and comparative case studies, it finds that a series of structural factors – relating to the society which banks operated in, the organisation of the banking system as a whole and the institutional attributes of individual banks – amplified or mitigated cooperatively-owned financial institutions' individual woes.

Following a presentation of the historical, historiographical and economics context of this topic, a series of three research papers – two on *boerenleenbanken* and one

on *middenstandsbanken* – examined the consequences of social, organisational and institutional differences between banks. They find that: (1) banks serving small religious groups were less willing, despite being more able, to take on risks than those serving majority denominations; (2) those banks that were subject to the lowest competitive pressures enjoyed the most liquid investment portfolios; and (3) the choice of liability limitation available to bankers influenced their balance sheet risks, for the worse. Together, these relationships provide reasons why some banks survived the crisis unscathed, whilst others needed (covert) rescuing, or had to shut up shop permanently. Whilst the *boerenleenbanken* performed well overall, crisis-period heterogeneity in their business results is partly explained by their relative ability to screen and monitor the activities of their members, which in turn was influenced by their social position within their local communities. The switching costs associated with religious affiliation also help to explain any divergence in the performance of these rural banks, with a competition-stability tradeoff appearing to intensify at the hight of the crisis period. The *middenstandsbanken* performed quite poorly overall in the crisis period, and one of the reasons for this failure was their customers' ability to choose to bank with institutions which closely matched their risk characteristics; as a consequence of the choice in liability regime available under Dutch law, many banks for urban SMEs became highly undiversified and crisis-prone.

This thesis significantly revises the way in which the early history of rural cooperative banking in the Netherlands is understood. Prior to the current research, most histories of *boerenleenbanken* were written as idealised narratives of farming communities triumphant over adversity. This thesis confirms that these banks were indeed a success, but crucially not for the reasons advanced by official histories of the sector. In short, these were banks for savers rather than borrowers; credit-granting to members was in general a side-show to their deposit-taking business. These banks survived the crisis because loans made up a smaller part of their business than they did at other types of financial institution at the time; there were simply fewer loans to go sour. Thanks to the various social, organisational and institutional factors, summarised above, their customers were able to resist mass withdrawals long enough for rural commodity prices to stabilise and the business cycle to pick up. The odds of survival were stacked in their favour. But, to a degree, they were lucky; had the economy continued to worsen, then they would have undoubtedly succumbed to the forces of debt-deflation. As it was, significant transfers between rural cooperatives, arranged

through their central clearinghouses, were made in the early 1920s in order to keep weaker banks afloat.

This thesis also revises the way in which the early development of urban cooperative banking is understood. In contrast to rural cooperatives, *middenstandsbanken* were credit-heavy and savings-poor. They did not benefit from the social, organisational and institutional environment in which they operated: unlike farmers, urban SMEs fiercely competed with one another and could not take full advantage of the Netherlands' social structure; urban cooperatives operated in a crowded marketplace for financial services, and some of their competitors were far more successful at mobilising savings; and granting banks a choice over their institutional arrangements resulting in them picking the wrong ones. *Middenstandsbanken* were perhaps doomed from their inception; it is arguably a miracle that they lasted so long.

The Dutch financial crisis of the early 1920s has long been viewed as the consequence of a Fisheresque debt-deflation process, aggravated by the structure of the Kingdom's financial services sector. Prior to this thesis, the only structural features to garner any attention were the downsides of interlocking directorships and the universal banking model more generally. This thesis has expanded the list of these structural factors significantly, and perhaps most striking among those examined are the findings on how the structure of Dutch society helped to amplify or mitigate the effects of the crisis. One important wider conclusion is then that future historical and economic research – also on other countries' financial sectors – should strive to consider the social aspects of finance.

The Netherlands has long been a popular subject of academic historical study. As Europe's pre-eminent polities for most of the sixteenth and seventeenth centuries, they have been the topic of much analysis regarding their subsequent (perceived) late arrival to the club of industrialised nations. Financial historians in particular have focused on explaining the consequences of the Dutch Golden Age. They have paid scant attention to the twentieth century, however. The only financial crisis of any consequence to hit the Dutch banking sector before the current one is the subject of only a handful of works; none have sought to explain the differences in the experience of this crisis observed between banks. Few works have attempted to weave social and economic history together; the Dutch *verzuiling* has been the subject of hundreds of volumes of scholarly analysis, but little has been written about its consequences for the Dutch economy, its financial sector in particular. This thesis is then an effort to

address this academic deficit. It shows that social forces had a great influence on the Dutch economy and help explain the strengths and weaknesses of its financial sector.

Scholarly writing on cooperative business organisations has traditionally been confined to works of (socio-) political history. Such analysis has tended to look at cooperatives in an idealistic, normative, fashion, for instance focusing on the Rochdale principles, or the use of cooperative organisations as "non-capitalist alternatives" to "conventional" business forms. A few exceptions aside, business historians have left a wide berth around such organisations, partly because they are perceived to constitute only a small part of the economy, but probably also because their business aims and objectives are non-standard and therefore difficult to conceptualise. But cooperative businesses have been a significant economic force throughout most of the twentieth century, with many banks even today organised along quasi-cooperative lines – including the much heralded microfinance institutions of the developing world. By looking at cooperatives using economic methodology, this thesis shows how they too can be integrated within the wider historiography of finance and development.

Empirical researchers in banking and finance often face significant obstacles in their work regarding the availability of data and the complexity of the current financial system. These problems together mean that they find it difficult to test the economic models developed by their colleagues specialising in economic theory. A side-effect of this is that the work of financial theorists is often not well grounded in reality. Historical work offers a potential solution to these problems. This thesis looked at a historical period for which good disaggregated data are available, and in which the financial system, and the relationship between different components of this system, is less complex and therefore more tractable. Theories regarding interbank competition and financial stability, and liability and bank survival, are easier to test and adapt as a result.

This thesis employed a variety of different methods in the pursuit of an explanation for the heterogeneous performance of cooperative banks in the period 1919 to 1927. Central to these was the quantitative analysis of bank-level balance sheet data for the near-population of such banks. The principal difficulty faced was how to measure bank performance. Inspiration was sought from methods used by modern financial analysts, especially from analysts of microfinance institutions – probably the most similar type of financial services organisation operating today. However, no one method could be replicated exactly; they had to be adapted to the Dutch historical context. For this

to be successful, a good understanding of the qualitative evidence on these banks was required. Indeed, this thesis argues that only the full integration of quantitative and qualitative methods enables historians to be better understand the causal mechanisms behind econometric results; a more comprehensive picture of interwar cooperative enterprises emerged only following the use of comparative case studies.

Economic and financial policymakers face normative choices. Should they help extend the access to financial services by ever wider segments of the population? Or should they keep things as they are, restricting finance to incumbents, maintaining stability, but with consequences for growth and development? De Nederlandsche Bank (DNB), the Netherlands' quasi-central bank, dearly wanted things to return *in statu quo res erant ante bellum*, a period in which it reigned supreme over the Dutch financial services sector, but had little involvement in its running. But the Bank was forced to adapt to the new post-war reality. Existing banks had expanded and altered their business model; new types of financial institution had sprung into existence. DNB chose to drag its feet. It got its way in the end: things did return to how they were, but only when a financial crisis had forced the sector to do so – although, crucially, not all of it, as this thesis has shown for the case of rural cooperatives, which could not be put back into the box from whence they came. It was only after the Second World War, after it was nationalised, that it started to play a more active role.

Perhaps the lesson from this episode for today is that policymakers should be more aware of the society which bankers serve. There are inherent risks in divorcing finance from the rest of the economy. That trained observers of the financial system failed to realise the implications of credit default swaps – that they were insurance policies against extreme events which could easily coincide – is partly a function of the fact that finance was abstracted from the society being served. The revealed problems with collateralised debt obligations composed by individuals trained as physicists with no understanding of financial history is perhaps a further example of this problem. This thesis recounts how DNB constantly worried about the implications of cooperative ownership and unlimited liability for the stability of *boerenleenbanken*, so much so that it failed to spot that what made these banks so successful was exactly what it was complaining about: the social context in which they operated enabled them to enjoy the benefits of highly effective peer monitoring. DNB was far less concerned, at least initially, with the *middenstandsbanken*. It liked the fact that many were choosing limited liability constructs and building up valuable share capital, rewarding

this behaviour by granting them access to their discounting facilities. What the Bank failed to spot was that these banks suffered from the absence of the things that made *boerenleenbanken* a success. Instead of acting as institutions to spread risks and punish bad behaviour, the rules permitted *middenstandsbanken* to actively segment society into highly undiversified risk tranches, with disastrous consequences.

The history of financial services during the interwar period has been the subject of extensive scholarship; different aspects of countries' national financial systems have been discussed individually at length. The Great Depression has enjoyed particular attention by financial historians of all types, qualitative and quantitative. But one aspect of the academic historical method that remains under-utilised for this period, one area from which there is still much potential to learn, is comparative history. Why was there such heterogeneity in the size and shape of European financial systems? What consequences did this have, financial and real? For instance, why did cooperative banks thrive in some countries but utterly fail in others? It is this aspect of financial history that should be a focus of future academic enquiry. And it may not be too hard: scholars already have existing bodies of work on their own countries' financial sectors; these desperately need to be compared and contrasted in new comparative works.

Glossary

algemene banken   banks which emerged from the turn of the twentieth century and engaged in a full range of financial services business; literally general banks; spelt algemeene (double-e) in the early twentieth century

ACBM   abbreviation of Algemeene Centrale Bank voor den Middenstand, a central bank for *middenstandsbanken*, headquartered in Amsterdam and established in 1914 out of a merger of four regional clearinghouses; politically neutral

Boazbank   the name adopted by *middenstandsbanken* with an explicitly Protestant ethos

boer   a farmer

boerenbond   a farmers' union; members of these unions were usually Catholic

boerenleenbank   a farmers' lending bank, a type of cooperatively-owned rural bank for savings and loans

central bank   a central clearinghouse and audit authority apex institution for a group of cooperatively-owned banks; not to be confused with DNB

CCB-Eindhoven	abbreviation of Coöperatieve Centrale Boerenleenbank, a central bank for *boerenleenbanken*, headquartered in Eindhoven and established in 1898; politically Catholic-leaning
CCCB-Alkmaar	abbreviation of Coöperatieve Christelijke Centrale Boerenleenbank, a central bank for *boerenleenbanken*, headquartered in Alkmaar and established in 1904; politically Catholic-leaning
CCRB-Utrecht	abbreviation of Coöperatieve Centrale Raifeissen Boerenleenbank, a central bank for *boerenleenbanken*, headquartered in Utrecht and established in 1898; politically neutral, but *de facto* Protestant-leaning
commissaris	a non-executive director
credietvereniging	a specialist mutual bank which sells loans, almost extinct by the turn of the twentieth century; spelt *credietvereeniging* (double-e) in the early twentieth century
dagboek	a bank ledger for daily mutations
DNB	abbreviation of De Nederlandsche Bank, the Dutch bank of issue and the Dutch state's bank; the *de facto* central bank of the Kingdom of the Netherlands
disconto	the discount of bills of exchange, a service provided by banks; DNB used its disconto facility to provide services as a *de facto* lender-of-last-resort to some parts of the banking sector
geestelijke adviseur	a spiritual advisor to a bank's management, usually a priest

gemeente	the lowest government administrative division in the Netherlands; can be translated as municipality
gereformeerd	orthodox Calvinism; literally re-reformed
groentevijling	a vegetable auction, may be cooperatively owned by the horticulturalists who use it
grootboek	a bank ledger organised by account-holder
gulden	guilder, the Netherlands' currency unit; on the gold standard pre-1914, and returned at pre-war parity to the gold-exchange standard at the same time as sterling
Hanzebank	the name adopted by *middenstandsbanken* with an explicitly Catholic ethos
hervormd	Dutch Reformed, a liberal form of Calvinism; the denomination of the House of Orange, and hence the *de facto* official religion of the Kingdom of the Netherlands
Hollandish	pertaining to Holland, the populous politically and economically important coastal region of the Netherlands constituting the western provinces of Noord-Holland and Zuid-Holland; an individual from Holland is both Hollandish and Dutch in the same way as an individual from England is English and British
hypotheekbank	a type of specialist bank selling mortgages
ING Bank	abbreviation of Internationale Nederlanden Groep, a bancassurance company formed in 1991 out of a merger between the NMB Postbank Groep (itself a merger between the NMB and the Postbank) and the insurer Nationale-Nederlanden

kassier	a cashier, usually a notary; a popular source of credit in rural areas in the late nineteenth century
kredietpapier	finance bills, a financial instrument requiring two signatures, rolled over frequently, used by banks as long-term credit, argued to be very illiquid
landbouwmaatschappij	a type of agricultural company established by regional government to improve the plight of farmers by e.g. subsidising agricultural consultants and organising trade fairs
land- en tuinbouwbond	a *boerenbond* specifically for horticultural farmers and market gardeners
middenstander	a member of the class of small (urban) business-owners in the retail trade and handicraft sector; modern-day equivalent classification is probably small- and medium-sized enterprise (SME)
middenstandsbank	a bank owned by and serving *middenstanders*
NBB	abbreviation for the Nederlandsche boerenbond, a national federal union of *boerenbonden*; instigator of the CCRB-Utrecht central bank
NCB	abbreviation for the Noordbrabantse Christelijke Boerenbond, a federal union of *boerenbonden* in the southern province of Noord-Brabant; instigator of the CCB-Eindhoven central bank
NLC	abbreviation of the Nederlandsch Landbouw-Comité, established in 1884 as a national *landbouwmaatschappij* to deal with agricultural issues (e.g. disease) which affected all parts of the country; politically neutral but *de facto* Protestant

NMB	abbreviation of the Nederlandsche Middenstandsbank, a bank established in 1927 as a forced merger, directed by the Dutch government, between some of the larger, more successful, middenstandsbanken as a pan-confessional financial institution
nutsspaarbank	a type of savings bank owned and run by the Maatschappij tot Nut van 't Algemeen, a friendly society; these banks are today parts of Fortis Bank (now ABN-AMRO) and the SNS Bank
NV	abbreviation of Naamloze Vennootschap, the legal form adopted by public companies
prolongatie	on-call money market; a repurchase agreement (repo), which in the nineteenth century was relatively unique to Amsterdam's money markets and attracted much foreign interest; low rates and ability to roll-over contracts meant this was a very attractive substitute for bank accounts, at least until the outbreak of the Great War
Raad van Toezicht	the corporate oversight committee, part of the two-tier board structure adopted by Dutch firms
Rabobank	a portmaneau of Coöperatieve Centrale **Ra**iffeisen-**Bo**erenleen**bank** B.A., the central bank of the Netherlands' local rural cooperative banks, formed out of a merger in 1972 of the confessional central banks
RPS	abbreviation of the Rijkspostspaarbank, the government-owned and guaranteed post office savings bank which later changed its name to Postbank
surséance	a court order to suspend any outstanding payments; the first step in bankruptcy proceedings in Dutch law

verzuiling	a Dutch confessionalisation phenomenon often translated literally as pillarisation
warmoezeniers-patroonsvereeniging	an association for horticultural business owners; literally translated as horticultural patronage society
Wet van 1855	abbreviation for the 1855 Act of Parliament which granted legal personality to associations of all kind (Staatsblad 1855, No. 32)
Wet van 1876	abbreviation for the 1876 Act of Parliament which granted legal personality to associations with a specific cooperative character (Staatsblad 1876, No. 227)
zuil	a socioreligious/sociopolitical group in Dutch society which is literally translated as pillar; there were three macro-*zuilen*, Catholic, Protestant and neutral, but each had sub-groups

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Where referenced according to the in-house archival referencing systems, or using a description in the absence of such a system, reports, correspondence and meeting minutes of the different central and local cooperative banks, the Dutch central bank and the Dutch state, available at:

- Archive of the Directie van Handel en Nijverheid held at the Nationaal Archief in The Hague (NA);

- Archive of the the headquarters operations of De Nederlandsche Bank in Amsterdam (DNB), transferred since viewing to the NA;

- Archives of the central clearinghouses of the two main Raiffeisen networks held at Rabobank Nederland in Utrecht (RaboNed);

- Archive of the *boerenleenbanken* in the Loosduinen area held at Rabobank Haaglanden in The Hague (RaboHaag); and

- Archive of the *boerenleenbanken* in Baardwijk and Capelle held at Rabobank Langstraat in Capelle (RaboLang).

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- Coöperatieve Centrale Boerenleenbank, Eindhoven (CCB-Eindhoven); and

- Coöperatieve Centrale Raiffeisen-Bank, Utrecht (CCRB-Utrecht).

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- Coöperatieve Centrale Christelijke Boerenleenbank, Alkmaar (CCCB-Alkmaar).

In-house newspapers published by the two primary cooperative central banks (CCB-Eindhoven and CCRB-Utrecht), available at http://rabobank-tijdschriften.pictura-dp.nl/:

- *Maandelijksche Mededelingen van de Coöperatieve Centrale Boerenleenbank*; and

- *De Raiffeisen-Bode*

A general register of names of all the savings banks operating in the Netherlands in 1919, published in Centraal Bureau voor de Statistiek (1921), 'Statistiek der Spaar-en Leenbanken in Nederland over het jaar 1918/1919', Bijdragen tot de statistiek van Nederland, No. 318.

Sources concerning middenstandsbanken

Where referenced in-text according to the in-house archival referencing systems, or using a description in the absence of such a system, corporate statutes, correspondence, meeting minutes, audit files and technical reports of different central and local *middenstandsbanken*, available at:

- Archive of the Directie van Handel en Nijverheid held at the NA;

- Archive of the predecessors of the Nederlandsche Middenstandsbank held at ING Bank Nederland in Amsterdam (ING); and

- Archive of the headquarters operations of DNB, transferred since viewing to the NA.

Annual reports for the 1917-1918 financial year for the following banks, available at the NEHA:

- Algemeene Centrale Bankvereeniging voor den Middenstand, Amsterdam (which reports data for 75 banks);

- Credietvereeniging "De Hanzebank", Den Bosch; and

- Coöp. Credietbank vd Handelsdr. en Industr. Middenstand, Den Haag.

Newspapers

Dutch newspapers and newspaper clippings from the early twentieth century were consulted at the NEHA and the Koninklijke Bibliotheek (KB) in The Hague. Titles quoted in text include:

- *De Kroniek van Sternheim*, a financial fortnightly, edited in Amsterdam;

- *De Residentiebode*, A Catholic local daily, edited in The Hague; and

- *De Telegraaf*, a populist national daily, edited in Amsterdam.

Census and survey data

Data from the *Volkstelling* (census) of the Netherlands conducted in December 1920, published by the Centraal Bureau voor de Statistiek (CBS) in The Hague in 1924, available at http://www.volkstellingen.nl/:

- Economisch-geografische indeeling van Nederland (Economic geographical division of the Netherlands);

- Onderscheiding naar bedrijfsklassen, bedrijfsgroepen en beroepen in de economisch-geografische deelen van het Rijk met vermelding van de positie in het beroep en van het geslacht (Division of labour by business class and job type in all economic-geographical organisational divisions of the Kingdom, by job seniority and by gender); and

- Aandeel van elk der voornaamste kerkelijke gezindten in het totaal der bevolking van iedere gemeente (Proportion of population affiliated to each of the main religions resident in every municipality).

Agricultural survey data from the tables 'Indeeling der gronden' in Directie van den Landbouw (1920), 'Verslag over den landbouw in Nederland over 1919', Verslagen en Mededeelingen van de Directie van den Landbouw, No. 3.

Monthly agricultural price data from the CBS's *Maandstatistiek* bulletin, various volumes spanning the period 1920 to 1925.

Geographic Information Systems (GIS) data

TOP250namen gazetteer of place names and their geographic coordinates. Coordinates provided in Amersfoortcoördinaten, the Netherlands' official UTM Cartesian coordinate system, which takes a spot near the town of Amersfoort as its place of origin. Provided by the Dutch Kadaster (land registry) in Apeldoorn.

NLKAART ArcGIS shape file of a political map depicting the borders of every Dutch *gemeente* (municipality) at the time of the 1920 census. Projected in the Rijksdriehoeksmeting (RD) system, the national grid projection of the Netherlands, a transformation of the Bessel 1841 reference ellipsoid. Programmed by Onno Boonstra of the Radboud Universiteit Nijmegen.

Government legislation

Dutch legislation governing liability limitation, available at the KB:

- 'Wet van den 22sten April 1855, tot regeling en beperking der uitoefening van het regt van vereeniging en vergadering' (Staatsblad 1855, No. 32), including legal changes resulting from 'Wet van den 14den September 1866, houdende uitbreiding van art. 14 der wet van 22 April 1855 tot wederkeerige verzekerings- of waarborgmaatschappijen' (Staatsblad 1866, No. 123);

- 'Wet van den 17den November 1876, tot regeling der coöperatieve vereenigingen' (Staatsblad 1876, No. 227), including legal changes resulting from 'Wet van den 28sten Mei 1925, houdende nieuwe wettelijke regeling van de coöperatieve vereenigingen' (Staatsblad 1925, No. 204); and

- 'Wet van den 2den Juli 1928, tot wijziging en aanvulling van de bepalingen omtrent de naamlooze vennootschap en regeling van de aansprekelijkheid voor het prospectus' (Staatsblad 1928, No. 216)

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