

Retail Ratios in the Netherlands, c. 1670 – c. 1815

Danielle van den Heuvel and Sheilagh Ogilvie

University of Cambridge

dwagv2@cam.ac.uk, sco2@cam.ac.uk

CWPESH no. 2

Acknowledgements: We would like to thank Daniëlle Teeuwen for the collection of a substantial part of the data; Piet Lourens and Jan Lucassen for access to their Guilds Database; Jelle van Lottum for training and guidance on ArcGIS; Jeremy Edwards for his advice on the econometric analysis; and Jeremy Edwards, Oscar Gelderblom, Lex Heerma van Voss, Alexander Klein, Jelle van Lottum, Jan Lucassen, Jean-Laurent Rosenthal, and participants at the All-UC Conference 2011 on ‘Space and Place in Economic History’, for their comments on the paper.

Abstract: The Netherlands are thought to have pioneered an early modern ‘Retail Revolution’ which reduced the transaction costs of bringing market wares to wider social strata, facilitating the Consumer Revolution. This paper addresses open questions about this development using a commonly used quantitative benchmark – the ‘retail ratio’, defined as the number of retailers per 1,000 inhabitants. We present a large dataset of Dutch retail ratios and use them to show how the density of retailing in the Netherlands varied across space, over time, and with other local characteristics. We conclude by drawing broader implications of our findings for understanding the early modern Retail Revolution.

1. Introduction

Expanding market consumption is widely held to have fuelled European economic growth before industrialization. Between 1650 and 1800, a ‘Consumer Revolution’ is thought to have seen the middling sort spending lavishly on luxuries and the poorer strata buying cheap fashions and comestibles, while in a parallel ‘Industrious Revolution’ the growing demand for market goods motivated households to re-allocate time from leisure and household production to income-earning work.¹

The Consumer and Industrious Revolutions not only needed people to shift into market work and earn more spending money. They also needed the commercial sector to reduce transaction costs, bringing new market wares within the reach of wider social strata. During this period, it is argued, European retailing underwent unprecedented growth and change. Shops, stalls, hawkers, and peddlers proliferated alongside established merchants, lowering the transaction costs of indulging in new market wares. The number of retailers grew, products for sale diversified, and shopping practices changed.²

The Netherlands, specifically the Dutch Republic, is widely regarded as the first European country to have experienced this explosive transformation in retailing.³ Yet this view is based largely on indirect evidence such as probate inventories and on case studies of shopkeeping in particular localities.⁴ As a result, we still do not know precisely how the Dutch retail sector developed over time, whether the changes were equally dramatic everywhere in the country, and how retailing varied with local and regional characteristics.

This paper addresses these open questions using a commonly used quantitative benchmark: the ‘retail ratio’, defined as the number of retailers per 1,000 inhabitants.⁵

¹ McKendrick, Brewer and Plumb (1982); Berg (1999); De Vries (2008).

² Shammass (1990); Mui and Mui (1989); Blondé et al. (2005); Stobart and Hann (2004); Blondé and Van Damme (2010).

³ De Vries and Van der Woude (1997); De Vries (2008); Van den Heuvel (2007); Lesger (2001).

⁴ Van Nierop (1953); Wijsenbeek (1987a); Streng (2001); Steegen (2006); Wijsenbeek (1987b); De Vries (1984); Kamermans (1999); Dibbits (2001).

⁵ Studies using this benchmark (or its reciprocal, the number of inhabitants per retailer) to examine the Consumer Revolution include Blondé and Greefs (2001), 207-29; Blondé and Van Damme (2006), 4, 18; De Munck (2010), 40; De Vries (2008), 170; De Vries and Van der Woude (1997), 581; Ogilvie

Some retail ratios for the Netherlands have been collected in earlier studies, but they cover only a small number of dates and localities, and are concentrated in urban centres and the province of Holland, so they provide only limited insight into retail development across the country as a whole during the period of the Consumer Revolution.⁶ We have collected and analyzed a much larger set of data on Dutch retail ratios. Our data span the period from 1639 to 1813 and include observations from the northern province of Friesland, the eastern provinces of Overijssel and Gelderland, the southern provinces of Brabant and Limburg, and – last but not least – the provinces of Holland and Zeeland in the west. Unlike many other data on retail ratios, ours do not focus primarily on cities, but also include numerous small towns, villages and hamlets, many of them located in the periphery rather than the economic centre of the country. We also seek to measure retail ratios more accurately, by including retailers who combined shopkeeping with another occupation. We use these data to show how the density of retailing in the Netherlands varied across regions, over time, and with other local characteristics such as settlement size. The paper concludes by drawing the broader implications of our findings for the early modern Retail Revolution.

2. The Dataset

The dataset is based on occupational and demographic information derived from local tax registers and censuses for more than 900 Dutch localities during the period 1639-1813.⁷ From the original registers and censuses we were able to incorporate into the dataset information on year, locality, province, population size, number of household heads, number of female household heads, and number of traders.⁸ The number of traders was separated into different categories, to allow for analysis according to gender and by-employment. To the data extracted from the tax registers and censuses we added information on the presence of retail guilds, derived from the Database on Dutch Guilds 1200-1800 compiled by Jan Lucassen and Piet Lourens. Finally, all localities in the database were mapped using geographic information system software, from which geographical coordinates (corresponding to latitude and longitude) were

(2010), 301-04; Ogilvie, K pker and Maegraith (2011); Van Aert (2007), 91-102; Van Aert and Van Damme (2005), 147-50; Van den Heuvel (2007), 141, 143.

⁶ Cf. De Vries and Van der Woude (1997); Kamermans (1999); Van den Heuvel (2007).

⁷ For an overview of the tax registers and censuses used to compile this dataset see Appendix.

⁸ When population numbers could not be derived from the original register we used Lourens and Lucassen (1997).

extracted and added to the database for use as independent variables in the econometric analysis.⁹

Most estimates of retail ratios in historical economies are based on documents recording the main occupation of each individual or household. However, historians analysing occupational structure in the pre-industrial Netherlands have found that retailing was very common as a subsidiary occupation, in both rural and urban areas.¹⁰ To obtain the most accurate estimate of retail ratios, we regarded it as important to include multiple occupations whenever these were documented. We recorded information on main and subsidiary occupations separately, for two reasons. First, this made it possible better to distinguish between those engaged in full-time and part-time retailing. Second, not all registers mention more than one occupation. As we cannot know whether this arose from less accurate registration of occupations or from the actual absence of multiple occupations, we regarded it as essential to analyse our data in two ways – first with all occupations included (a ‘maximal’ measure of retailing) and then with only the main occupation included (a ‘minimal’ measure). The subsidiary retailing occupations included in our ‘maximal’ measure of retailing reflected both subsidiary activities of household heads and separate activities by different household members, typically wives.

In addition to casting our net more widely than previous studies, by including subsidiary occupations, we also used a broader definition of retailing. We took into account all persons practising a commercial occupation autonomously, i.e. excluding only those working as employees in businesses headed by others and craftsmen retailing their own products. We included, of course, anyone whose occupational descriptor referred explicitly to retailing, such as ‘winkelier’ (shopkeeper), ‘winkelhouder’ (shop-holder), ‘winkel’ (shop), and ‘-verkoper’ (a seller of a particular type of wares). But we also included anyone described as a wholesaler, such as ‘-koper’ (a buyer-up of a particular type of wares) or ‘handelaar’ (trader), and anyone described as ‘koopman’ or ‘koopvrouw’ (male or female merchant). The terminology used to describe traders differed chronologically and geographically across the early modern Netherlands. Whereas a large variety of occupational descriptors existed for

⁹ Localities were mapped using ArcGIS, from which geographical coordinates were then extracted.

¹⁰ Slicher van Bath (1977), 181; Roessingh (1965), 232; De Vries and Van der Woude (1997), 602.

traders in the large urban centres of Holland, a much narrower range was used in smaller provincial towns and rural areas. In tax registers from the eastern province of Overijssel, for example, we often only find traders registered as ‘koopman’ or ‘koopvrouw’ (male or female merchants), and from this alone we cannot establish whether that person engaged in retailing, wholesaling, or a combination of the two.¹¹ An additional reason to include all persons practising a commercial occupation is to facilitate future international comparisons: in a number of pre-modern European societies wholesalers and retailers were not recorded separately but were designated with an umbrella term for ‘traders’, a feature of archival sources which has led previous studies to include all traders in their calculations of retail ratios.¹²

The majority of the registers we use are sources that are accepted in the Dutch historiography as accurately reflecting the economic activities of heads of household.¹³ However, we also take into account some registers, mainly from the nineteenth century, which have the potential of either over- or under-recording the number of retailers.

Five observations in our dataset are based on information from early nineteenth-century registers of the Patent Tax.¹⁴ The Patent Tax, introduced under French rule, required anyone practising a trade to pay a tax to the government to be allowed to do so.¹⁵ People were classified into occupational categories according to the type of trade

¹¹ Van den Heuvel (2007), 31-4. In Amsterdam, according to Gelderblom (2000), 29-30, occupational descriptors obscure the actual activities of traders; he assumes that most people whose occupation was ‘koopman’ were probably specialized wholesalers, but that a number of them probably engaged in retail trade. In very large cities such as Amsterdam, by the late seventeenth century increasing levels of commercial specialization are likely to have led to the rise of specialized merchant-wholesalers who did not engage in any retail activities; but this is far less likely to be the case in smaller cities, towns, villages, and hamlets.

¹² For early modern Europe more generally, see Ogilvie (2010), 302 (Table 2). On the use of umbrella terms for ‘traders’ (‘Handelsmann’, ‘Handelsleute’) in an early modern German context, see Ogilvie, Küpker and Maegraith (2011), 60-1. For Dutch studies which also include ‘merchants’ as possible participants in retailing, see Kamermans (1999), 34; Harten (1971), 33.

¹³ See the following basic works in Dutch economic history which use these registers to reconstruct the occupational structure of various parts of the Northern Netherlands: Faber (1972); Harten (1971); Slicher van Bath (1977); Roessingh (1965); Van der Woude (1972). Faber (1972), 449-452, makes a passing remark expressing the view that the 1749 Friesland tax registers under-recorded persons working in the service sector. We find more persuasive the arguments advanced by Noordam (1994), 144-5, who argues that there is no reason to assume that people working in trade and transport were disproportionately under-reported in this register.

¹⁴ These are all settlements in North Holland: see the overview in the Appendix.

¹⁵ In the majority of the areas under scrutiny in this paper, including all 5 localities for which it was used in our data set, the Patent Tax was introduced in 1806; in the southern part of the province of

and the income it generated, the higher-earning occupations generally paying a higher rate than the poorer ones.¹⁶ This system had the potential for both over- and under-recording of occupations.

Over-recording could arise in several ways. If a person practised multiple, unrelated occupations, he or she was obliged to acquire multiple Patent licenses.¹⁷ In 1806, the year the tax was introduced, some local councils were reported to be compelling people to buy too many licenses when they practised related trades.¹⁸ As the law required all retailers and wholesalers, whether or not they were heads of household, to pay the licence tax, the Patent registers probably record higher numbers of traders in a certain locality than earlier tax registers which only recorded occupations of heads of household.¹⁹ When a married couple practised a trade together *and* had entered into the legal status of marital community of property (which was the normal practice), the couple was only required to acquire one license; but if the couple did not have community of property, they might have to buy two licenses for their joint trade.²⁰ The Patent Tax Law also required registration not only of permanent residents practising each occupation, but also foreign workers and itinerant salesmen, in contrast to earlier tax registers which only recorded locals.²¹

However, the Patent Tax also had the potential for under-recording the number of retailers in a locality. For one thing, the existence of a tax created an incentive to conceal occupations to avoid payment, and the documents record various fraudulent practices both by taxpayers and by local authorities responsible for the administration of the law. There is certainly evidence of local residents seeking to avoid paying the Patent Tax on their occupations despite the heavy fines imposed on those who failed

Limburg the Patent Tax was introduced in 1796 after the incorporation of this territory by the French in 1795.

¹⁶ Several occupations were exempt from the Patent Tax, but none of them concerned wholesale or retail trade activities, so this does not affect the quality of our data.

¹⁷ If one practised the same trade in more than one town, one only had to purchase one license.

Nationaal Archief (NA), Collection Gogel, inv. no. 91.

¹⁸ NA, Gogel, 91.

¹⁹ In late eighteenth-century Maastricht one category of retailers was exempt from paying Patent Tax: food hawkers, as they were deemed not to earn enough with their trade to pay the tax. This was however not the case in the early nineteenth century and therefore does not affect the outcome of the retail ratios we collected from the Patent Tax registers. Steegen (2006) 150; NA, Gogel, 91.

²⁰ NA, Gogel, 91.

²¹ NA, Gogel, 91.

to show their licence.²² Foreigners and itinerants also sought to avoid the tax, as shown by complaints sent in July 1807 to the central government in The Hague alleging that foreign peddlers had been avoiding paying the Patent Tax by posing as sales assistants or business associates rather than independent salesmen.²³ A locally administered tax inevitably also creates incentives for corrupt behaviour by local officials who may turn a blind eye to practitioners on grounds of kinship, friendship, patronage, or outright bribery.

The Patent Tax thus contained the potential for both over-recording and under-recording of occupations, both via the legitimate enforcement of its regulations and via the incentives it created for locals, foreigners, itinerants, and tax-collectors to interpret registration flexibly or avoid it altogether. These pressures are likely to have affected the overall numbers of retailers recorded in the five observations in our dataset which are derived from Patent Tax registers. However, these examples show that distortions went both directions. It cannot be definitively concluded that the Patent Tax registers systematically either over-record or under-record retailers, but our assessment is that the pressures leading to over-recording slightly outweighed those leading to under-recording. We discuss below how we deal with this issue in the statistical analysis.

A second data source that needs careful consideration is the 1807/08 census, from which 124 observations in our database derive.²⁴ For 92 of these observations the originals of the census registers have not survived so we have to rely on the archival ‘summaries’ of the originals. These summaries almost certainly under-record retailers, as shown by a systematic comparison between originals and summaries for localities in which both sources survive.²⁵ A further potential problem is that the 1807/08

²² Steegen (2006), 151; NA, Gogel, 91. Steegen argues that for retailers and wholesalers in particular, due to the public nature of their trade it was very difficult to escape paying the Patent Tax. Steegen (2006) 156-7. See also Klep a.o. (1985) 19-20.

²³ Van Lottum (2004), 39, also found that ambulant traders who were included in the Utrecht censuses of 1829 and 1839 were not always included in the Patent Tax registers.

²⁴ This excludes the 5 observations for Zeeland, which are derived from Harten (1971), 57, 67-9, who regarded the 1807 census as a reliable source on numbers of retailers in Zeeland towns.

²⁵ We found a substantial discrepancy between the original, the summary (*samenvatting*), and the summary of the summary (*verzamelstaat*). To give one example, for the Schiedam register, the summary (*samenvatting*) records 393 traders, while the summary of the summary (*verzamelstaat*) only records 329. The reasons for differences between the originals and the two levels of summary appear to have varied locally. In the Quarter of Leiden, the summaries appear only to include the first occupation

censuses might have been compiled based on the Patent Tax registers (where these were available), rather than (re-)visiting and interviewing the inhabitants. We know that this happened when the late nineteenth-century population registers were compiled.²⁶ Although there is no direct evidence that this also occurred in the early-nineteenth-century censuses, we cannot completely dismiss the possibility. If it did occur in the 1807/08 census, then this would create the same potential for both over- and under-registration of occupations as afflicts the Patent Tax registers themselves.

Our database thus includes 5 observations based on the 1806 Patent Tax registers (whose biases go in both directions, but may be slightly weighted towards over-recording), 92 based on the 1807/08 census summaries (which almost certainly under-recorded retailers), and 32 observations based on the 1807/08 census originals (which may rely on Patent Tax registers with the associated biases). We deal with this potential over- and under-recording by marking those observations as less reliable, and further indicating whether we regarded this bias to involve an over-estimation (in the case of the Patent Registers), an under-estimation (in the case of the 1807/08 registers for which only summaries were available), or a bias of indeterminate direction (mainly tax registers listing only those heads of household liable for taxation).²⁷ As discussed below, we carried out robustness tests on the regressions to evaluate whether the results were affected by data reliability; they were not.

of male household heads (excluding female heads and second occupations), while in the Quarter of Rotterdam the summaries seem only to include shopkeepers (excluding stallholders and other street vendors).

²⁶ Klep a.o. (1985) 20-21.

²⁷ We classified 134 observations as unreliable, 3 as overestimations, 119 as overestimations and 12 as ambiguous. The majority (118) were nineteenth-century observations. Of the 12 ambiguous observations, one (for Arnhem in 1749) was classified as ambiguous because it was based on the number given by Roessingh (1977) in his overview of retail services in the Veluwe and we do not know which traders he included. The other 11 observations we classified as ambiguous derived from *Klein familiegeld* tax registers known to list only those liable for taxation. These registers therefore include only a portion of the population and only a subset of household heads. As we do not know the actual size of the population, the actual number of household heads, or the economic activities of those not liable for taxation, the actual retail ratio could be either higher (if there were disproportionately many retailers among the less well-off portion of the population that is not included in the registers) or lower (if there were disproportionately few retailers among the less well-off).

3. Characteristics of the Dutch Retail Ratio and its Determinants

In discussions of the early modern Retail Revolution, the Netherlands is regarded as being at the forefront of European development. The country not only had a wide and varied network of retail outlets as early as the second half of the seventeenth century, but its retail sector was characterized by features considered to belong to ‘modern’ retail systems. Studies of Dutch retailing between c. 1670 and 1750 have shown that the country’s retailers were highly specialized, that shopping streets and neighbourhoods with dense concentrations of shops selling similar products were common, and that many retailers were selling new products such as printed cottons and ‘colonial beverages’ (coffee, tea, and chocolate) that became increasingly fashionable and widely desired in the course of the Consumer Revolution.²⁸

Previous research has also suggested that in the Netherlands large numbers of people were involved in retailing relative to the overall population. By the mid-eighteenth century, for instance, Amsterdam is estimated as having had 18-23 retailers per 1,000 inhabitants, and similar levels are observed for the cities of Leiden and Zwolle.²⁹ Even higher retail ratios have been measured for the Brabant town of ’s-Hertogenbosch in 1742 (37 per 1,000) and for towns in the province of Zeeland in 1807 (26.5 per 1,000).³⁰ Nor were high retail densities limited to urban areas, as shown by some rural localities in the province of Holland which had retail ratios as high as 26 per 1,000.³¹ Ogilvie’s recent comparison across 308 different early modern European localities found that the average retail ratio across 48 localities in the Netherlands covering the period 1639-1811 was a striking 22.9 per 1,000, significantly higher than the ratios observed for 190 localities in Germany, which varied between 3.7 and 7.7 per 1,000.³² However, most of the Dutch observations in this comparison were for relatively large urban centres and for the province of Holland and thus may not accurately reflect retail density in the country as a whole.³³ Indeed, the data available on retailing in

²⁸ Van den Heuvel (2007), 181-187; Lesger (2007); Van Aert and Van den Heuvel (2007); Van den Heuvel and Van Nederveen Meerkerk (2010).

²⁹ De Vries and Van der Woude (1997), 581; Van den Heuvel (2007), 143.

³⁰ Harten (1971), 33; Van den Heuvel (2007), 143.

³¹ Van den Heuvel (2007), 143.

³² Ogilvie (2010), 302 (Table 2).

³³ Retail ratios for scattered localities, regions and dates are reported in Kamermans (1999), 34 (Krimpenerwaard 1807 1.51 per 1,000 (shopkeepers only), 2.32 (shopkeepers and merchants)); Harten (1971), 33 (Zeeland 1807 rural areas 6.4, towns 26.5; total 13.9 (shopkeepers only) rural areas 8.9,

areas of the Netherlands outside the core province of Holland point to a substantial variation in retail ratios, not only between urban and rural areas, but also across the country.³⁴ Unfortunately, many of these data are only available at an aggregate level and as a result provide little insight into local and regional variation, or into the factors that may have given rise to such variation.³⁵ Here we broaden the analysis to the Netherlands at large, explore different definitions of the retail ratio, and investigate how retail density varied with other factors.

We collected 966 observations of retail ratios for different Dutch localities between 1639 and 1813. Not all observations had information on all the variables of interest outlined in the description of the dataset above, but three large data subsets proved suitable for analysis. The first consisted of 959 observations, for which full information was available on all variables of interest except for two: whether retailing was the main occupation and the sex of the household head. The second subset consisted of 873 observations, for which full information was available on all variables, including whether retailing was the main occupation, but not the head's sex. The third subset consisted of 751 observations for which full information was available on all variables, including whether retailing was the main occupation and head's sex. We describe the characteristics of the three datasets in detail below.

3.1. Measures of the Retail Ratio

Retail ratios varied considerably across early modern Dutch localities, as Table 1 shows. The 'maximal' retail ratio (which includes retail by-employments) varied from 0 to over 112 per 1,000 inhabitants, with a mean of just over 8 for the large data subset and just over 6 for the smaller data subsets. Even the 'minimal' retail ratio (which excludes by-employments) covered a very considerable range, from 0 to over

towns 33.8, total 18.5 (shopkeepers and merchants)); Van den Heuvel (2007), 143 (Zwolle 1742 22 per 1,000; Leiden 1749 24 per 1,000; 's-Hertogenbosch 1742 37 per 1,000, Graft 1748 21 per 1,000, Winkel 1742 26 per 1,000, De Zijpe 1742 12 per 1,000); De Vries and Van der Woude (1997), 581 (Amsterdam 1742 (estimate) 18-23 per 1,000); Slicher van Bath (1977), 170 (Overijssel 1795 10.25 per 1,000 (10.72 including by-employments)); Roessingh (1965), 228 (Veluwe 1749 5 per 1,000); Van der Woude (1972), 300 (Noorderkwartier 1811 16 merchants and shopkeepers per 1,000).

³⁴ Harten (1971), 33; Slicher van Bath (1977), 170; Roessingh (1965), 228; Kamermans (1999) 34.

³⁵ Another problem with the rural data presented in existing historiography is that it is not usually clear which types of traders are included – retailers only, retailers and wholesalers, retail by-employments, and so on.

82, but unsurprisingly with a lower mean of around 5. For both measures of the retail ratio, the distribution was skewed towards the lower end of the distribution in all data subsets, as shown by the fact that the median was zero or nearly so. Even for the ‘maximal’ measure of the retail ratio, about half of all localities had zero retailers, and for the ‘minimal’ measure this rose to c. 55 per cent.

Differences in retail ratios among localities are likely to result from differences in other factors. For instance, the localities in our dataset varied greatly not just in their retail ratios but also in their dates of observation, their population sizes, and their geographical location. Perhaps the settlements with low or zero retail ratios had a low density of retailing because they were observed at earlier dates, had fewer inhabitants, were located in particular areas of the country, or had other features which deterred retailers or their potential customers. What values did these characteristics take for the localities in our dataset?

3.2. Settlement Size

In theory, the population size of a locality might be expected to increase retail density in several ways. First, larger settlements may have higher average incomes, increasing the demand for retailing, since Engel’s Law predicts that richer consumers will spend a higher share of their incomes on tertiary goods (such as retail services) than will poorer ones.³⁶ Second, larger settlements have the potential for a more extensive division of labour, creating a demand for retailers to reduce exchange costs between producers and consumers of different goods. Third, larger settlements tend to function as central places for the surrounding region, exchanging secondary goods and tertiary services for rural primary products.³⁷ Fourth, larger settlements are widely held to create economies of agglomeration – positive externalities in the form of improved information flow, specialization, division of labour, or the ability to attract more suppliers and customers than a single producer could alone. On the other hand, large cities can also suffer from *diseconomies* of agglomeration through congestion, pollution and other negative externalities; perhaps more relevantly for pre-modern societies, larger towns and cities may suffer from diseconomies of scale arising from

³⁶ Wrigley (2011), 9-10.

³⁷ Christaller (1933).

competition, shortage of labour, or lack of flexibility.³⁸ Furthermore, the Dutch countryside is also supposed to have commercialized in this period, which may diminish the expected impact of the population size of a locality on its retail ratio.³⁹ On the whole, however, since the early modern period saw the decisive shift from periodic fairs to continuous urban markets in Europe, combined with rapid urbanization specifically in the Netherlands, we would expect economies of agglomeration to have predominated over diseconomies in this period.⁴⁰

In addition, there is the possibility that settlement size affected retail density differently in different geographical regions. Some region-specific features might have widened the gap in retailing between large and small settlements. In more highly urbanized provinces of the Netherlands, for instance, the provision of retail services in large urban centres might have acted to stifle retail development in the surrounding countryside, increasing the difference in retail density between large and small settlements and thus increasing the coefficient on settlement size.⁴¹ A further possibility is that in Dutch provinces with stronger urban privileges institutional constraints might have increased the costs and risks of village retailing, widening the retail gap between large and small settlements. Although guilds in the Netherlands did not extend their controls into the countryside to the extent observed in other early modern European societies such as Germany, there is evidence that retailers' guilds in some Dutch towns did exert power over nearby villages. In 's-Hertogenbosch, for instance, the retailers' guild legally obliged anyone wishing to operate a retail establishment in the neighbouring village of Den Dungen to obtain guild membership.⁴² Guild admission requirements could be particularly burdensome for villagers, who were usually poorer than townspeople and typically operated more modest retail establishments. Where an urban guild was able to impose barriers to entry to rural retailing, this could maintain a significant gap in retail density between town and country.

³⁸ Fujita and Thisse (1996).

³⁹ As pointed out by De Vries (2008), 93-5, 128.

⁴⁰ De Vries (1984).

⁴¹ Faber found this in early sixteenth-century Friesland. Faber (1971), 96.

⁴² Gemeentearchief 's-Hertogenbosch, Archief van het kramers- en tingietersgilde, inv.no. 183.

On the other hand, there were region-specific features with the potential to narrow the retail gap between large and small settlements. In more highly urbanized Dutch provinces, the abundance of urban retail services might not have substituted for village shops but instead have acted as an inspiration to inhabitants of the surrounding countryside, causing villagers to demand retail outlets closer to home, where they would be able to purchase consumer goods similar to those for sale in the towns, albeit on a smaller scale, reducing the difference in retail density between large and small settlements. Furthermore, in Dutch provinces where city-dwellers adopted the fashion of setting up country houses (*buitenplaatsen*), the difference in retail density between cities and smaller rural settlements might have been diminished by the demand of these urban outsiders for retail services near their country houses similar to those they were accustomed to at home in the city.⁴³ In the provinces of Holland and Utrecht, where wealthy townspeople bought land and built country houses in areas surrounding the cities to spend the summer to escape from the heat and smell, the temporary but recurring influx of urban dwellers with money to spend might have provided a stimulus to village retailing, narrowing the gap in retail density between town and country.⁴⁴ Conversely, the relative lack of burghers' country houses in central or eastern Dutch provinces might have prevented this diffusion of urban behaviour into villages, sustaining a wider gap between town and country. Including interaction terms between settlement size and province in our regressions enables us to explore these countervailing hypotheses about possible geographical determinants of the gap in retail density between town and country in different regions of the Netherlands.

Previous studies of early modern European retailing have understandably focused mainly on large urban centres.⁴⁵ Not only were substantial changes in the retail sector (both an expansion of its size and an alteration of its character) first observed in cities, but many of the archival sources that provide an insight into the early modern retail sector are records of various retailers' guilds. As these guilds were mostly found in

⁴³ Schama (1991) 290-4.

⁴⁴ Cf. the remark by Braudel on the demand for retail services from wealthy Dutch townspeople living in country houses during the summer. Braudel (2002) 78.

⁴⁵ The historiography of early modern retailing can be divided into two strands which unfortunately show little overlap: some historians focus on stationary retailing, mainly in urban centres (for examples, see footnote 26), while others focus on ambulatory retailing, mainly in rural areas and over long distances, e.g. Spufford (1984); Oberpenning (1996); Fontaine (1996).

large urban centres, the focus of the historiography on retail growth has been on urban developments.⁴⁶ Despite important work on retail growth in rural areas of the Netherlands by Slicher van Bath, Roessingh, De Vries, Van der Woude, Faber, Harten, and Kamermans, these findings have not fully found their way into the wider debates on retail development in the Dutch Republic.⁴⁷ This emphasis on urban retailing is reflected in the fact that the mean population size of the 308 European localities whose retail ratios were analyzed by Ogilvie was over 14,000 and the median was nearly 1,600. For the 48 Dutch localities in that dataset, the mean population size was 9,995 and the median was 2,134. Even though Ogilvie's dataset did include some smaller Dutch localities, and even though her econometric analyses did control for settlement size, that study focused primarily on urban centres and its findings may not apply to villages or even small country towns.⁴⁸

By contrast, as Table 1 shows, the localities in our Dutch dataset cover the whole range of population sizes from very small (a hamlet of 5 inhabitants) to very large (a city of 67,000). In the largest data subset, the mean population is c. 970 and the median 285; the smaller data subsets have means of 700-780 and medians of 216-265. In the largest data subset, one-fifth of localities have fewer than 100 inhabitants, two-thirds have fewer than 500, and over four-fifths have fewer than 1,000; in the smaller data subsets, the proportion of small localities is even higher. Due to unavailability of data, the outstandingly large city of Amsterdam, which had a population of 220,000 during most of the period under study, is excluded from our dataset.⁴⁹ While it is regrettable that no data on retail ratios are available for Amsterdam, it also means that our results are not skewed by the inclusion of such an extraordinary – probably unique – place.

⁴⁶ Examples are Stegeman (1991); Jongman (1951); Streng (2001); Steegen (2006); Van den Heuvel (2007); Van den Heuvel (2008). Also several M.A. theses have been written on the basis of such guild records: see Bot (1996); Peters (1987); Becker (n.d.). For the Southern Netherlands, see Blondé and Greefs (2001); Van Aert (2007); Van Damme (2007).

⁴⁷ Exceptions are Van den Heuvel (2007) which compares retail density and levels of specialization in retailing between rural and urban areas; and De Vries (2008), which connects it with the theory of the Industrious Revolution.

⁴⁸ Ogilvie(2010), 302 (Table 2).

⁴⁹ For Amsterdam only two tax registers have survived, one for 1580 and one for 1742, both of which only include 5 per cent of household heads. The population of Amsterdam was 219,000 in 1680, 242,326 in 1720, 220,000 in 1742 and 221,000 in 1795. On this, see Van den Heuvel (2007) 279, 283.

This wide range of variation in our Dutch dataset, and the inclusion of many small localities, enables us to go beyond existing literature to explore the development of retailing in both urban centres and the countryside. This is particularly important because the early modern period is supposed to have seen wider social strata, including rural ones, becoming involved in market production (as part of the Industrious Revolution) and in market consumption (as part of the Consumer Revolution). Did they also participate in the Retail Revolution? Our data enable us to explore this hypothesis systematically for the first time.

3.3. Time

Superficially it might seem obvious that retail density should also have increased as time passed. For one thing, economic growth would be expected to cause retailing to expand because of Engel's Law, according to which, as incomes rise, people will spend a larger share of their income on 'luxuries' which include more secondary and (especially) tertiary products. Secondly, the early modern period in particular is supposed to have seen a Commercial Revolution, part of which should have involved a rise over time in retail density. Thirdly, during the early modern period the Dutch Republic acquired colonies in the West and East Indies, which provided direct access to new consumables for which demand expanded over the seventeenth and eighteenth centuries. Finally, studies of Dutch inventories show that during the early modern period there was an increasing tendency for people to shift away from durable products towards items with a much shorter lifespan, giving rise to a pattern of replacing household goods and clothing on a regular basis.⁵⁰ This in turn is thought to have made fashion more important, in turn stimulating frequent purchases of goods and increasing demand for the services of retailers in the course of the early modern period.⁵¹

However, there are problems with this simple hypothesis of unidirectional expansion of retailing over time. One complicating factor is that growing commercialization will not necessarily bring in its wake a proliferation in the number of retail establishments

⁵⁰ De Vries (1974); Kamermans (1999); Dibbitts (2001); Koolbergen (1983).

⁵¹ Lemire (1997); Shammass (1990); Van Damme (2007); Van Aert (2007); Blondé and Van Damme (2010)

but may instead cause existing shops to consolidate and expand. This certainly happened to retailing in most European economies in the later nineteenth and early twentieth century, as small corner shops gave way to larger department stores.⁵² Our dataset does not cover this later period but it is not unthinkable that such phases of consolidation and expansion of scale also occurred earlier.

A second complication is that even if commercialization does involve expansion in shop numbers rather than in shop size, the pace of expansion may vary over time. Any economy will tend to experience phases of rapid commercialization followed by phases of slower growth or even stagnation, and then a return to expansion in some later period. We should not assume a uniform growth trajectory over time, even if over the very long term retailing expanded.

Features of the available archival sources on Dutch retail ratios give our dataset characteristics that preclude free selection of chronological break-points or time-phases. All but two of our data points are clustered in four ‘decades’ – the 1670s (1673-1680), the 1740s (1735-49), the 1790s (1795-7), and the 1800s (1803-13). The two observations falling outside these clusters date from 1639 and 1775. Lacking a scatter of observations across the entire time span from 1673 to 1813 compelled us to define dummy variables for each ‘decade’ and then test for differences among the ‘decades’.

What would we expect to be the effect of time on retail ratios in the early modern Netherlands? The Dutch historiography provides us with interesting hypotheses to test in this context. The Netherlands is regarded as experiencing its economic ‘Golden Age’ from c. 1550 to c. 1650. Unfortunately we have only one observation during the ‘Golden Age’ itself, for the town of Zwolle in Overijssel in 1639. This isolated observation cannot readily be included in the regression analysis because it falls outside the four decadal clusters and we have no other localities observable during the Golden Age. The retail ratio in Zwolle was already quite high in 1639, at over 29 per 1,000. On the other hand, Zwolle was already fairly large (over 8,500 inhabitants), nearly nine times the average settlement size in our sample and 30 times the median

⁵² Jefferys (1954); Mathias (1967); Alexander (1970); Schrover (2002).

size. Perhaps equally important was Zwolle's history as a member of the Hanseatic League: even though the importance of Zwolle and other eastern Dutch towns had declined over the sixteenth century as the commercial centre of the Netherlands moved to the cities of Holland, Zwolle remained an important regional trading centre throughout the early modern period.⁵³ This single 'Golden Age' retail ratio of 1639 may thus be high simply because Zwolle was a relatively large urban centre with a distinctive commercial history.

The earliest period we can analyze systematically is the 1670s, nearly a quarter of a century after the Dutch Golden Age is thought to have come to an end. Interestingly, however, in recent micro-studies of retailing in the Low Countries the period between the 1670s and 1750s is regarded as one in which the expansion and diversification of retailing is supposed to have taken off.⁵⁴ This raises several competing hypotheses. Would one expect retail ratios to be already quite high in the Netherlands in the 1670s because of the preceding century or more of Dutch economic expansion? Alternatively, would one expect the Netherlands to have already entered a period of slower commercial growth with the end of the Golden Age? Or thirdly, did the Golden Age only involve some types of economic expansion (e.g. in agriculture and long-distance trade) and did the most important phase of expansion in the retail sector still lie in the future, e.g. in the eighteenth century?

As far as development of retailing during the eighteenth century is concerned, our data permit us to analyse changes between the late seventeenth and the mid-eighteenth century (by comparing the 1670s with the 1740s), and also changes occurring in the second half of the century (by comparing the 1740s and 1790s). The historiography on the Dutch eighteenth century is divided. On the one hand, micro-studies of particular places – mainly urban centres – and of particular segments of the retail trade – textiles and colonial groceries – find evidence that the retail sector continued to expand and develop.⁵⁵ On the other, the Dutch economy as a whole saw slower growth or even stagnation between the end of the seventeenth and the end of the eighteenth century, as institutional structures became more rigid, high wages

⁵³ Wijngaarden (2000); Streng (2001).

⁵⁴ Van den Heuvel (2007); Van Aert and Van den Heuvel (2007); De Vries (2008); Blondé and Van Damme (2010); Van den Heuvel and Van Nederveen Meerkerk (2010).

⁵⁵ Van Aert and Van den Heuvel (2007); Van den Heuvel and Van Nederveen Meerkerk (2010).

decreased competitiveness, and the commercial centre of Europe shifted away from Amsterdam towards London. Economic disruption was intensified in the 1770s and 1780s, with rising conflict between the Orangists (royalists) and the Patriots (democrats), the military and economic disaster of the Fourth Anglo-Dutch War (1780-4), and the Patriot Rebellion of 1787 resulting in Prussian military occupation. Given these countervailing forces, of growing general commercialization but decelerating growth and relative economic decline, the predictions to be derived from the secondary literature are ambiguous. Would one expect retail density to continue to rise rapidly as a highly commercialized economy became more sophisticated even though its growth rate was decelerating, as has been argued by Blondé and Van Damme for the city of Antwerp in the neighbouring Southern Netherlands (present-day Belgium)?⁵⁶ Alternatively, would one expect retail density to stagnate in parallel with the wider economy, and if so did it occur in the first or the second half of the eighteenth century?

Finally, our data enable us to analyse retail density in the early nineteenth century, specifically the decade from 1803 to 1813, and to compare it with earlier periods. The historiography makes conflicting predictions about the Dutch economy between c. 1780 and 1813.⁵⁷ On the one hand, the period saw severe disturbances to the established political order: French invasion and occupation in 1795, regime change and a new French Bonaparte monarch in 1806, direct incorporation into the French empire in 1810, and the Orangist invasion of 1813. These events might be expected to disrupt economic activity, reducing growth and stifling commercialization. On the other hand, the Napoleonic occupation in the Netherlands, as in German territories, saw a number of reforms such as the abolition of guilds (including retailers' guilds) and the dismantling of other institutional and legal barriers to economic participation.⁵⁸ This form of disruption, insofar as it broke down entrenched privileges, removed barriers to entry, or created space for new commercial practices,

⁵⁶ Blondé and Van Damme (2010).

⁵⁷ See, for instance, the differences in the assessment of the late-eighteenth-century and early-nineteenth-century Dutch economy between De Vries (1953), De Vries and Van der Woude (1997), and Buyst and Mokyr (1990) on the one hand; and Van Zanden and Van Riel (2000) on the other.

⁵⁸ Van Zanden and Van Riel (2000).

might have enabled retail density to increase.⁵⁹ Our data enable us to test these hypotheses about how Dutch retailing differed between this period and previous ones.

Fortunately our dataset contains a relatively large number of observations for each of the four time-clusters, as Table 2 shows. Even for the least well-represented period, the 1670s, we have nearly as many observations (45) as had been previously gathered for the Netherlands across the whole early modern period (48).⁶⁰ For the 1740s we have ten times as many observations, for the 1790s seven times as many, and even for the 1800s three times as many.

At first sight, looking just at the decadal averages, it might appear that retail ratios were already reasonably high in the 1670s (at a mean of 8.4 and a median of 2), but fell between then and the 1740s (mean 6, median 0), and declined further up to the 1790s (mean 3.7, median 0), before rising spectacularly by 1803-13 (mean 23.8, median 21.4). But not all these period differences are statistically significant and, more seriously, they do not control for other variables such as settlement size or location in a particular province of the Netherlands. Unfortunately, the nature of surviving archival sources means that observations for particular decades are also clustered in particular Dutch provinces. Fortunately, however, for most decades we have been able to assemble at least some observations for several different provinces, providing enough variation to test for the effect on retail density of both time and space.

3.4. Space

This leads to the question of how retail density varied spatially. Hitherto the literature on retail ratios has focussed primarily on differences across national units, or even supra-national ones such as German-speaking central Europe. Mui and Mui pointed out the relatively high retail ratios observed in early modern England, Blondé and Van Damme focussed on the high retail ratios found in cities of the Southern Netherlands in the eighteenth century, and Dutch historians emphasized the density of commercial

⁵⁹ Horlings (1995), 290-291; Van Zanden and Van Riel (2000), 108.

⁶⁰ Ogilvie (2010), 302 (Table 2).

occupations in urban centres of the early modern Dutch Republic.⁶¹ Ogilvie showed that the variation in retail ratios across different early modern European societies was statistically significant, even controlling for settlement size and date of observation, with significantly higher retail ratios in the north Atlantic region (England, Northern Netherlands, and Southern Netherlands) than in German-speaking central Europe, and further significant differences among the low-retail-density German territories.⁶²

This raises the question of whether retail density also varied spatially *inside* territorial units. Previously reported Dutch retail ratios – such as the 5 per 1,000 observed in the Gelderland rural region of Veluwe or the 1.5 per 1,000 for the South Holland rural region of Krimpenerwaard – already suggest that there was at least some variation across regions of the Netherlands. The question is what precise form this variation took.

Our data enable us to explore such variation in two ways. The first is purely spatial: the latitude and longitude of the specific locality. Precise geographical coordinates show that the localities in our dataset are scattered across nearly the whole geographical expanse of the Netherlands. Thus our localities vary in latitude between 53° 24' N (Wierum and Paesens) and 50° 47' N (Eijsden), and in longitude between 7° 0' E (Lossen) and 3° 35' E (Vlissingen). The Netherlands extends geographically from its northernmost point at 53° 52' 05" N to its southernmost point at 50° 45' 05" N (a total distance of 312 km), and from its westernmost point at 3° 21' 31" E to its easternmost point at 7° 13' 14" E (a distance of 264 km).⁶³ Our dataset thus covers almost the whole geographical extent of the country, as can be seen on Map 1.

The Dutch historiography postulates a west-east economic gradient within the early modern Netherlands, according to which the economy became less commercialized as one moved from the North Sea coast in the west to the German border in the east. In the west of the country not only were urbanization levels higher, but both guild

⁶¹ Mui and Mui (1989); Blondé and Van Damme (2010); Harten (1971) 33; De Vries and Van der Woude (1997), 581; Van den Heuvel (2007) 143.

⁶² Ogilvie (2010), 302-04 (Tables 2-3).

⁶³ <http://home.planet.nl/~veenhh/borderland/nederland/pa-extremes.htm>, derived from Centraal Bureau voor de Statistiek (2000). The geographical centre of the Netherlands lies at 52° 6' N, 5° 39' E.

membership and access to town citizenship were open to broader groups of people.⁶⁴ The historiography is less explicit about north-south differences, since the early modern Netherlands had some fairly rural and non-commercialized areas both in the far north (Drenthe) and in the south (Brabant).⁶⁵ One would therefore predict a negative relationship between retail density and longitude (i.e., declining retail ratios as one moves eastwards) and an indeterminate relationship with latitude (i.e., no special reason to expect retail ratio to change systematically as one moves from the north to the south of the country).

Our data also include an alternative spatial variable which combines pure location with territorial affiliation – namely, the province in which a town or village was located. It is not merely incidental that between 1581 and 1795 the Northern Netherlands were called the ‘United Provinces’ or (more officially) the ‘Republic of the Seven United Netherlands’. These seven provinces were Gelderland, Holland, Zeeland, Utrecht, Overijssel, Friesland and Groningen; in addition, there was an eighth province, Drenthe (too poor to pay federal taxes and therefore denied parliamentary representation), plus the so-called ‘Generality Lands’ (Brabant, parts of Limburg, and small areas of Zeeland and Gelderland) which were ruled by the central government and lacked parliamentary representation. As in most territorial confederations, each province of the Netherlands not only differed in geographical location but had, to a greater or lesser extent, a distinct history, economic trajectory, institutional framework, and identity.

We were able to obtain data on retail density and a number of potential influences on it for seven provinces, two in the west (Holland, Zeeland), two in the east (Overijssel, Gelderland), two in the south (Brabant, Limburg), and one in the north (Friesland). We split the province of Holland into the Noorderkwartier and the Zuiderkwartier (referred to as North Holland and South Holland) and analysed the two parts of the province separately.⁶⁶ The only provinces missing altogether are Groningen in the far north, Drenthe in the far northeast, and Utrecht in the centre-west. However, for

⁶⁴ Lourens and Lucassen (2000).

⁶⁵ Slicher van Bath (1977), 729.

⁶⁶ The Noorderkwartier and Zuiderkwartier were two separate administrative entities within the province of Holland and correspond roughly to the current provinces Noord-Holland and Zuid-Holland which were formed in 1840.

Brabant we had only three observations, all for the same locality (the town of 's-Hertogenbosch), and for Zeeland only five observations, all for the same year (1807). Lacking sufficient variation for these provinces led us to exclude them from the multivariate analyses. Nevertheless, many of the characteristics of the excluded provinces are covered in the provinces that are included in our dataset. As Table 2 shows, we have a substantial number of observations for the six remaining provinces, with over 50 observations for even the least represented province (North Holland) and over 350 observations for Friesland. We are thus in a good position to explore the extent and nature of variation in retail density across these six Dutch provinces, which represent all geographical extremes of the country at large.

The Dutch historiography provides a rich but internally inconsistent basis for hypothesizing how provincial affiliation might affect retail density.⁶⁷ One possibility is that inter-provincial differences followed the negative west-east gradient already discussed, but in that case one would expect the longitude variable to be a more important influence on retail density than provincial affiliation. Another possibility is that spatial differentiation was a function of coastal as opposed to inland location. This would partly follow the west-east gradient, but not fully, as both Friesland and Groningen are coastal provinces which lie in the eastern part of the country. A third possibility is that particular provincial institutions or path dependencies, such as the historical dominance of the province of Holland, had an effect on retailing that was independent of (or stronger than) location in a purely geographical sense.

We therefore include province alongside longitude and latitude as potential explanatory variables in the multivariate framework. We also include interaction terms between province and date to examine whether the time-path of retail density differed among Dutch provinces, and interaction terms between province and population to examine whether the effect of settlement size on retail density varied geographically in this way.

⁶⁷ At least four different systems of inter-provincial variation can be derived from the historiography on the Dutch economy between 1600 and 1815. Cf. Lourens and Lucassen (2000); De Munck, Lourens and Lucassen (2005); Hurlings (1995); De Vries (1984).

3.5. Retailers' Guilds

Commercial expansion is widely regarded as being connected with the existence of particular institutional structures. Some institutions lower the costs of trade (for instance by efficiently enforcing property rights and facilitating contract enforcement), while others increase trade costs (for instance by enabling established traders to erect barriers to entry against potential competitors).⁶⁸ In explaining variations in retail ratios we would like to obtain a measure of institutional differences across our observations.

One key institutional variable is the strength of retailers' guilds. Guilds of retailers were widespread in early modern Europe, and were almost ubiquitous in some societies such as the German territories, where they erected formidable barriers to entry into retailing by low-cost practitioners such as women and migrants, or those wishing to practise retailing alongside another occupation.⁶⁹ Retailers' guilds also existed, although less universally, in more commercialized societies such as England⁷⁰ and the Northern and Southern Netherlands.⁷¹ Micro-studies of the activities of Dutch retailers' guilds suggest that although they were more liberal than craft guilds, they nonetheless erected barriers to entry, especially by low-cost practitioners such as women.⁷² On the other hand, there are studies which argue that guilds were beneficial for the economy because they provided training and quality guarantees creating trust between sellers and buyers.⁷³

To examine whether the constrictive or facilitative effects of retailers' guilds predominated, it is therefore of interest to explore whether the presence of a retailers' guild in a particular locality was associated with a higher or lower density of retailing. We were able to obtain information on retailers' guilds for all observations in our

⁶⁸ For a discussion of these countervailing institutional influences on pre-modern commerce, see Ogilvie (2011), ch. 1.

⁶⁹ Ogilvie (2010), 298-304; Ogilvie, K pker and Maegraith (2011).

⁷⁰ Walker (1985); Berger (1993).

⁷¹ Van den Heuvel (2007); Van Aert (2007).

⁷² Van den Heuvel (2007); Van den Heuvel (2008).

⁷³ For an excellent general summary of these arguments, see Epstein and Prak (2008); for the questions this raises in the context of the early modern Consumer Revolution, see De Munck (2008), 197, 201-02, 216, 224-5, 229, 231-2.

dataset: as Table 2 shows, a retail guild was present in the locality for 22 of our observations (2.3 per cent of the total dataset).

However, exploring the effect of guilds in a multivariate context encounters a serious econometric problem. This is caused by the fact that retailing may affect the existence of the guild as well as vice versa. On the one hand, retailers' guilds had the potential to affect retailing density through their institutional activities – whether positively or negatively. On the other hand, retail density had the potential to affect the formation of guilds. First, a retailers' guild was only likely to be formed when there was a sufficient absolute number of retailers in the locality to set it up. Second, one potential impetus to the formation of a retailers' guild was that there was a particularly high density of retailers relative to the local population of potential customers, creating an incentive for established retailers to erect institutional barriers to entry to prevent further competition for scarce customers.⁷⁴ Furthermore, there might be underlying variables – e.g. the political economy of a particular locality or region – that affected both the presence of guilds and the presence of retailing.

Because causation is likely to go both ways between the presence of a retailers' guild and the density of retailing, and because there may be relevant explanatory variables omitted from the model (the underlying causes of both retail ratio and guild presence), any variable registering the presence or absence of a retailers' guild is likely to be correlated with the error term in the regression equation. In this situation, regression analyses generally produce biased and inconsistent estimates. Including 'retailers' guild' in a regression in which 'retail ratio' is what we are trying to explain may lead to biased estimators for coefficients on that variable and on other variables, and to unreliable results in general. Ideally, what we need is an instrumental variable which has a strong correlation with the presence of retailers' guilds but not with the retail ratio – a variable that could be expected to affect the retail ratio only via its effect on the presence of guilds. Unfortunately, the historiography on the determinants of the presence or absence of retailers' guilds in the Dutch Republic (or in any early modern economy) is as yet not sufficiently developed to provide such a variable. For this reason, we were unable to include an instrumental variable for retailers' guilds in our

⁷⁴ Cf. the relationship between urbanization, economic growth and guild formation suggested by De Munck, Lourens and Lucassen (2005), 65-6.

multivariate analyses. We therefore decided to run our regressions with and without the endogenous variable (presence of retailers' guilds) in order at least to find out whether it was positively or negatively associated with the retail ratio and whether taking it into account significantly altered the estimated effect of other explanatory variables.

3.6. Female Household Headship

The same problem of endogeneity arises with female household headship. The historiography for both the Northern and the Southern Netherlands suggests a positive relationship between the proportion of households headed by females and the intensity of retailing in a locality.⁷⁵ After textile production, retailing was the most common occupation for early modern Dutch women, especially in urban centres, but also in a number of rural areas.⁷⁶

Again, the potential causal relationships go in both directions – although in this case they are uniformly positive. On the one hand, women may prefer to engage (or may be more productive) in retailing than in other occupations. Retailing was commonly advocated by contemporaries as a trade that was particularly suited for female heads of household.⁷⁷ In addition, female household heads may be more productive in retailing than other activities because keeping a shop can be more easily combined with household production (especially child care) than can agriculture or many crafts, more of whose tasks may need to be carried out in non-domestic locations. Women may be more productive in retailing because it requires communication and calculation skills rather than the physical (especially upper-body) strength required for farming, labouring, or heavy crafts. This effect may have even been stronger in the Dutch Republic than elsewhere in Europe as Dutch women are known to have been relatively well educated.⁷⁸ Furthermore, early modern women may have favoured retailing over skilled manufacturing trades because although retail guilds did erect entry barriers which affected women, they were generally more lenient towards

⁷⁵ Wijssenbeek (1987); Van Deursen (1988); Schrover (1997); Kamermans (1999) 31; Schmidt (2001) 125; Mosmuller (2004); Van Aert (2006).

⁷⁶ Van Nederveen Meerkerk (2007); Van den Heuvel (2007).

⁷⁷ Van den Heuvel (2007), 44-45.

⁷⁸ Kuijpers (1997); Spufford (1995); Van den Heuvel (2007), 46-56; De Moor and Van Zanden (2010).

female membership than were craft guilds, which typically excluded females from apprenticeship and journeymanhood.⁷⁹ For all these reasons, if female headship was high for exogenous reasons (e.g. higher male mortality, differential male emigration, warfare, naval and military employment, etc.), then the resulting greater density of female household heads may have led to a greater density of retailing. On the other hand, however, if retailing was dense for exogenous reasons (e.g. better transportation and communication links, higher commercialization, better institutions, more favourable government policies), this may have favoured the establishment of female-headed households by making it more possible for women to earn a livelihood independently rather than working in households headed by males. Finally, exogenous factors may have facilitated both female headship and retailing: more flexible institutions may have enabled women to support themselves independently in all occupations (not just retailing) and may have enabled all economic agents (not just women) to set up retail establishments.

These two-way causal links between retailing and female headship create the same econometric problems as already discussed in the context of the endogeneity between retailers' guilds and the retail ratio. As with that endogenous variable, so too with female headship, it proved impossible to identify an instrumental variable that would be strongly correlated with female headship but not with the retail ratio so that one could be certain that its effect on retailing was exerted wholly via the female headship rate. This is largely because the determinants of female headship rates in historical (and modern) societies are still not fully understood, and seem likely to be affected by a wide variety of demographic, economic, and institutional variables. The historiography leads us to predict that female headship rates were likely to be influenced by occupational structure (e.g. by retail ratios) and also by other variables which affected retail ratios such as urbanization and the passage of time.⁸⁰

We were able to assemble measures of female headship for a large subset of our observations, as Table 2 shows. The localities in our dataset showed a wide range of female headship rates, ranging from a high of 37 per cent female household heads to a

⁷⁹ Van den Heuvel (2007); Van den Heuvel (2008); Schmidt (2009).

⁸⁰ For a consideration of the determinants of female household headship rates in pre-modern European societies, see Ogilvie and Edwards (2001).

low of zero. The average female headship rate across the 751 observations for which information on this variable was available was just over 12 per cent, which is in the range to be expected for a sample of predominantly rural western European settlements.⁸¹ However, given the probable two-way causality between female headship and retail density, we followed the same strategy as with retailers' guilds, running our regressions with and without the female headship variable in order to find out whether it was positively or negatively associated with the retail ratio and whether taking it into account significantly altered the estimated effect of other explanatory variables.

4. Multivariate Analyses of the Dutch Retail Ratio

To explore how retail ratios in the early modern Netherlands varied across space and time while controlling for other potential influences, we carried out a series of Tobit regressions with the retail ratio as the dependent variable and population size, date, province, latitude, longitude, retailers' guilds, and female headship as explanatory variables. As already discussed, we used two different measures of the retail ratio – a 'maximal' measure including retail by-employments (giving rise to the regressions in Table 3) and a 'minimal' measure including only main occupations (the regressions in Table 4). Whether occupations were main or subsidiary ones was fully recorded for only 873 observations, so the model for the 'minimal' retail ratio could only be estimated for this smaller data subset. Since the loss of 86 observations as well as the shift from 'maximal' to 'minimal' retail ratio could affect the results, a separate model was estimated for the 'maximal' retail ratio using that smaller data subset (in Table 3 Regression 2) in order to ensure comparability between the results for the two different definitions of the retail ratio.

Most of the observations (87 per cent) were regarded as extremely accurate, but for the reasons discussed above in Section 2 we regarded a small number (12 per cent) as potentially under-estimating retail ratios and an even smaller number (less than 1 per cent) as potentially over-estimating them. Since these observations were unevenly distributed across time-periods and provinces, excluding them altogether would have

⁸¹ For comparative data on female headship across other early modern European societies, see Ogilvie and Edwards (2001).

created a data sub-sample incapable of registering important chronological and spatial influences. Instead, we tested for robustness by re-estimating all models on a dataset in which 1, 3, 5, and 10 points were progressively added to the retail ratios of the observations suspected of being under-estimates and were analogously progressively subtracted from the retail ratios of the observations suspected of being over-estimates. These robustness tests seemed appropriate given the orders of magnitude involved: the mean retail ratio was less than 8 per 1,000, fewer than 15 per cent of localities had retail ratios over 20, and fewer than 7 per cent exceeded 30. Neither separately nor in combination did these robustness tests alter the models estimated or the results of the hypothesis tests. This encouraged us to be confident that the possibly less reliable observations were not driving the results of the analyses.

Because of the substantial skew in the distribution of population sizes discussed above, population was measured using a logarithmic transformation to generate a more symmetric distribution. Given the chronological clustering discussed above, we defined the date variable in terms of four decadal clusters – the 1670s, 1740s, 1790s, and 1800s. Space was measured in two ways: through the precise latitude and longitude of the locality; and through the province in which that locality was situated (Friesland, Gelderland, Limburg, Overijssel, South Holland, and North Holland). For retailers' guilds, a dummy variable registered presence (1) or absence (0) of such a guild in the locality at that date. Female headship was defined as the percentage of independent households in the locality headed by women at that date. Female headship was fully recorded for only 751 observations, so the model including that variable could only be estimated for this smaller data subset. Since the loss of 208 observations compared to the full dataset as well as the inclusion of female headship as an explanatory variable could affect the results, two separate models were estimated using that smaller data subset, one including female headship and the other excluding it. This enabled us to see whether any differences compared to the regressions on the larger data subsets were caused by the inclusion of female headship or alternatively by the loss of observations.

In addition to these basic explanatory variables, we created a number of interaction terms to explore whether the effect of particular factors varied across space and time. A decade-province interaction term enabled us to examine whether the effect of time

differed across provinces; a decade-population interaction term enabled us to investigate whether the effect of population size differed across time; and a province-population interaction term enabled us to test whether the effect of population size differed across provinces.

Table 3 presents the models estimated for the ‘maximal’ retail ratio (including retailing as a subsidiary occupation) while Table 4 presents those for the ‘minimal’ retail ratio (focussing solely on retailing as a main occupation).

Table 3 reports four different models. Regression 1 is the model for the large data subset in which ‘minimal’ retail ratio and female headship are not fully recorded (and the latter is therefore excluded as an explanatory variable). Regression 2 is the model for the data subset in which ‘minimal’ retail ratio is fully recorded (for comparability with Table 4 Regression 1) but female headship is not fully recorded (and is therefore excluded as an explanatory variable). Regression 3 is the model for the data subset in which both ‘minimal’ retail ratio and female headship are fully recorded, and female headship can thus be included as an explanatory variable. Regression 4 is the model for that same data subset, but excluding female headship (for comparability with Table 1 Regressions 1 and 2).

Table 4 proceeds analogously for the ‘minimal’ retail ratio. Regression 1 is the model for the largest data subset for which ‘minimal’ retail ratio is fully recorded; female headship is not fully recorded and is therefore excluded as an explanatory variable. Regression 2 is the model for the data subset in which female headship is fully recorded and can thus be included as an explanatory variable. Regression 3 is the model for that same data subset, but excluding female headship (for comparability with Table 4 Regression 1).

4.1. Female Household Headship

We start by discussing female headship since it provides the sole motivation for analysing the smallest data subset of 751 observations (Table 3 Regressions 3 and 4, Table 4 Regressions 2 and 3). We can then shift focus to the regressions on the full

dataset (Table 3 Regression 1, Table 4 Regression 1) when we discuss all the other influences on retail ratios.

As discussed earlier, the historiography suggests a strong positive relationship between female headship and the retail ratio, although the causal link probably ran in both directions. We therefore explored the association between the female headship rate and the retail ratio in the regressions on the small data subset for which female headship was fully recorded, while acknowledging the problem that there are almost certainly two-way causal links between the two variables.

As Table 3 Regression 3 shows, there was indeed a significant association between female headship and the ‘maximal’ retail ratio. (Here and throughout, ‘significant’ means that a result is statistically significant at or below the 0.05 level; it does not refer to the *magnitude* of any effect.) Although this positive association between female headship and retail density was statistically significant, its magnitude was rather small. Assessed at the sample means of all variables, the elasticity of the retail ratio with respect to the female headship rate was only 0.20 – i.e., a 1 per cent increase in the female headship rate was associated with a 0.20 per cent rise in the retail ratio.

Female headship was also positively and significantly associated with the ‘minimal’ retail ratio, as Table 4 Regression 2 shows. This finding indicates that it was not just retailing as a subsidiary occupation but also retailing as a main occupation that favoured, or was favoured by, the existence of a larger proportion of households headed by females. However, the elasticity of the ‘minimal’ retail ratio with respect to female headship was even smaller, at 0.12.

This finding is consistent with a number of studies which have suggested that women were more likely to undertake retailing as a subsidiary than as a main occupation.⁸² The larger size of the association between female headship and the ‘maximal’ definition of the retail ratio is consistent with the idea that females may have disproportionately adopted retailing as ancillary rather than main occupations,

⁸² Roessingh (1965), 232; Slicher van Bath (1977), 181; De Vries and Van der Woude (1995), 602.

although deeper household-level analyses would be necessary to explore this association more thoroughly. Furthermore, it may simply be that a locality in which underlying factors facilitated retailing by-employments was also one in which the same factors facilitated female household headship.

4.2. Retailers' Guilds

The variable registering the presence of retailers' guilds also only emerges into statistical significance for the small data subset for which female headship was known. The retailers' guild variable was included in the regressions despite the fact that, as discussed earlier, there is probably two-way causation between the retail ratio and the presence of a guild. As it turned out, the inclusion or exclusion of this variable had no effect on the coefficients or standard errors of any other variables in the regressions, so it was retained in all regressions and is reported in all models in Tables 3 and 4. In all cases, it had a negative coefficient (i.e., the presence of a retail guild was associated with a lower retail ratio, holding all other variables constant). But in almost all cases, this coefficient was not significantly different from zero.

The exception was Table 1 Regression 3, in which female headship was also included in the model. In this model alone, the negative coefficient on retailers' guild was statistically significant (although only at the 0.10 level). It is possible that controlling for female headship is what moved the retail guild variable into the borderline of significance. This speculation is lent some support by the fact that when female headship is removed from the model for this data subset (in Table 1 Regression 4), retail guild becomes insignificant (though its coefficient remains, as always, negative). We know that guilds disproportionately affected women's economic participation, including in retailing, so this may be why, once the effect of female headship on retail ratio is taken into account, the negative effect of guilds on retail ratio emerges into greater significance.

Overall, however, the presence of a retailers' guild is not associated with a significant effect on the retail ratio one way or the other. This is not surprising, and may indeed be caused precisely by the fact that causation is likely to go both ways between the two variables. Thus on the one hand, retailers' guilds may have been acting to reduce

retail ratios by erecting barriers to entry; but on the other hand they were only likely to be formed when established retailers felt that the density of retailers relative to the local population of customers had risen to a high level, creating an incentive to erect institutional barriers to prevent further competition. These opposing two-way influences between retail density and the presence of retail guilds may lie behind the absence of any significant statistical relationship between the two.

Unless and until we find a good instrumental variable for the effect of retailers' guilds on retail density, this aggregate statistical analysis of their relationship must remain indeterminate. Investigations of the effect of guild institutions on retailing must instead be pursued through detailed micro-studies which analyse the activities such guilds engaged in – particularly the barriers to entry they erected – behind the sheer fact of their existence.

This consideration is the more important given that guilds in the same economic sector acted very differently in different Dutch towns. For one thing, guilds in cities of the western Netherlands were more flexible and more open to outsiders (migrants, women, Jews) than those in the eastern part of the country.⁸³ Moreover, admission policies and practices of retail guilds could vary not only *between* towns, but *within* towns, with different retail guilds in the same town controlling entry very differently, with potentially substantial – but heterogeneous – effects on the size of the overall retail sector.⁸⁴ Since the wide variability in admissions restrictions across different retailers' guilds is borne out by detailed micro-studies, it is not surprising that a macro-level analysis encompassing both western and eastern parts of the Netherlands but solely registering a guild's *presence*, and not its policies or activities, should fail to find a systematic statistical relationship with the retail ratio.

4.3. Population Effects by Province

The postulated east-west gradient for Dutch guilds raises the whole question of regional differences not just in retail density itself but in the factors that might be expected to affect it. One factor we expected to affect retail density was the

⁸³ Lourens and Lucassen (2000).

⁸⁴ Van den Heuvel (2007); Van den Heuvel (2008).

population size of a locality. However, population size might have exerted different effects in different places and at different times.

Turning first to the question of time, in theory the population size of a locality might be expected to affect retail density more in earlier time-periods when, on average, population sizes were smaller. To explore the hypothesis that a locality's population size affected its retail ratio more in some time-periods than in others, we carried out preliminary analyses in which interaction terms between population and decade were included in the regressions. In none of the regressions, for either 'maximal' or 'minimal' retail ratio, and for none of the data subsets, were the coefficients on these interaction-terms significant. This enabled us to conclude that the effect of population size on the retail ratio (no matter how it was defined) did not differ between the 1670s, the 1740s, the 1790s and the 1800s.

Spatial or geographical variables, by contrast, did significantly affect the retail gap between large and small settlements. In other words, the effect of population size on retail ratios turned out to differ significantly across Dutch provinces. This result emerged for both the 'maximal' and the 'minimal' definitions of the retail ratio, as shown by the coefficients on the province-population interaction terms in Tables 3 and 4. It also held true across all the data subsets – both the full data set and the two smaller data subsets for which multiple occupations and female headship could be considered. The universality of these inter-province differences in the population effect provides striking support for their robustness. Settlement size affected retail density differently in different provinces.

The most powerful effect of settlement size on retail ratio was in Overijssel, where it had a statistically significant, and positive, effect on the retail ratio. This effect was quite substantial, as shown by the fact that the elasticity of the 'maximal' retail ratio with respect to settlement size was 1.16, and the elasticity of the 'minimal' retail ratio was 1.42. In Overijssel, which (as Table 1 shows) had the lowest average density of retailing of any province, the size of a settlement was a very powerful influence on its retail ratio. In so far as there were substantial concentrations of retailing in Overijssel, they were found predominantly in towns and cities.

The next most powerful effect of settlement size was found in a group of intermediate provinces – Friesland, Gelderland, and Limburg – where the effect of that variable did not differ significantly within the group. In these provinces, which Table 1 shows were characterized by intermediate average retail ratios, settlement size still had a statistically significant and positive effect on retail density, but one that was significantly smaller than in Overijssel and significantly larger than in North or South Holland. In this group of provinces, the elasticity of the ‘minimal’ retail ratio with respect to the population size of settlements was only 0.86, while the elasticity of the ‘maximal’ retail ratio was only slightly higher, at 1.02.

Settlement size also had a significant and positive effect on the retail ratio in South Holland, but one that was in turn significantly smaller than in the ‘intermediate’ provinces. As Table 1 shows, South Holland had the second-highest average retail ratio of all provinces. Here, the elasticity of the ‘maximal’ retail ratio with respect to the population of settlements was only 0.33; the elasticity of the ‘minimal’ retail ratio was hardly higher, at 0.59.

North Holland, which Table 1 shows to have had by far the highest average retail density of any province, was also the only one in which settlement size had no significant effect on either measure of the retail ratio. This finding is the more striking in that the North Holland localities in the dataset covered a wide range of settlement sizes, from less than 30 inhabitants to nearly 9,000. Despite this wide variation, the population of a settlement exerted no significant effect on retail density in the province, suggesting that at the high level of commercialization observed in North Holland, dense concentrations of retailers had arisen even in small rural localities, to an extent not observed elsewhere in the country.⁸⁵ This confirms that the remarkably high retail ratios reported in earlier publications for two rural settlements in North Holland in the mid-eighteenth century (Graft with 21 retailers per 1,000 and Winkel with 26 retailers per 1,000) were not exceptional.⁸⁶

⁸⁵ There is a possibility that the de-urbanization of North Holland which occurred especially in the first half of the eighteenth century may have influenced the effect of settlement size on retail ratio in this province, although doubt is cast on this idea by the fact that the effect was already statistically insignificant in the later seventeenth century, before the onset of this de-urbanization. See De Vries and Van der Woude (1997), 64-5.

⁸⁶ Van den Heuvel (2007), 143.

Spatial variables thus influenced how settlement size affected retail density. In the low-retail-density province of Overijssel, settlement size affected retail ratio most strongly. In an intermediate group of provinces (Friesland, Gelderland, and Limburg), settlement size exerted a medium-sized effect on the retail ratio. Even in South Holland, where average retail density was quite high, settlement size still exerted a statistically significant positive effect on retailing, although only a mild one. But in the most highly commercialized province, North Holland, retail density did not depend on the population of the locality. An important aspect of the zone of high retail densities observed in North and South Holland, therefore, was that it was characterized by much greater similarity in ratios between villages, towns and cities: retailing was not just an urban phenomenon but was diffused throughout the countryside.

This large and significant effect of settlement size on retail density in some Dutch provinces but not in others has a number of wider implications. First, it helps resolve the question of whether high levels of urbanization substituted for village retailing or, alternatively, complemented it. The small or non-existent effect of settlement size on retail density in the most highly urbanized provinces, North and South Holland, provide strong support for the view that urbanization did not stifle village retailing but rather stimulated it, whether through urban shops causing villagers to demand retail outlets closer to home or via the annual influx of burghers into villages demanding retail services near their country houses.⁸⁷ Conversely, the significant and substantial effect of settlement size on retail density in the least urbanized provinces, in the eastern parts of the Netherlands, suggests that towns in these provinces did substitute for village retailing, either because of the lack of burghers' country houses in surrounding villages or because of other (possibly institutional) variables acting to maintain a wider economic and social gap between towns and villages. At low levels of urbanization, economic differences between town and country appear to have been wider, not narrower, than in regions where levels of urbanization were high.

A second, and wider, implication of these findings relates to economies of agglomeration. In so far as the positive effect of settlement size on retail density was

⁸⁷ Schama (1991), 290-4; Braudel (2002), 78.

caused by economies of agglomeration, these appear to have been more important in less commercialized provinces. In more commercialized provinces, agglomeration economies were less influential and in the most commercialized one – North Holland – they had no detectable effect. Even though, as De Vries has argued, many rural settlements in the Netherlands also commercialized in this period,⁸⁸ in all provinces except North Holland, cities remained significantly more highly commercialized than smaller towns, and towns than villages.

These results support the idea that urbanization may have played an independent role in the commercialization of the early modern European economy. That is, when moving from low to intermediate levels of commercialization, simply increasing the number of large urban centres, or even enabling villages to expand into market towns, could enhance retail density. This development might have been connected with economies of agglomeration, in which the larger number and range of producers and consumers in a particular location gave rise to enhanced opportunities to exploit the division of labour and gains from trade. One reason the Netherlands may have been so highly commercialized compared to many other parts of Europe at a relatively early date may simply have been its high urbanization – and the underlying factors that made it possible.

4.4. Direct Effects of Spatial Variables

This raises the question of the direct effects of spatial variables on retail density. As discussed earlier, spatial factors could be measured in two ways – through purely locational coordinates and through province. In initial estimations of the regressions, latitude and longitude were included alongside the province variables. In the presence of the province dummies, the coefficients on both latitude and longitude were statistically insignificant, justifying their elimination from the model. This held true for both ‘maximal’ and ‘minimal’ definitions of the retail ratio and for all data subsets.

⁸⁸ De Vries (2008), 93-5, 128.

Nonetheless, given the hypothesis of a negative west-east gradient of Dutch commercialization advanced in the literature, it is worthwhile reporting that when province is *not* taken into account, longitude (though not latitude) emerges as a significant and negative effect on the retail ratio. That is, controlling for other factors, retail ratios declined significantly as one moved across the Netherlands from west to east, a striking confirmation of the more general hypothesis that the economy in the west of the country was more commercialized than that in the east. However, since all the spatial information contained in the coordinates of latitude and longitude was evidently included in the province variables (as shown by the fact that latitude and longitude were statistically insignificant in the presence of the province dummies), the former were eliminated from the model and the latter retained.

Five province dummies (Gelderland, Limburg, Overijssel, South Holland, and North Holland) are reported in Tables 3 and 4, with the sixth province, Friesland, as the omitted category. The coefficients on the five province dummies show the estimated effect of province on retail ratio (relative to Friesland) assuming that all other variables in the regression, including population size, are set to zero. The effects on the retail ratio of moving from one province to another can therefore not be evaluated by inspecting the coefficients on the province dummies alone; instead, we need to take account of both these province-dummies and the province-population interaction terms in order to show the full province effects. We do this in Tables 5 and 6 by presenting the predicted effect of province on the retail ratio assessed at various population sizes and setting all other independent variables at their sample means. These predicted effects can be regarded as the pure effects of province on the retail ratio, i.e. controlling for all other explanatory variables in the regressions.

Table 5 and Graph 1 show the predicted effect of province on the ‘maximal’ retail ratio (i.e., including retail by-employments), estimated on the basis of Table 3 Regression 1. These results show that a pure effect of province on retail density is moderately clearly visible for settlements with a small population size. However, for most provinces this effect becomes progressively less clear and less statistically significant as settlements increase in size. This is because, as we have just seen, population increased retail ratios at differing rates in the different Dutch provinces.

The notable exception is North Holland, which had a significantly (and substantially) higher retail ratio than all other provinces at all values of settlement size.

The differing trajectories of these pure province effects on retail ratio can be seen in Graph 1. Thus for settlements of 100 inhabitants (at the 20th percentile of our dataset) and those of 200 inhabitants (at the 39th percentile), North Holland had a significantly higher retail ratio than all other provinces and South Holland had a higher retail ratio than all other provinces except for North Holland, although the difference compared to Friesland and Gelderland is of borderline significance.⁸⁹ There was no significant difference among Friesland, Gelderland and Limburg: this is consistent with what we found for the effect of settlement size on retail density, which was indistinguishable among these three provinces. For settlements of 100 inhabitants Overijssel, with the lowest point estimate of retail ratio, is significantly lower not only than North and South Holland but also (with borderline significance) than Friesland, the ‘intermediate’ province with the highest estimated retail density.

However, as mentioned, these pure province differences become progressively less significant and less substantial as settlements increase in population size. By the time one gets to settlements of 500 inhabitants (at the 67th percentile), there is still some evidence of pure province effects but the differences are much less significant. Only North Holland is still significantly and substantially different from all other provinces at this settlement size. And by the time we reach settlements with 750 inhabitants (the 77th percentile) or 1,000 (the 84th percentile), the difference between North and South Holland is only of borderline significance, although North Holland still has significantly and substantially higher retail ratios than all other provinces.

For the ‘minimal’ retail ratio (i.e. excluding retail by-employments), the pecking order among the provinces at small settlement sizes is almost identical to the picture for the ‘maximal’ retail ratio, as we can see from Table 6 and Graph 2. Again, North Holland maintains a significantly and substantially higher retail ratio than all other provinces, and this continues up to quite large settlement sizes. The major deviation in the pure province effect for the ‘minimal’ retail ratio is that Friesland pulls ahead of the other

⁸⁹ Cf. the remark by De Vries and Van der Woude (1997), 510, that ‘no sharp division separated city from countryside in [the distribution of services among cities and villages in North Holland]’.

‘intermediate’ provinces as settlement size increases, and once it reaches settlements of 750 or 1,000 inhabitants (the 77th and 84th percentile respectively) its predicted pure province effect is not significantly different from that of North Holland.⁹⁰ Among the remaining provinces, the predicted value of the retail ratio at different values of settlement size does not for the most part differ significantly by province. The only exception is for small settlements of 100 or 200 inhabitants (the 20th and 39th percentiles respectively) where Overijssel is significantly lower not just than North Holland but also than Friesland. Arguably this is testimony more to Friesland’s distinctively high retail ratios (in the ‘minimal’ definition) than to Overijssel’s distinctively low ones, although the fact that Overijssel consistently lies at or near the bottom of all provinces in retail density is consistent with what we know of the early modern Overijssel economy, which relied heavily on low-productivity agriculture and proto-industrial textile production, giving rise to relatively low living standards for its inhabitants.⁹¹

The difference we observe in the position of Friesland compared to the other provinces when we look at a ‘minimal’ instead of a ‘maximal’ definition of the retail ratio is interesting for several reasons. First, the more standard ‘minimal’ definition of the retail ratio highlights the relatively commercialized nature of Friesland, which follows immediately after Holland in the density of its retailing and runs ahead of all other parts of the country. This is especially striking given Friesland’s rural character, reflected in the database by its mean settlement size of 350, significantly lower than any other province even including Gelderland (at over 450) and Overijssel (at over

⁹⁰ This confirms the observation by Faber (1972), 112, that in Friesland subsidiary occupations were ‘quantitatively not that important’.

⁹¹ Slicher van Bath (1977), 729. According to Faber (1972), 112, Overijssel also had a much smaller share of household heads with subsidiary occupations. Quoting from Slicher van Bath (1977) and Roessingh (1965), Faber gives the following figures: Friesland 2.3%, Veluwe: 3.7% and Overijssel 1.5%. Faber reports substantial differences in the percentage of household heads listed with a subsidiary occupation between the different administrative regions (‘*grietenijen*’) of Friesland: whereas in the *grietenijen* of Gaasterland and Uteringadeel subsidiary occupations were registered for no heads of household, in Opsterland 10 per cent of household heads were recorded with a subsidiary occupation, much higher than the average proportion for the province of Friesland as a whole (2.3%). Faber argues that these differences across *grietenijen* and the low percentages of household heads with subsidiary occupations in some *grietenijen*, may have been caused by differences in registration practice. However, given that we now know that there were wide differences among European regions in the prevalence of by-employments, these differences may reflect actual occupational structure. The available documentary sources provide no grounds for favouring one of these explanations over the other. In this paper, we provisionally accept the recorded level of by-employments as a reflection of actual occupational structure, in the absence of positive evidence of differences in registration practice within sub-regions of Friesland in 1749.

620), and strikingly lower than Limburg (over 1,000), North Holland (over 1,300), and South Holland (over 2,700). For such a predominantly rural province, therefore, Friesland had an unusual density of retailers. This testimony to Friesland's commercialized character is consistent with Jan de Vries's research, which found that as early as the seventeenth century Friesland peasant inventories recorded numerous articles which peasants could not have fashioned by themselves and that by the eighteenth century the province's agriculture had become highly commercialized and many inhabitants practised non-agricultural occupations.⁹²

Second, the finding that Friesland moves down in the ranking of provinces when we use a 'maximal' definition of retail ratios taking account of subsidiary occupations suggests that in provinces such as South Holland, Gelderland and Limburg, combining retailing with other occupational activities was more common than in Friesland. This also fits with the findings of a number of scholars who have argued that in Friesland retailing and agriculture were not likely to be combined, in contrast with what historians have observed for other Dutch provinces.⁹³ Moreover, and perhaps as a result of this, a majority of Friesland's retailers appear to have been relatively well-off shopkeepers who were able to earn a decent living by shopkeeping alone and were thus not part of an economically marginal group engaging in small-scale retailing to complement their household incomes.⁹⁴

Finally, the changing position of Friesland shows that whereas the more commonly used definition of the 'minimal' retail ratio is helpful for understanding the development of retailing, it does not yield a fully differentiated analysis. Analysing a 'maximal' retail ratio not only provides a more accurate picture of the true size of the retail sector, but also deepens our understanding of different patterns of retailing – in this case between regions in which retailing was predominantly a main occupation (such as Friesland) and those in which it was also common as a by-employment (other provinces with 'intermediate' retail ratios). This approach may also shed light on the role of women in retailing in the various provinces of the Netherlands, given that a number of studies have suggested that subsidiary occupations reflected work

⁹² De Vries (1974), 127-36.

⁹³ Roessingh (1965), 232-36; Slicher van Bath (1977), 181. See also Faber (1972), 112, who observed that subsidiary occupations were not common in Friesland.

⁹⁴ De Vries (1984), 230-1.

undertaken by the wives of the male household heads recorded in tax registers and censuses.⁹⁵

These findings concerning the pure province differences in retail density raise two wider questions. First, these pure province effects show that Holland – particularly North Holland – occupied a very distinctive position in the retail landscape of the early modern Netherlands. Its retail density was significantly and very substantially higher than that of every other province, even South Holland.⁹⁶ We know that this distinctiveness was not caused by settlement size, date, female headship or the presence of retailers' guilds, since these are controlled for in the regressions. What, then, caused North Holland's extraordinary retail density compared to all other provinces of the Netherlands?

A second issue raised by the province differences in retail densities is that, as we have seen, there is evidence that there are significant differences in retail density between provinces for small settlements. These cannot be dismissed as unimportant, since such small settlements made up a non-trivial share of localities in the early modern Netherlands: after all, settlements of 200 inhabitants lay at the 39th percentile of our data. But given that there were these significant pure province effects on the retail ratio for small settlements, what caused them? They cannot have been caused by settlement size, date, female headship, or the presence of retailers' guilds, since we have controlled for all these variables. What is it that meant that the differences between provinces of the Netherlands became less marked as one moved from smaller to larger settlements? In short, what was the underlying cause of this variation in retail density for small settlements, for which province is acting as a proxy variable?

A first possible explanation of these findings is the dense network of waterways in North Holland. However, there are two problems with this explanation. The first is that cheaper transportation can have countervailing effects on the gap between urban and rural retail density. On the one hand, extensive waterways had the potential to stimulate rural retail development as they allowed retailers to transport goods from

⁹⁵ Roessingh (1965), 232; Slicher van Bath (1977), 181; De Vries and Van der Woude (1995), 602; Van den Heuvel and Van Nederveen Meerkerk (2010) 114.

⁹⁶ Cf. the finding presented in De Vries and Van der Woude (1995) 510-1, that North Holland had exceptionally high levels of service provision in both its urban and its rural settlements.

urban centres to village shops. On the other hand, an extensive network of waterways and cheap passenger transportation had the potential to maintain towns as retail centres and to suck consumer demand out of the countryside by making it easier for villagers to get to the nearest town to do their shopping – a frequent concern for villages in present-day economies. The second problem with seeking to explain the high density of retailing in North Holland in terms of its extensive waterways is that North Holland was far from being the only Dutch province with such high-quality water transportation: other provinces, including South Holland, Zeeland and Friesland, also had very well-developed networks of canals and rivers.⁹⁷ The differences in retail ratios between these four provinces vividly illustrate the perils of simply assuming a unidirectional and positive relationship between waterways and retail density. A well-functioning water transportation network does not necessarily mean very high retail ratios or a very narrow gap between urban and rural retail density, and cannot explain the differences we observe in retail density among Dutch provinces in this period, especially in the smallest settlements.

A second possible explanation for these differences in retail density is differences in income levels. The very low retail densities in Overijssel, which is known to have been a very poor province, is certainly consistent with the view that there was a positive relationship between income levels and retail development. Moreover, it is well-known that real wages were much higher in the western than in the eastern part of the Netherlands. However, there is no evidence suggesting any large differentials in income levels between North and South Holland.⁹⁸ More fundamentally, it is problematic to assume that retailing only develops in the presence of a relatively well-off population with large amounts of disposable income to purchase luxurious wares. Retailers varied in the sizes of their businesses and in the value and quality of the products they offered.⁹⁹ Indeed, it is widely argued that the Industrious Revolution saw a proliferation not so much of large-scale, lavish shopkeepers focussing on well-off consumers, but precisely of small-scale, low-cost retailers catering to wider social

⁹⁷ De Vries (1978).

⁹⁸ Indeed, analysis of the 1808 tax registers suggests that by that period some rural areas in South Holland actually had higher income levels than rural areas in North Holland. See Van Zanden (1987) 574.

⁹⁹ Cf. the differences in wealth between shopkeepers selling different types of goods in the cities of Holland in 1742, as shown by De Vries and Van der Woude (1997), 580.

strata of poorer customers.¹⁰⁰ Retail ratios could rise if there was an expansion of spending-power by poorer social strata, even if average income-levels stagnated or declined. These considerations mean that we cannot explain inter-province differences in retail density purely in terms of differences in income. However, they do indicate an urgent need for deeper analysis of the economic importance, type of activities, and degree of specialization of retailers in different settlements, provinces, and time-periods – future research avenues that can be explored using our data.

A more promising line of explanation for the distinctive retail pattern among different Dutch provinces may reside in the underlying agrarian economy. North Holland had distinctive characteristics of agricultural production and commerce which differentiated it even from South Holland, let alone from other Dutch provinces, specifically its highly commercialized rural economy. Features of this highly commercialized agricultural economy may help explain why North Holland had the highest retail ratios, why its retail density exceeded even that of South Holland, and why it showed no significant difference in retail ratios between large and small settlements.

First, North Holland farmers were highly specialized, producing milk, butter and cheese for local, regional, national and international markets. Butter and, especially, cheese were exported from the port towns of North Holland, and were very much sought after in southern Europe.¹⁰¹ This high degree of specialization meant that farmers' households in North Holland were not self-sufficient: they relied on the market for consumption goods other than dairy products. Moreover, this type of farming also required the constant attention of many household members, as cattle had to be tended, and cheese and butter produced and sold, which were labour-intensive tasks.¹⁰² For many of these North Holland dairy-farming households, the intensively market-oriented work schedule, which also encompassed the labour of wives and children, meant that household members lacked time to travel into towns to carry out the necessary shopping for necessities. This created a demand for local retail services.

¹⁰⁰ De Vries (2008), 169.

¹⁰¹ Bieleman (2008), 76.

¹⁰³ Noordam (1986); 54-5; Van Bavel and Gelderblom (2009).

¹⁰³ Boon (1996).

This demand for local retail outlets was further intensified by a second feature of the North Holland rural economy. In many rural communities of North Holland, especially in the West-Friesland area in the north-east of the province, farming was combined with seafaring. This meant that husbands, and often also older sons, were absent for considerable periods of time, and that the remaining household members – wives, daughters and younger sons – were left to tend the farm.¹⁰³ The periodic departure of the strongest members of the household labour force meant that the demands of operating the farm pressed even harder on the shoulders of those staying behind, increasing labour-intensity, limiting self-provisioning, and reducing opportunities for longer-distance provisioning trips to urban retailers.

A third characteristic of the rural economy of North Holland which may help explain its high retail densities compared to other provinces is that it contained substantial rural regions that were highly industrialised. Especially the Zaanstreek, an area to the north of Amsterdam, was highly industrial, with a number of large-scale industries such as shipbuilding, related activities such as rope- and sail-making, and textile production. These industries created a high labour demand for male and female wage workers, whose activities in these industries left them little time to produce goods for home consumption while also earning them the cash wages needed to purchase consumer goods from retailers.¹⁰⁴

This very pronounced specialization and commercialization of the rural economy meant that both agricultural and industrial families in the countryside of North Holland worked extremely intensively, with hardly any gaps in the work schedule during which they could either produce other, non-specialized goods for their own consumption within the household or travel to a nearby town to purchase such goods from urban retailers. All these features of this highly commercialized, market-oriented agrarian economy combined to increase both the supply of and the demand for retail services even in the smallest rural settlements, and may help to explain why North

¹⁰³ Noordam (1986); 54-5; Van Bavel and Gelderblom (2009).

¹⁰³ Boon (1996).

¹⁰⁴ Van der Woude (1972), 462-7.

Holland had such distinctively high retail ratios and showed no gap in retail density between its large and small settlements.

These features of the agrarian economy and its knock-on consequences for the market-orientation, specialization, and time-allocation of rural households may also help explain why retail ratios were high in South Holland, although not to quite the same extent as in North Holland. The agricultural system in South Holland consisted to a greater extent of mixed farming in which there was a lower work intensity and more interstices within which farm households could potentially either produce for their own consumption or travel to towns to visit urban shops.¹⁰⁵ In addition, in South Holland seafaring and farming were less likely to be combined. Furthermore, apart from some concentrations of rural industrial activity such as the rope-making districts around the city of Gouda, large-scale industries in this province were primarily to be found in urban centres.¹⁰⁶ South Holland still had a highly commercialized and market-oriented rural economy even by Dutch standards – hence its high retail density relative to most other provinces – but these attributes had not developed to the same extreme degree as they had in North Holland, which may account for the slightly lower retail density in South Holland and the survival there of some differences in retail density between large and small settlements.

Deeper regional and community-level research in the various provinces of the early modern Netherlands would be necessary to identify all the features of the rural economy that created a differential demand for (and supply of) retail outlets in smaller settlements under different agrarian systems. The aggregative findings of the present paper can only point out that the most significant differences in retail density between Dutch provinces emerge specifically for the smallest (i.e. rural) settlements and that it therefore seems likely that the explanation for these differences may lie in characteristics of the rural economy in different provinces. Such an explanation would certainly be consistent with what we know about the central role played by the

¹⁰⁵ Bieleman (2008), 80, 230.

¹⁰⁶ De Wit (2008); De Vries and Van der Woude (1997), 270-2.

performance of the agricultural sector in economic development more widely – not just in the Netherlands but throughout early modern Europe.¹⁰⁷

¹⁰⁷ On the Netherlands, see De Vries (1974); De Vries (1975). On early modern England, see Overton (1996). On modern developing economies, see World Bank (1982).

4.5. Time

The development of the economy during the early modern period raises a final question. How did time affect the retail ratio, and did the effect of time vary spatially across provinces? It was only possible to create meaningful interaction terms between time and space for North and South Holland because these were the only provinces with substantial numbers of observations from several different decades. In the regressions, the coefficients on those interaction-terms were not statistically significant, showing that the effect of time did not differ between either of those two provinces and the other provinces. This provided us with a basis for concluding that there was no evidence that the effect of time on the retail ratio differed from one province to another, and thus enabled us to concentrate on pure chronological effects across the entire data set.

Three decadal clusters (1670s, 1740s, and 1790s) are reported in Tables 3 and 4, with the fourth decadal cluster, 1803-13, as the omitted category. The coefficients on the three decade dummies show the differences in retail ratio between those decades and 1803-13, while differences among the other decades were explored through post-regression hypothesis-testing. The effects of time on retail density, unlike the effects of space and settlement size, differed considerably according to whether we focused on the ‘maximal’ definition of retail ratio (in Table 1) or the ‘minimal’ (in Table 2), and also varied somewhat according to which data subset was being analysed.

The results for the ‘maximal’ definition of retail ratio analysed for the largest dataset (Table 3 Regression 1), show that the retail ratio was significantly lower in the 1670s than in 1803-13, but that it did not follow a clear upward trend across the eighteenth century. The retail ratio rose significantly between the 1670s and the 1740s. However, it then stagnated between the 1740s and the 1790s: the average for the 1790s was actually lower than for the 1740s, although the difference was not statistically significant. The retail ratio then rose between the 1790s and 1803-13, but the rise again was not statistically significant. Thus between the 1670s and the early nineteenth century, the retail ratio in its ‘maximal’ definition increased, and the rise was statistically significant, but most of the growth took place between the 1670s and the 1740s. The remainder of the eighteenth century saw stagnation or, if anything, a

slight decline, and even the recovery in the early decades of the nineteenth century was muted.

A rather different chronology emerges for this same ‘maximal’ definition of retail ratio within the smaller data subsets. For the multiple-occupation dataset (Table 3 Regression 2), the chronological development is very similar to that for the full dataset (Table 3 Regression 1), except that the rise between the 1670s and the 1740s is only of borderline statistical significance. This strengthens the impression of a long-term stagnation of retail ratios between the later seventeenth and the end of the eighteenth century.

This impression of long-term stagnation in retail ratios also emerges from the analysis of the female-headship data subset (Table 3 Regressions 3 and 4), which shows no significant difference in retail ratio between the seventeenth century and any part of the eighteenth century. However, the nineteenth century emerges as distinctively higher – not just than the 1670s but also than the 1740s and the 1790s. Once female headship is controlled for, the differences between the eighteenth and the nineteenth century appear to be more accentuated.

Of course, this change in emphasis might result from shifting to the smaller data subset rather than from controlling for female headship. This possibility can be investigated by comparing Regressions 3 and 4 in Table 3, since Regression 4 estimates the model for that data subset pretending that female headship is unknown. Doing so renders the difference between the 1740s and the 1800s of borderline statistical significance and the difference between the entire eighteenth century and the 1800s not significant. This implies that it is the act of controlling for female headship, rather than the choice of data subset, which brings to the fore the accentuated difference between the eighteenth century and the early nineteenth. We should be wary of placing too much weight on this finding, however, given that (as discussed earlier) female headship is an endogenous variable and may be generating biased estimates.

Analysing the ‘minimal’ definition of the retail ratio, in Table 4, also gives rise to a chronology of long-term stagnation before the nineteenth century, a result that holds

whether female headship is taken into account (Regression 2) or not (Regressions 1 and 3). Unlike with the ‘maximal’ retail ratio, there is no significant difference in retail ratio between the 1670s, the 1740s and the 1790s. But all three of these ‘early modern’ decades had retail ratios significantly lower than the 1803-13 period.

Thus if one focuses purely on retailing as a main occupation (as in the Table 4 regressions), and in so doing uses a comparable approach to most previous studies, one finds a definitive picture of long-term stagnation in the retail ratio between the 1670s and the 1790s, and then a significant upturn in the first decade and a half of the nineteenth century. By contrast, if one takes into account by-employed retailers (as in the Table 3 regressions), the retail ratio starts to increase (with borderline statistical significance, at least) between the 1670s and the 1740s, although it stagnates thereafter. Any dynamism in the retail ratio between the 1670s and 1740s thus seems to have involved an expansion in the number of individuals practising retailing as a by-employment in combination with other occupations; it did not necessarily involve more individuals practising retailing as their main occupation.

This suggests that the transformation of the Dutch retail sector between c. 1670 and c. 1750, which is emphasized in the historiography,¹⁰⁸ was predominantly an expansion of retailing as a by-employment. Moreover, it is likely that many of the new practitioners entering retailing in this period were not main household heads, usually married men, but rather wives or other family members, as postulated in Jan de Vries’ theory of the Industrious Revolution.¹⁰⁹ This is confirmed by a recent in-depth study of the occupational identities of the hundreds of people who moved into tea- and coffee- retailing in the South Holland city of Leiden in the first half of the eighteenth century: not only were the majority of these new tea- and coffee-retailers married women, but most of them had husbands working outside retailing (mainly in crafts and proto-industry).¹¹⁰

Any dynamism in the retail ratio between the 1790s and the 1803-13 period, by contrast, appears to have involved an expansion in the number of those for whom

¹⁰⁸ Van Aert and Van den Heuvel (2007); Van den Heuvel (2007).

¹⁰⁹ De Vries (2008).

¹¹⁰ Van den Heuvel and Van Nederveen Meerkerk (2010), 121.

retailing was their main activity. Because the development of Dutch retailing has been much less intensively studied for this later period, it is more difficult to put this finding into context. A possible explanation is that retailing was previously largely a secondary occupation for those working in industry, but with the late-eighteenth-century decline of the Dutch industrial sector, many of those who had earlier combined retailing with a craft or proto-industry now found themselves forced to rely solely on their retail outlet.

The 1849 Dutch census shows that in the mid-nineteenth century the overall retail ratio for the Netherlands as a whole was very similar to its level in 1807, approximately 28 per 1,000.¹¹¹ This suggests that between 1807 and 1849 Dutch retail ratios did not change significantly, implying that the first decades of the nineteenth century were indeed the period in which the most significant changes in retail density occurred over the almost two centuries between 1670 and 1850.¹¹²

How can we explain this sudden increase in retail density in the first decade and a half of the nineteenth century? As mentioned earlier, one of the important transformations taking place in the economy of the Netherlands at this period consisted of a cluster of fundamental changes in its institutional structure, one of the most striking being the dissolution of the guilds.¹¹³ Although the Dutch guilds were formally abolished in 1798, in some parts of the Netherlands they retained their powers until 1818. But even where they remained in control of certain segments of the economy, they were compelled to adopt alterations in their admission policies, generally resulting in more equal access for groups such as Jews and ‘strangers’ (non-locals) who had previously suffered from discriminatory policies.¹¹⁴ In addition, in 1806 the Patent Tax was introduced, with the explicit purpose of undermining the position of the guilds. This tax lowered the entry barrier for every occupation to the price of a licence and it has

¹¹¹ Retail ratios for the Netherlands are calculated from the figures in Horlings (1995), 333 (Table 11.9), showing 28.6 per 1,000 in 1807 and 28.17 per 1,000 in 1849. For the province of Overijssel, Slicher van Bath (1977), 171, finds stability in retail density between 1795 and 1889.

¹¹² It is precisely during the second quarter of the nineteenth century that larger shops and department stores began to appear in Dutch cities. So although we do not observe growth in the numbers of retailers per head of population, the Dutch retail sector did experience growth during this period on the level of the average size of retail businesses. See Schrover (2002), 266-85; Van Lottum (2004), 40-1.

¹¹³ Van Zanden and Van Riel (2000).

¹¹⁴ Van den Heuvel (2007), chs. 3 and 4.

been argued that the result was to stimulate domestic trade inside the Netherlands.¹¹⁵ On the other hand, the direct impact on retailing of this shift from guild regulation to state licensing may have been muted by the fact that Dutch retailers' guilds already imposed entry barriers lower than those of most craft guilds,¹¹⁶ and the Patent Tax system actually introduced a license (albeit a relatively cheap one) to many localities which had previously had no retailers' guilds.

The price of a license differed according to the type of retail trade one was involved in. First, it varied according to how large the business was (yearly revenues and number of employees) and whether it sold exotic wares.¹¹⁷ Furthermore, the price of the license depended on where the retailer was based, with retailers operating in larger cities paying the highest fees.¹¹⁸ Although for some types of retailing in certain areas of the country, the introduction of the Patent Tax made entry more difficult than it had been under guild regulation, for other would-be retailers, especially people who did not hold town citizenship, start-up costs decreased dramatically. The Hague, for example, was a city in South Holland with c. 38,000 inhabitants at the end of the eighteenth century. Before the dissolution of the guilds, those without town citizenship wishing to engage in retailing in The Hague were required to pay between 25.6 and 40.6 guilders for guild membership and town citizenship (a pre-requisite for guild admission). When the guilds were abolished and the Patent Tax was introduced, set-up costs in retailing became much lower for those lacking town citizenship (now required to pay only 10-35 guilders for permission to trade) although the price for citizens rose from 5.6 guilders to 10.¹¹⁹ In Arnhem, a medium-sized town in Gelderland with 7,400 inhabitants in 1797, the effect of the dissolution of the guilds and the subsequent introduction of the Patent Law was even greater. Whereas under the guild regime newcomers to the trade paid up to 178.3 guilders for citizenship and guild admission, after 1806 the fee for a license was only 9-33 guilders. The only people who could obtain the legal right to trade more cheaply under guild rule were

¹¹⁵ Horlings (1995), 290.

¹¹⁶ Prak (1999); Van den Heuvel (2007).

¹¹⁷ The license fee also varied according to whether one sold from a shop or as a hawker and peddler, but since peddlers and hawkers were generally not allowed to become guild members and thus faced (in principle) infinite entry barriers under the guild regime, we leave this out of consideration here.

¹¹⁸ There were five different categories of settlement, the lowest category comprising (unidentified) small towns and rural areas.

¹¹⁹ Gemeentearchief Den Haag, Archieven van Ambachtsgilden en Bussen, 138; Panhuysen (2000), 295 (on the cost of citizenship fees in the eighteenth century).

daughters of guild members whose entry fee was set at 8.5 guilders; all others, citizens included, paid an equal or much higher sum under the guilds than they did under the Patent Law.¹²⁰

Of course, guild membership and town citizenship admission fees were only paid once, but a number of retailers' guilds are known to have also demanded additional periodic payments such as annual dues (*jaargelden*) and fees for the allocation of market stalls.¹²¹ Patent Tax had to be paid annually as long as one practised the trade, so in some cases the cumulative cost of years of Patent Tax payments may have exceeded the cumulative cost of guild fees. However, in starting a retail business the level of the initial admission costs was crucial, especially since shopkeeping required additional capital to buy wares and set up shop. License fees, by contrast, could be paid out of the ongoing cash flow of the shop and partly transferred to customers by increasing the mark-up on shop wares. Given this, it is likely that guild entrance fees were a greater obstacle to entry than the annual license tax, especially for people who did not hold town citizenship.¹²²

Indeed, Van Lottum has shown how the drastic lowering of entry barriers for migrants as a result of the dissolution of the guilds in Utrecht led to an extraordinary influx of German bakers and shopkeepers who settled in the city only after the guilds were abolished.¹²³ These German shopkeepers, who founded the first Dutch department stores and became prominent in Utrecht and the wider Dutch retail sector, were often members of the same families as the German peddlers who had been visiting the Netherlands before 1800 and operating in the grey market, but had not been allowed to settle and start businesses under the guild regime because they were either excluded from town citizenship altogether or deterred by costly entry barriers.¹²⁴ In France, too, contemporaries acknowledged that the shift from guild regulation to a Patent Tax

¹²⁰ Migrant men paid 178.3 guilders; migrant women paid 160 guilders; citizen males paid 27.3 guilders; citizen females paid 9 guilders; men married to the daughters of guild members paid 24.8 guilders; men married to widows of guild members paid 23.3 guilders; and eldest sons of guild members paid 21.3 guilders. See Gelders Archief, Archief Gilden, 1464; Panhuysen (2000), 295.

¹²¹ Van den Heuvel (2007), 92-3.

¹²² Klep (2009), 136-7, has shown that with the demise of the guilds in Arnhem it became possible for greater proportions of offspring of labourers to enter into a craft.

¹²³ Van Lottum (2004), 44-5.

¹²⁴ Schrover (2002), 234, 257-263. According to Oberpenning (1996), 292-4, German peddlers settled in Leeuwarden only in the late eighteenth century after they were legally obliged to do so by the local authorities if they wished to continue selling their wares to the city's inhabitants.

caused an enormous proliferation in retailers. A Metz magistrate, for instance, wrote to the general council on trade in Paris on 6 February 1813 that because of the modest price of the Patent license anybody could set himself up as a retailer and that the only way to put a stop to this was to ‘re-establish the guilds’.¹²⁵

The significant upturn in retailing as a main occupation in the Netherlands in the first two decades of the nineteenth century took place, therefore, in the context of a number of linked institutional changes. These consisted not just in the abolition of retailers’ guilds, but in the emergence of a more liberal general framework of occupational and geographical mobility permitting wider social groups to move into the retailing of craft wares previously reserved to guild masters and to engage in low-cost ambulatory selling whose costs and risks had previously been inflated by restrictions on ‘strangers’ (non-locals) and ‘non-citizens’ (those without community citizenship rights).¹²⁶ The emergence of the interval between the 1790s and 1803-15 as the period during which the Netherlands experienced this significant rise in retail ratios opens up stimulating avenues for future research into both retailing and institutional change in these key decades.

5. Conclusion

An expansion in the retail sector is widely regarded as central to the Consumer and Industrious Revolutions between 1650 and 1800 – as the final link in the long chain of commercial practices which reduced the transaction costs of bringing the products of long-distance and regional trade into the households of ordinary consumers. The Netherlands is supposed to have seen a particularly striking expansion of retailing in the early modern period, as smaller-scale shopkeepers, stallholders and itinerant traders flourished alongside established merchants, and the number of retailers expanded relative to the population of potential customers.

But this outline narrative of the first modern Retail Revolution still has important gaps. Empirically, it has relied largely on scattered case studies, with no systematic

¹²⁵ Quoted in Braudel (2002), 80.

¹²⁶ On the expansion of ambulatory trading in Zeeland in the early decades of the nineteenth century, see Harten (1971), 60 with n. 83.

measurement of the density of retailing over larger numbers of localities. Existing studies have also concentrated on urban centres and the province of Holland, which as the cockpits of early modern commercialization and consumerism may have been exceptional. Finally, in measuring retail ratios and therefore also the retail sector the historiography has focused mainly on those practising retailing as their main occupation and has not taken into account the wider penumbra of – possibly less formal – traders offering retail services as by-employments alongside other occupations.

This paper has sought to fill these gaps by collecting a much larger body of evidence on retail density, both in its standard definition in terms of primary practitioners and in a broader definition which includes part-time retailers. It encompasses a wider array of Dutch regions, includes smaller settlements as well as urban centres, and covers the entire period during which the Consumer Revolution is supposed to have occurred. It has also sought to assemble information on spatial, chronological, demographic, and institutional factors which might have influenced the density of retailing and its variation. The result has been to provide a more systematic but also a more differentiated picture of retail density across the entire landscape of the ‘first modern economy’.

Spatial factors strongly affected retail density, even across a relatively small and economically well-integrated early modern economy such as the Netherlands. Different Dutch provinces showed significantly differing effects of settlement size (i.e., number of inhabitants) on retail ratio. In Overijssel, the easternmost and least commercialized province, settlement size had the largest effect on retail density. In the westernmost and highly commercialized provinces, settlement size had little effect on retail density (as in South Holland) or none (as in North Holland). In provinces with intermediate retail ratios, settlement size had an intermediate effect on retail density. These findings cast light on our understanding of the effect of urbanization and its associated agglomeration economies in the early modern period. In particular, they suggest that agglomeration economies created by urban centres were much more important in zones of low than in those of high commercialization. At the high levels of commercialization attained in the western provinces of the Netherlands by the later seventeenth century, retail density was high even in small settlements and was not so

dependent on agglomeration economies created by large concentrations of rich consumers, information, or specialization. But even in the highly urbanized Netherlands, settlement size did still positively influence retail density in most parts of the country, albeit differently in different provinces, testifying to the important role played by cities and towns in bringing lower transaction costs to early modern consumers.

There was also a direct effect of province on retail density, the magnitude of which varied with settlement size. The exception was North Holland, whose retail density was significantly and very substantially higher than that of every other Dutch province irrespective of settlement size. The other 'pure' province effects were clearest in small settlements (below the 40th percentile of population size) and became progressively less substantial and less significant as settlements increased in size. But at least among small settlements, South Holland emerged as having a distinctively high 'maximal' retail ratio, Friesland as having a distinctively high-intermediate 'minimal' retail ratio, and Overijssel as having a distinctively low retail density no matter how it was measured.

The retail landscape of the early modern Netherlands was thus highly differentiated both by the boundaries of individual provinces and into larger zones of relatively similar groups of provinces. This raises the question of the underlying causes of this strong spatial differentiation. Should greater emphasis be placed on differences among individual provinces, indicating a primacy of institutional or historical factors specific to each province? Or do the inter-provincial differences instead reflect geographical or ecological zones which are better proxied by province than by latitude, but which relate to hitherto unmeasured variables such as proximity to coast or canal routes (indicating lower transport costs), soil quality (proxying wealth and thus effective demand for retailed luxuries), or agrarian system (proxying rural commercialization, specialization and labour-intensity)? This opens up new avenues for research incorporating additional provinces (Drenthe, Groningen, Utrecht) and additional local characteristics (transport links, resource endowments, agricultural specialization).

Compared to the strong and significant impact of space and settlement size, time had a more muted effect on retail density. Dutch retail ratios were already fairly high in the

1670s, and did not experience any statistically significant increase between then and the 1790s. The eighteenth century saw a long period of stagnating retail density. Only after 1800 did retail ratios rise to levels significantly different from the later seventeenth century. Slight differences in chronology are visible between ‘maximal’ and ‘minimal’ retail ratios. The ‘maximal’ retail ratio (including by-employed retailers) experienced a statistically significant rise between the 1670s and the 1740s, but then stagnated or even declined up to the 1790s, before rising mildly up to 1803-13. In the 1800s, it was significantly higher than the 1670s, but not significantly higher than the eighteenth century. Thus it is the half-century between the 1670s and the 1740s that emerges as crucial in the expansion of *by-employed retailing*, followed by a long-term stagnation. By contrast, the ‘minimal’ ratio (including only full-time retailers) showed long-term stagnation from the 1670s to the 1790s, and only took off significantly between then and 1803-13. The key phase of expansion in *retailing as a main occupation* should thus be dated to the Napoleonic period, suggesting that the institutional changes of that decade may have played an important role.

Unfortunately, reverse causation problems exist for the only available measure of such institutional influences on the retail ratio, the presence or absence of retailers’ guilds, so its effect could not be explored satisfactorily. In all analyses, the presence of retail guilds was negatively associated with the retail ratio, but in only one case (when female headship was taken into account) was this negative relationship statistically significant. It would therefore be unwise to place much weight upon it. Two countervailing influences may have been at work here. On the one hand, a higher density of retailers relative to the population of potential customers created incentives for established retailers to form guilds to protect their businesses, creating a positive association between pre-existing retail density and the presence of a guild to manage this density. On the other hand, such protective organizations by their nature sought to prevent retail density from rising further, creating a negative association between pre-existing retail guilds and any further increase in retail density. In combination, these two forces could cancel each other out, leading to the absence of any statistically significant association between the two. Unless and until a good instrumental variable to register guilds’ effect on retailing can be devised, the statistical analysis of guilds’ impact on retailing will not be able to progress further.

More seriously still, the absence of any systematic relationship between retailers' guilds and retail density may also arise from other considerations relating to the unavoidable aggregation involved in macro-level analyses. In particular there is the finding, which emerges strongly from micro-studies, that what matters is not so much the existence of something that calls itself a guild as what that organization does, particularly with regard to imposing and enforcing barriers to entry. The entrance policies of Dutch retail guilds could differ substantially between and even within towns, resulting in large differences in not only the make-up but also the size of guild membership, and hence the local retail density. But identifying an instrumental variable to measure the effect of guild *policy* is even more difficult than finding one to measure the effect of guild *existence*, creating an additional hindrance to progressing further with this question using aggregate approaches.

A further variable which emerges as significantly associated with retail density is female household headship. Again, there is reverse causation between the retail ratio and female household headship, so the effect of female headship on the retail ratio could not be explored satisfactorily. However, in all analyses we found female headship to be positively associated with the retail ratio, at a high level of statistical significance. This is consistent with the view, advanced in the literature, that female household heads had a type of human capital that made them highly productive in retailing occupations. But it is also consistent with the idea that retailing represented a type of employment that was particularly well suited to the formation and survival of female-headed households because it could be relatively easily combined with household production. A further possibility is that both higher female headship and higher retail density were simultaneously facilitated by underlying characteristics of particular localities – for instance, by institutional characteristics diminishing constraints both on female economic participation and on entry into retailing. These competing explanations pose stimulating questions for future research into the precise characteristics of the individuals and households that acted as vectors of the Retail Revolution in the early modern Netherlands.

Finally, this study alerts us to two general considerations which may be helpful in future analyses of the early modern 'retail revolution'. First, it is important to analyse retailing as a main occupation and retailing as a subsidiary occupation separately.

Although the two types of retailing have many characteristics in common, the Dutch evidence suggests that the trajectory of their expansion differed, with retail by-employments proliferating between the 1670s and the 1740s, but retailing as a main occupation expanding between the 1790s and 1803-13. The two measures of retailing also varied spatially, particularly in Friesland, which emerges as a high-retail-density province when we examine retailing as a main occupation, but as merely an intermediate-density province when by-employed retailers (more numerous in other Dutch provinces) are taken into account.

Second, although international comparisons have their place and have convincingly established countries such as the Netherlands (but also Flanders and England) as societies with relatively high average retail ratios in the early modern period, regional comparisons inside each country are also essential. Behind its high average density of retailing, the early modern Netherlands reveals a highly differentiated retailing landscape, with significant differences among different Dutch provinces and within those provinces between smaller and larger settlements. The spatial, demographic and institutional sources of this variation open up stimulating – indeed, indispensable – avenues for deeper research.

References

- Alexander, D. (1970). *Retailing in England during the Industrial Revolution*. London.
- Bavel, B. Van, and O. Gelderblom (2009). 'The economic origins of cleanliness in the Dutch Golden Age'. *Past and Present* 205: 41-69.
- Becker, M. (n.d.) 'De teloorgang van het Arnhemse kramersgilde onderzocht vanuit een breed perspectief'. (MA thesis, university unknown).
- Berg, M. (1999). *Consumers and luxury: consumer culture in Europe 1650-1850*. Manchester.
- Berger, R. M. (1993). *The most necessary luxuries: the Mercers' Company of Coventry, 1550-1680*. University Park, PA.
- Bieleman, J. (2008). *Boeren in Nederland Geschiedenis van de landbouw, 1500-2000*. Amsterdam.
- Blondé, B., E. Briot, N. Coquery and L. Van Aert, Eds. (2005). *Retailers and consumer changes in Early Modern Europe. England, France, Italy and the Low Countries*. Tours.
- Blondé, B. and H. Greefs (2001). 'Werk aan de winkel. De Antwerpse meerseniers: aspecten van de kleinhandel en verbruik in de 17de en 18de eeuw'. *Bijdragen tot de geschiedenis: De lokroep van het bedrijf. Handelaars, ondernemers en hun samenleving van de zestiende tot de twintigste eeuw. Liber amicorum Roland Baetens* 84: 207-229.
- Blondé, B., P. Stabel, J. Stobart and I. Van Damme, Eds. (2006). *Buyers and sellers: retail circuits and practices in medieval and early modern Europe*. Turnhout.
- Blondé, B. and I. Van Damme (2006). 'Consumer and retail "revolutions": perspectives from a declining urban economy. Antwerp in the seventeenth and eighteenth centuries'. Paper presented to the XIV International Economic History Congress, Helsinki, Finland, 21-25 Aug.
- Blondé, B. and I. Van Damme (2010). 'Retail growth and consumer changes in a declining urban economy: Antwerp (1650–1750)'. *Economic history review* 63(3): 638-663.
- Boon, P. (1996) *Bouwers van de zee. Zeevarenden van het West-Friese platteland*. Hilversum.
- Bot, M. (1996). 'Het Haarlemse Comansgilde. De strijd tegen de ventjagerij in de zeventiende en achttiende eeuw en de uiteindelijke afschaffing van dit gilde'.

- (M. A. thesis, University of Amsterdam).
- Braudel, F. (2002). *The wheels of commerce. Civilization & capitalism 15th-18th century*. Volume 2. First published 1982. London.
- Buyst, E. and J. Mokyr (1990). 'Dutch manufacturing and trade during the French Period (1795-1814) in a long-term perspective'. *Economic effects of the French Revolutionary and Napoleonic Wars*. Eds. E. Aerts and F. Crouzet. Leuven: 64-78.
- Christaller, W. (1933). *Die zentralen Orte in Süddeutschland: eine ökonomisch-geographische Untersuchung über die Gesetzmäßigkeit der Verbreitung und Entwicklung der Siedlungen mit städtischen Funktionen*. Jena.
- De Moor, T. And J.L. van Zanden (2010). 'Every woman counts: A gender-analysis of numeracy in the Low Countries in the early modern period. *Journal of interdisciplinary history* 41(2): 179-208.
- De Munck, B. (2007). *Technologies of learning: apprenticeship in Antwerp guilds from the 15th century to the end of the Ancien Regime*. Turnhout.
- De Munck, B. (2008). 'Skills, trust and changing consumer preferences: the decline of Antwerp's craft guilds from the perspective of the product market, ca. 1500 – ca. 1800'. *International review of social history* 53(2): 197-233.
- De Munck, B. (2010). 'One counter and your own account: redefining illicit labour in early modern Antwerp'. *Journal of urban history* 37(1): 26-44.
- De Munck, B., P. Lourens and J. Lucassen (2006). 'The establishment and distribution of craft guilds in the Low Countries: 1000-1800'. In: *Craft guilds in the early modern Low Countries: work, power, and representation*. Eds. M. Prak, C. Lis, J. Lucassen and H. Soly. Aldershot, UK: 32-73.
- De Vries, J. (1974). *The Dutch rural economy in the golden age, 1500-1700*. New Haven, CT.
- De Vries, J. (1975). *Peasant demand patterns and economic development: Friesland 1550-1750*. In: *European peasants and their markets*. Eds. W. N. Parker and E. L. Jones. Princeton: 205-238.
- De Vries, J. (1978). *Barges and capitalism; Passenger transportation in the Dutch economy (1632-1839)*. A.A.G. Bijdragen 21. Wageningen.
- De Vries, J. (1984). *European urbanization 1500-1800*. Cambridge, MA.
- De Vries, J. (2008). *The industrious revolution: consumer behavior and the household economy, 1650 to the present*. Cambridge.

- De Vries, J. and A. Van der Woude (1997). *The first modern economy: success, failure, and perseverance of the Dutch economy, 1500-1815*. Cambridge.
- Deursen, A. T. van (1988). 'Werkende vrouwen in een Hollands dorp'. *De zeventiende eeuw* 4: 3-16.
- Dibbits, H. (2001). *Vertrouwd bezit. Materiële cultuur in Doesburg en Maassluis 1650-1800*. Nijmegen.
- Epstein, S. R. and M. Prak (2008). 'Introduction: guilds, innovation and the European economy, 1400-1800'. *Guilds, innovation and the European economy, 1400-1800*. Eds. S. R. Epstein and M. Prak. London: 1-24.
- Faber, J.A. (1972). *Drie eeuwen Friesland. Economische en sociale ontwikkelingen van 1500 tot 1800*. Wageningen.
- Fontaine, L. (1996). *History of pedlars in Europe*. Cambridge.
- Fujita, M. and J.-F. Thisse (1996). 'Economics of agglomeration'. *Journal of Japanese and international economies* 10: 339-378.
- Gelderblom, O. (2000). *Zuid-Nederlandse kooplieden en de opkomst van de Amsterdamse stapelmarkt (1578-1630)*. Hilversum.
- Harten, J. D. H. (1971). 'De verzorging van het platteland van de Zeeuwse eilanden in de Franse Tijd'. *Bulletin Geografisch Instituut Rijksuniversiteit Utrecht* 3(1): 31-73.
- Heuvel, D. van den (2007). *Women and entrepreneurship: female traders in the Northern Netherlands, c. 1580-1815*. Amsterdam.
- Heuvel, D. van den (2008). 'Partners in marriage and business? Guilds and the family economy in urban food markets in the Dutch Republic'. *Continuity and change* 23(2): 217-236.
- Heuvel, D. van den and E. van Nederveen Meerkerk (2010). 'Huishoudens, werk en consumptieveranderingen in vroegmodern Holland. Het voorbeeld van de koffie- en theeverkopers in 18de-eeuws Leiden'. *Holland, Historisch Tijdschrift* 42(2): 102-124.
- Horlings, E. (1995). *The economic development of the Dutch service sector 1800-1850: trade and transport in a premodern economy*. Amsterdam.
- Jefferys, J. B. (1954). *Retail trading in Britain, 1850-1950*. Cambridge
- Jongman, C. D. (1951). 'De historische ontwikkeling van het kruideniersbedrijf in Nederland'. *Het kruideniersbedrijf. Een studie over het kruideniersbedrijf in Nederland*. Eds. F. L. v. Muiswinkel and J. C. Berk. Amsterdam.

- Kamermans, J. A. (1999). *Materiële cultuur in de Krimpenerwaard in de zeventiende en achttiende eeuw. Ontwikkeling en diversiteit* Wageningen.
- Kappelhof, T. (1997). 'Laverend tussen Mars en Mercurius. Demografie en economie'. *'s-Hertogenbosch. De geschiedenis van een Brabantse stad 1629-1990*. Eds. A. Vos and et al. Zwolle.
- Klep, P. et al (1985), *De registers van patentplichtigen, 1805-1893*. (Den Haag).
- Klep, P. (2009). 'Economische en sociale ontwikkeling'. *Arnhem van 1700 tot 1900*. Eds. F. Keverling Buisman and I. Jacobs. Utrecht: 116-171.
- Koolbergen, H. van (1983). "De materiële cultuur van Weesp en Weesperkarspel in de zeventiende en achttiende eeuw." *Volkskundig Bulletin* 9: 3-52.
- Kuijpers, E. (1997). 'Lezen en schrijven. Onderzoek naar het alfabetiseringsniveau in zeventiende-eeuws Amsterdam'. *Tijdschrift voor sociale geschiedenis* 23: 490-522.
- Lesger, C. (2001). *Handel in Amsterdam ten tijde van de Opstand. Kooplieden, commerciële expansie en verandering in de ruimtelijke economie van de Nederlanden ca. 1550-1630*. Hilversum.
- Lesger, C. (2007). 'De locatie van het Amsterdamse winkelbedrijf in de achttiende eeuw'. *Tijdschrift voor Sociale en Economische Geschiedenis* 4: 35-70.
- Lemire, B. (1997). *Dress, culture, and commerce: the English clothing trade before the factory, 1660-1800*. New York.
- Lottum, J. van (2004). *Immigranten in Nederland in de eerste helft van de 19e eeuw. Een onderzoek op basis van de Utrechtse volkstellingen van 1829 en 1839. IISG Research Paper 43*. Amsterdam.
- Lourens, P. and J. Lucassen (1997). *Inwoneraantallen van Nederlandse steden ca. 1300-1800*. Amsterdam.
- Lourens, P. and J. Lucassen (2000). "'Zunftlandschaften" in den Niederlanden und im benachbarten Deutschland'. *Zunftlandschaften in Deutschland und den Niederlanden im Vergleich. Kolloquium der Historischen Kommission für Westfalen am 6. Und 7. November 1997 auf Haus Welbergen*. Ed. W. Reininghaus. Münster: 11-43.
- Mathias, P. (1967). *Retailing revolution: a history of multiple retailing in the food trades based upon the Allied Suppliers group of companies*. London, Longmans.
- McKendrick, N., J. Brewer and J. H. Plumb, Eds. (1982). *The birth of a consumer*

- society: the commercialization of eighteenth century England*. Bloomington, IN.
- Mosmuller, J. (2004). 'Handelende weduwen. Amsterdamse handelsvrouwen in de achttiende eeuw'. *Skript* 25: 5-17.
- Mui, H.-C. and L. H. Mui (1989). *Shops and shopkeeping in eighteenth-century England*. Kingston, Ontario / London.
- Nederveen Meerkerk, E. van (2006). *De draad in eigen handen. Vrouwen in loonarbeid in de Nederlandse textielnijverheid, 1581-1810*. Amsterdam.
- Nierop, L. van (1953). 'De handeldrijvende middenstand te Amsterdam in 1742'. *Vijfenveertigste jaarboek van het genootschap Amstelodamum* 45: 193-330.
- Noordam, D.J. (1986). *Leven in Maasland. Een hoogontwikkelde plattelandssamenleving in de achttiende en het begin van de negentiende eeuw*. Hollandse Studiën 18. Hilversum.
- Noordam, D.J. (1994). 'Modernisering in de beroepsstructuur van Holland en Friesland in de vroegmoderne tijd'. *Het platteland in een veranderende wereld. Boeren en het proces van modernisering*. Eds. H. Diederiks et al. Hilversum: 141-152.
- Oberpenning, H. (1996). *Migration und Fernhandel im Tödden-Systeme: Wanderhändler aus dem nördlichen Münsterland im mittleren und nördlichen Europa*. Osnabrück.
- Ogilvie, S. (2010). 'Consumption, social capital, and the "Industrious Revolution" in early modern Germany'. *Journal of economic history* 70(2): 287-325.
- Ogilvie, S. (2011). *Institutions and European trade: merchant guilds, 1000-1800*. Cambridge
- Ogilvie, S. and J. S. S. Edwards (2000). 'Women and the "second serfdom": evidence from early modern Bohemia'. *Journal of economic history* 60(4): 961-994.
- Ogilvie, S., M. Kúpker and J. Maegraith (2011). 'Krämer und ihre Waren im ländlichen Württemberg zwischen 1600 und 1740'. *Zeitschrift für Agrargeschichte und Agrarsoziologie* 59(2), 54-75.
- Overton, M. (1996). *Agricultural revolution in England: the transformation of the agrarian economy 1500-1850*. Cambridge.
- Panhuysen, B. (2000). *Maatwerk. Kleermakers, naaisters, oudkleerkopers en de gilden (1500-1800)*, Amsterdam
- Peters, M. (1987). 'Gildebroeders en gildezusters. De economische positie van

- vrouwen in de Zutfense ambachtsgilden', (M.A. thesis, Catholic University of Nijmegen).
- Prak, M. (1992). 'Een verzekerd bestaan. Ambachtslieden, winkeliers en hun gilden in Den Bosch, ca. 1775'. *De kracht der zwakken. Studies over arbeid en arbeidersbeweging in het verleden. Opstellen aangeboden aan Theo van Tijn bij zijn afscheid als hoogleraar Economische en Sociale Geschiedenis aan de Rijksuniversiteit Utrecht*. Eds. B. De Vries et al. Amsterdam: 49-79.
- Roessingh, H. K. (1965). 'Beroep en bedrijf op de Veluwe in het midden van de achttiende eeuw'. *A. A. G. Bijdragen* 13: 181-274.
- Schama, S. (1991). *The embarrassment of riches. An interpretation of Dutch culture in the Golden Age*. First published 1987. London.
- Schmidt, A. (2001). *Overleven na de dood. Weduwen in Leiden in de Gouden Eeuw*. Amsterdam.
- Schmidt, A. (2009). 'Women and guilds: corporations and female labour market participation in early modern Holland'. *Gender and history* 21(1): 170-189.
- Schrover, M. (1997). 'De affaire wordt gecontinueerd door een weduwe. Handelende vrouwen in de negentiende eeuw'. *Geld en goed. Jaarboek voor vrouwengeschiedenis* 17: 55-74.
- Schrover, M. (2002). *Een kolonie van Duitsers. Groepsvorming onder Duitse immigranten in Utrecht in de negentiende eeuw*. Amsterdam.
- Shammas, C. (1990). *The preindustrial consumer in England and America*. Oxford.
- Slicher van Bath, B. H. (1977). 'Agriculture in the vital revolution'. *The Cambridge economic history of Europe: vol. 5: The economic organization of early modern Europe*. Eds. E. E. Rich and C. H. Wilson. Cambridge: 42-132.
- Slicher van Bath, B. H. (1977). *Een samenleving onder spanning. Geschiedenis van het platteland in Overijssel*. Utrecht.
- Spufford, M. (1984). *The great reclothing of rural England: petty chapmen and their wares in the seventeenth century*. London.
- Spufford, M. (1995). 'Literacy, trade and religion in the commercial centres of Europe'. *A miracle mirrored: the Dutch Republic in European perspective*. Eds. K. Davids and J. Lucassen. Cambridge: 229-284.
- Centraal Bureau voor de Statistiek (2000). *Statistisch Jaarboek 2000*. The Hague.
- Steegen, E. (2006). *Kleinhandel en stedelijke ontwikkeling. Het kramersambacht te Maastricht in de vroegmoderne tijd*. Hilversum.

- Stegeman, J. (1991). 'Scheveningse visverkoopsters ca. 1600-1900'. *Holland* 21: 38-53.
- Stobart, J. and A. Hann (2004). 'Retailing revolution in the eighteenth century? Evidence from north-west England'. *Business history* 46(2): 171-194.
- Streng, J. C. (2001). *Vrijheid, gelijkheid, broederschap en gezelligheid. Het Zwolse Sint Nicolaasgilde tijdens het ancien regime*. Hilversum.
- Van Aert, L. (2006). 'Trade and gender emancipation: retailing women in sixteenth-century Antwerp'. *Buyers and sellers: retail circuits and practices in medieval and early modern Europe*. Eds. B. Blondé, P. Stabel, J. Stobart and I. Van Damme. Turnhout: 297-314.
- Van Aert, L. (2007). 'Tot leven of overleven? Winkelhouden in crisistijd: de Antwerpse meerseniers, ca. 1648 - ca. 1748'. (Ph.D. dissertation, University of Antwerp).
- Van Aert, L. and D. van den Heuvel (2007). 'Sekse als de sleutel tot succes? Vrouwen en de verkoop van textiel in de Noordelijke en Zuidelijke Nederlanden 1650-1800'. *Textielhistorische Bijdragen* 47: 7-32.
- Van Damme, I. (2007). *Verleiden en verkopen. Antwerpse kleinhandelaars en hun klanten in tijden van crisis (ca. 1648 – ca. 1748)*. Amsterdam.
- Vries, J. de (1959). *De economische achteruitgang der Republiek in de achttiende eeuw*. Leiden.
- Vos, A. (2003). 'Vrouwenarbeid en de gilden in vroegmodern 's-Hertogenbosch'. *Noordbrabants Historisch Jaarboek* 20: 148-175.
- Walker, M. J. (1985). 'The extent of the guild control of trades in England, c.1660-1820: a study based on a sample of provincial towns and London companies'. (Ph.D. dissertation, University of Cambridge).
- Wijngaarden, H. van (2000). *Zorg voor de kost. Armenzorg, arbeid en onderlinge hulp in Zwolle 1650-1700*. Amsterdam.
- Wijzenbeek, T. (1987a). *Achter de gevels van Delft. Bezit en bestaan van rijk en arm in een periode van achteruitgang (1700-1800)*. Hilversum.
- Wijzenbeek, T. (1987b). 'Van priseersters tot prostituées. Beroepen van vrouwen in Delft en Den Haag tijdens de achttiende eeuw'. *Vrouwenlevens 1500-1800. Achtste Jaarboek voor Vrouwengeschiedenis* 1987: 173-201.
- Wit, A. de (2008). *Leven, werken en geloven in zeevarende gemeenschappen. Schiedam, Maassluis en Ter Heijde in de zeventiende eeuw*. Amsterdam.

- World Bank (1982). *World development report 1982: agriculture and economic development*. Oxford.
- World Bank (1986). *World development report 1986: trade and pricing policies in world agriculture*. Oxford.
- Woude, A.M. van der (1972). *Het Noorderkwartier. Een regionaal historisch onderzoek in de demografische en economische geschiedenis van westelijk Nederland van de late middeleeuwen tot het begin van de negentiende eeuw*. A.A.G. Bijdragen 16. Wageningen.
- Wrigley, E. A. (2011). The PST system of classifying occupations. (Unpublished paper, Cambridge Group for the History of Population and Social Structure, University of Cambridge).
- Zanden, J.L. (1987). ‘ De economie van Holland in de periode 1650-1805: groei of achteruitgang? Een overzicht van bronnen, problemen en resultaten’. *Bijdragen en mededelingen betreffende de geschiedenis der Nederlanden* 102: 562-609.
- Zanden, J. L. van and A. van Riel (2000). *Nederland 1780-1914: staat, instituties en economische ontwikkeling*. Amsterdam.

Appendix: Tax Registers and Censuses Used to Compile Dataset of Dutch Retail Ratios

Year	Province	Settlements	Document title	Reference
1639	Overijssel	Zwolle	(Gemeente Archief Zwolle, AAZ01, 6455)	Streng, <i>Gezelligheid</i> (2001) 52
1673	Holland (above IJ)	Edam, Volendam, Purmer, Warder, Middellie en Axwijk, Kwadijk, Oosthuizen	Register van het familiegeld	Waterlands Archief, Archief van Edam, Oud Archief, inv.no. 274a
1674	Holland (below IJ)	Capelle aan de IJssel	Kohier	Gemeentearchief Rotterdam, 9, inv.no. 351
1674	Holland (below IJ)	Overschie	Familiegeld	Gemeentearchief Rotterdam, 7.01, inv. no. 123
1674	Holland (above IJ)	Heemskerk	Kohier van het familiegeld	Noord-Hollands Archief, 1032, inv.no. 106
1674	Holland (above IJ)	De Zijpe	Kohier Familiegeld	Regionaal Archief Alkmaar, Waterschap Zijpe en Hazewinkel, Oud Archief, inv.no. 363
1674	Holland (below IJ)	Leiden	Klein Familiegeld	G.J. Peltjens, <i>Leidse lasten, twee belastingkohieren uit 1674. Een bronnenpublicatie en multimedialprogramma</i> (Leiden 1995)
1674	Holland (below IJ)	Rotterdam	Klein Familiegeld	Database created by H. Kentin and Paul van de Laar
1679	Gelderland	Zutphen	Lijsten van inwoners, straatsgewijze opgemaakt, met opgave van het door hen verschuldigde quotisatiegeld van "gewin en gewerf"	Regionaal Archief Zutphen, Oud Archief Zutphen, inv. No. 1438
1680	Holland (below IJ)	Schoonderloo, Overschie, Abtsrecht, Akkersdijk en Vrouwenrecht, Monster, Naaldwijk, Rijswijk, Voorburg,	Kohier van de huishoudens binnen de gerechten en	Gemeentearchief Delft, Oud-administratief Archief Delft,

		Beukelsdijk, 't Hoff van Delft, Nootdorp, Nieuweveen, Bieland, Vrijenban, Berkel, Ruyven, Schiebroek, St Maartensrecht, Schipluiden, Hodenpijl, Dorpambacht, De Lier, Maasland, Santambacht, Tedingerbroek, Maassluis, Wout/Wout-harnasch en Groeneveld, 's-Gravenzande, Wateringen en Halfkwintsheul, Pijnacker, Hogeveen	ambachten onder Delft ressorterende, 1680	inv.no. 1763
1742	Brabant	Den Bosch	'Biljettering'	
1742	Holland (above IJ)	Purmerend	Kohier der Personele Quotisatie	Waterlands Archief, Archief van Purmerend, inv.no. 178
1742	Holland (above IJ)	Krommenie	Lijst van de Familie	Archief Zaanstad, Oud Archief, 0035, 289
1742	Holland (above IJ)	Zwaag	Kohier van het familiegeld	West-Fries Archief, 0689, inv.no. 182
1742	Overijssel	Zwolle	'Volkstelling'	Database created by Elise van Nederveen Meerkerk
1742	Holland (above IJ)	Winkel	Kohier van het familiegeld	Regionaal Archief Alkmaar, Archief Niedorp, Gemeentearchief Winkel, Oud Archief, inv.no. L 201
1742	Holland (above IJ)	De Zijpe (incl. Burgerbrug, Hazepolder, Mennistenbuurt, Oude Sluis, Pannestolpen, Sint Maartensbrug, 't Buurtje)	Kohier van Zijpe van de familie	Regionaal Archief Alkmaar, Waterschap Zijpe en Hazewinkel, Oud Archief, inv.no. 363
1748	Holland (above IJ)	Beverwijk	Register van ontvangst van de belasting, in plaats gekomen van de afgeschafte verpachte belastingen, 1748-1751 (ook wel genoemd Taxatieregister 1748-1751)	Noord-Hollands Archief, 3769, inv.no. 207
1748	Holland (above IJ)	Graft, West-Graftdijk, Oost-Graftdijk, Noordeinde	Stukken betreffende de Personele Quotisatie 1742-1748	Regionaal Archief Alkmaar, Gemeentebestuur Graft, Oud Archief, inv.no. 530

1749	Friesland	All settlements	Quotisatie 1749	Database created by Tresoar
1749	Gelderland	Veluwe (all settlements)	Lijsten van huizen, personen etc.	Gelders Archief, 0008, inv.nos. 256-262; 264-277
1775	Brabant	Den Bosch	'Blokboeken'	Database created by Maarten Prak and Lisette Tax
1795	Overijssel	Salland (all settlements)	Volkstelling	Historisch Centrum Overijssel, 3.1, inv.nos. 5320-5321; 5323-5327; 5329-5337; 5339-5342
1795	Overijssel	Twente (all settlements)	Volkstelling	Historisch Centrum Overijssel, 3.1, inv.nos. 5343-5344; 5346-5350; 5352-5356
1795	Overijssel	Vollenhove (all settlements)	Volkstelling	Historisch Centrum Overijssel, 3.1, inv.nos. 5360-62; 5366; 5368-5370
1796	Limburg	(Settlements belonging to municipalities of) Echt, Eijsden, Heerlen, Heythuizen, Maaseik, Meerssen, Oirsbeek, Roermond, Rolduc, Valkenbrug, Venlo, Weert, Wittem		Regionaal Historisch Centrum Limburg, 03.01, inv.nos. 1036-1037; 1039; 1041; 1047; 1049; 1053; 1055-1056; 1059-1062
1797	Holland (above IJ)	Krommenie and Krommeniedijk	Lijst der geregelde contributien	Archief Zaanstad, Oud Archief, 0035, inv.no. 237
1803	Limburg	Maastricht	Tableau de la population de la ville de Maestricht, contenant le nombre, les noms, age, etat ou profession des habitants de la ville, le lieu de leur domicile, l'epoque de leur entrée dans la ville et les proprietaires des maisons, an XI (23 september 1802 – 23 september 1803)	Regionaal Historisch Centrum Limburg

1806	Holland (above IJ)	Beverwijk	Lijsten van afgegeven patenten	Noord-Hollands Archief, 3769, inv.no. 500
1807	Holland (above IJ)	Graft (including West- and Oost-Graftdijk and Noordeinde)	Patentregisters 1806-1812	Regionaal Archief Alkmaar, inv.no. 589-590
1807	Holland (below IJ)	Maasland, 2 nd Quarter	Staten van de bevolking van gemeenten in het tweede kwartier	Nationaal Archief, 3.02.08, inv.no. 710
1807	Holland (below IJ)	Vrije en Lage Broekhorst, Hillegom, Noordwijkerhout en De Zilk, Katwijk aan Zee, Katwijk aan den Rijn en Het Zand, Rijnsburg en de Vrouwvenne, Oegstgeest en Poelgeest, Wassenaar en Zuidwijk, Voorschoten, Voorburg, Banne van Stompwijk, Zegwaard, Langer- en Korteraar, Alkemade, Leiden, Den Haag, Haag-Ambacht, Loosduinen, Haagzijde en Scheveningen	Verzamelstaat houdende gegevens over burgerlijke staat, aantal kinderen, aantal personeelsleden, beroep, veestapel, bouw- en weiland – in eigendom of in huur – van de mannelijke inwoners van het eerste kwartier, de door hen te betalen belastingen en het aantal bedeeden onder hen, n.a.v. de circulaire van de minister van binnenlandse zaken d.d. 1807 juni 15, no. 6; met bijlagen.	Nationaal Archief, 3.02.08, inv.no. 676
1807	Holland (below IJ)	Maasland, 1st quarter	Verzamelstaat houdende gegevens over burgerlijke staat, aantal kinderen, aantal personeelsleden, beroep, veestapel, bouw- en weiland – in eigendom of in huur – van de mannelijke inwoners van het eerste kwartier, de door hen te betalen belastingen en	Nationaal Archief, 3.02.08, inv.nos. 676; 683; 685-688; 691-693; 695-708

			het aantal bedeeden onder hen, n.a.v. de circulaire van de minister van binnenlandse zaken d.d. 1807 juni 15, no. 6; met bijlagen.	
1807	Zeeland	Middelburg, Vlissingen, Goes, Veere and Colijnsplaat	Tableau van den Staat en Betrekkingen der In- en Opgezetenen in de onderscheidene Districten van het Department Zeeland, getrokken uit de ingezonden Opgaven der Gemeente Bestuuren, en geformeerd ingevolge Decreet van Zijne Majesteit den Koning van Holland de dato 28 Meij 1807.	Harten, 'Verzorging' (1971)
1808	Brabant	Den Bosch	'Volkstelling'	Database created by Elise van Nederveen Meerkerk
1811	Holland (above IJ)	Alkmaar, Edam, Monnikendam, Purmerend, Zaandam, Westzaan, Koog aan de Zaan, Wormerveer, Zaandijk, Krommenie, Assendelft, Oostzaan, Wormer, Jisp, Oosthuizen, Middellie, Ransdorp, Broek in Waterland	Registres Civiques	Van der Woude, <i>Noorderkwartier</i> (1972) pp. 646-7
1811	Limburg	Maastricht	Cremerij accijns [Register koffie en thee]	Steegen, E. (2006). "Eighteenth-century Maastricht shopkeepers and their hinterland customers." in <i>Buyers and sellers: retail circuits and practices in medieval and early modern</i>

				Europe. Ed. B. Blondé, P. Stabel, J. Stobart and I. Van Damme. Turnhout, Brepols: 315-330, p. 318
1812	Holland (above IJ)	Wormer	Register van afgegeven patenten	Waterlands Archief, Archief van Wormer, inv.no. 309
1812	Holland (above IJ)	Zwaag	Lijst van afgegeven patenten	West-Fries Archief, 0689, inv.no. 168
1813	Holland (below IJ)	Capelle aan de IJssel	Patentbelasting 1812-1813	Gemeentearchief Rotterdam, 9, inv.no. 1221

Table 1: Descriptive Statistics for Continuous Variables in Regressions

Variable	Primary occupation not fully recorded, head's sex not fully recorded (n=959)					Primary occupation fully recorded, head's sex not fully recorded (n=873)					Head's sex fully recorded (n=751)				
	mean	median	max	min	std dev	mean	median	max	min	std dev	mean	median	max	min	std dev
RR maximal all	7.88	1.68	112.38	0.00	13.23	6.48	0.00	112.38	0.00	11.70	5.98	0.00	112.38	0.00	11.18
RR minimal all	n/a	n/a	n/a	n/a	n/a	5.36	0.00	82.95	0.00	9.81	4.95	0.00	82.95	0.00	9.36
Population	920.71	283	67000	5	3877.50	752.95	259	67000	5	3214.49	668.46	216	67000	5	3360.05
Log of population	5.71	5.65	11.11	1.61	1.27	5.62	5.57	11.11	1.61	1.22	5.46	5.38	11.11	1.61	1.18
Year	1768.40	1749	1813	1673	32.02	1764.75	1749	1813	1673	31.11	1759.01	1749	1813	1673	29.73
Latitude	491975	498048	601967	308864	77198	497033	503905	601967	308864	78876	516145	520188	601967	309449	62013
Longitude	173462	184476	265320	54811	46211	181807	188252	265320	58300	39092	184739	188817	265320	70538	37748
Female headship	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	12.12	12.20	37.14	0.00	7.45
RR max N. Holland	27.52	24.10	84.07	0.00	20.36	27.52	24.10	84.07	0.00	20.36	28.23	24.51	84.07	0.00	22.70
RR max S. Holland	17.99	15.91	92.59	0.00	16.83	13.12	11.52	48.93	0.00	12.74	8.64	4.01	33.80	0.00	10.16
RR max Friesland	4.77	0.00	33.91	0.00	6.89	4.77	0.00	33.91	0.00	6.89	4.77	0.00	33.91	0.00	6.89
RR max Gelderland	13.55	0.00	112.38	0.00	13.55	5.25	0.00	112.38	0.00	13.32	5.25	0.00	112.38	0.00	13.32
RR max Limburg	4.43	0.00	82.95	0.00	10.92	4.18	0.00	82.95	0.00	4.18	8.86	4.02	82.95	0.00	16.73
RR max Overijssel	3.60	0.00	41.51	0.00	7.90	3.60	0.00	41.51	0.00	7.90	3.60	0.00	41.51	0.00	7.90
RR min N. Holland	n/a	n/a	n/a	n/a	n/a	22.45	20.21	77.22	0.00	17.60	20.98	4.63	77.22	0.00	20.25
RR min S. Holland	n/a	n/a	n/a	n/a	n/a	9.26	7.31	47.68	0.00	9.79	6.77	3.18	28.09	0.00	7.91
RR min Friesland	n/a	n/a	n/a	n/a	n/a	4.20	0.00	30.71	0.00	6.38	4.20	0.00	30.71	0.00	6.38
RR min Gelderland	n/a	n/a	n/a	n/a	n/a	3.35	0.00	63.79	0.00	8.44	3.35	0.00	63.79	0.00	8.44
RR min Limburg	n/a	n/a	n/a	n/a	n/a	4.12	0.00	82.95	0.00	10.60	8.73	3.51	82.95	0.00	16.76
RR min Overijssel	n/a	n/a	n/a	n/a	n/a	3.29	0.00	40.00	0.00	7.32	3.29	0.00	40.00	0.00	7.32

Notes:

RR max = 'maximal' retail ratio measured as number of retailers (including multiple occupations) per 1,000 population.

RR min = 'minimal' retail ratio, measured as number of retailers (primary occupations only) per 1,000 population.

Latitude and longitude are measured in ArcGIS geographical coordinates; see text for equivalents in terms of degrees (°), minutes ('), and seconds (").

Female headship is measured as number of female household-heads per 100 households.

Table 2: Descriptive Statistics for Categorical Variables in Regressions

Variable	Primary occupation not fully recorded, head's sex not fully recorded		Primary occupation fully recorded, head's sex not fully recorded		Head's sex fully recorded	
	no.	%	no.	%	no.	%
1670s	45	4.7	45	5.2	45	6.0
1740s	478	49.8	476	54.5	476	63.4
1790s	298	31.1	298	34.1	215	28.6
1800s	138	14.4	54	6.2	15	2.0
Friesland	355	37.0	355	40.7	355	47.3
Gelderland	103	10.7	102	11.7	102	13.6
Limburg	118	12.3	117	13.4	33	4.4
Overijssel	181	18.9	181	20.7	181	24.1
North Holland	51	5.3	51	5.8	32	4.3
South Holland	151	15.7	67	7.7	48	6.4
Retail guild	22	2.3	19	2.2	14	1.9
N	959	100.0	873	100.0	751	100.0

Notes:

1670s = 1673-1680.

1740s = 1735-1749.

1790s = 1795-1797.

1800s = 1803-1813.

Retail guild: 1=present; 0=absent.

For the reasons discussed in the text, the regressions exclude 3 observations for Brabant (the same town in 1742, 1775, and 1808), and 5 observations for Zeeland (5 different towns in 1807).

Table 3:
Determinants of 'Maximal' Retail Ratio (Including Multiple Occupations),
Dutch Localities, 1673-1813, by Province

Variable	Regression 1		Regression 2		Regression 3		Regression 4	
	Primary occupation not fully recorded, head's sex not fully recorded		Primary occupation fully recorded, head's sex not fully recorded		Head's sex fully recorded		Head's sex assumed not fully recorded	
	(n=959)		(n=873)		(n=751)		(n=751)	
	coefficient (std err.)	marg. eff. (std err.)	coefficient (std err.)	marg. eff. (std err.)	coefficient (std err.)	marg. eff. (std err.)	coefficient (std err.)	marg. eff. (std err.)
Log pop Friesl., Gelderl., Limb.	10.187*** (1.025)	4.859*** (0.386)	9.735*** (1.086)	4.225*** (0.358)	8.870*** (1.105)	3.629*** (0.349)	9.741*** (1.153)	4.015*** (0.357)
Log pop Overijssel	13.849*** (1.622)	6.606*** (0.689)	13.473*** (1.642)	5.847*** (0.616)	12.322*** (1.604)	5.042*** (0.555)	13.431*** (1.703)	5.537*** (0.598)
Log pop South Holland	4.094*** (1.242)	1.953*** (0.589)	5.304*** (1.093)	2.302*** (0.449)	6.539*** (1.372)	2.676*** (0.523)	6.366*** (1.400)	2.624*** (0.543)
Log pop North Holland	-2.630 (2.194)	-1.254 (1.055)	-2.580 (2.184)	-1.120 (0.960)	-1.973 (2.953)	-0.807 (1.215)	-0.850 (3.046)	-0.350 (1.259)
1670s	-20.122*** (3.294)	-5.460*** (0.462)	-18.929*** (3.903)	-4.520*** (0.433)	-23.277*** (4.995)	-4.472*** (0.400)	-20.304*** (4.866)	-4.377*** (0.473)
1740s	-7.490 (4.966)	-3.572 (2.377)	-7.576 (5.036)	-3.365 (2.301)	-19.364** (8.565)	-9.384** (4.776)	-15.018* (8.560)	-7.055 (4.526)
1790s	-10.862 (6.914)	-4.622* (2.624)	-11.571 (7.339)	-4.477* (2.546)	-20.674* (11.823)	-6.358** (2.816)	-21.841* (12.490)	-6.721** (2.961)
Gelderland	-1.437 (2.300)	-0.664 (1.035)	-1.355 (2.245)	-0.569 (0.917)	-0.729 (2.200)	-0.293 (0.873)	-1.394 (2.254)	-0.555 (0.874)
Limburg	-8.391 (6.857)	-3.332 (2.196)	-7.231 (7.869)	-2.630 (2.339)	0.336 (9.168)	0.139 (3.830)	6.314 (9.727)	3.112 (5.569)
Overijssel	-28.821** (11.455)	-8.290*** (1.896)	-28.078** (12.254)	-7.331*** (1.956)	-26.714** (12.844)	-7.039*** (2.278)	-24.913* (13.580)	-6.825*** (2.529)
South Holland	43.725*** (12.012)	33.006*** (10.328)	32.038*** (10.628)	23.775** (9.730)	6.963 (14.484)	3.455 (8.441)	16.965 (14.301)	10.386 (11.255)
North Holland	100.421*** (14.774)	90.697*** (14.088)	96.851*** (14.592)	86.279*** (13.778)	87.704*** (18.400)	78.074*** (17.735)	87.340*** (18.829)	77.632*** (18.177)
Retail guild	-2.471 (3.552)	-1.104 (1.467)	-4.424 (3.913)	-1.668 (1.240)	-6.551 (5.113)	-2.128* (1.237)	-5.453 (5.283)	-1.868 (1.440)
Female headship	n/a n/a	n/a n/a	n/a n/a	n/a n/a	0.485*** (0.127)	0.198*** (0.050)	n/a n/a	n/a n/a
Constant	-49.811*** (7.913)		-46.661*** (8.366)		-36.518*** (10.840)		-39.180*** (11.051)	
Pseudo R-sq	0.1117		0.1132		0.1173		0.1106	

Notes:

Variable definitions as in Tables 1 and 2.

Tobit regressions. Standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Marginal effect is effect on the mean value of the dependent variable conditional on the dependent variable being either strictly positive or zero. For dummy variables, marginal effect (dy/dx) is for discrete change of dummy variable from 0 to 1.

Table 4:
Determinants of 'Minimal' Retail Ratio (Including Primary Occupations Only),
Dutch Localities, 1673-1813, by Province

Variable	Regression 1		Regression 2		Regression 3	
	Primary occupation recorded, head's sex not fully recorded		Head's sex fully recorded		Head's sex assumed not fully recorded	
	(n=873)		(n=751)		(n=751)	
	coefficient (std err.)	marg. eff. (std err.)	coefficient (std err.)	marg. eff. (std err.)	coefficient (std err.)	marg. eff. (std err.)
Log pop Friesl., Gelderl., Limb.	9.133*** (0.846)	3.637*** (0.265)	8.557*** (0.880)	3.176*** (0.261)	9.229*** (0.868)	3.437*** (0.257)
Log pop Overijssel	12.701*** (1.468)	5.507*** (0.521)	11.911*** (1.458)	4.421*** (0.477)	12.679*** (1.483)	4.722*** (0.494)
Log pop South Holland	5.263*** (1.014)	2.096*** (0.391)	6.017*** (1.277)	2.233*** (0.458)	5.897*** (1.321)	2.196*** (0.478)
Log pop North Holland	0.159 (2.146)	0.063 (0.854)	0.513 (2.871)	0.190 (1.064)	1.273 (2.930)	0.474 (1.088)
1670s	-11.780*** (3.595)	-3.023*** (0.521)	-15.304*** (4.413)	-3.153*** (0.426)	-13.291*** (4.291)	-2.989*** (0.507)
1740s	-10.111** (4.213)	-4.191** (1.841)	-18.553** (7.545)	-8.410** (4.058)	-15.571** (7.524)	-6.857* (3.849)
1790s	-9.539* (5.589)	-3.395* (1.798)	-15.873 (9.854)	-4.546** (2.238)	-16.617 (10.254)	-4.743** (2.310)
Gelderland	-4.789*** (1.796)	-1.648*** (0.528)	-4.311** (1.785)	-1.402*** (0.508)	-4.861*** (1.807)	-1.563*** (0.498)
Limburg	-10.076* (5.972)	-2.980** (1.242)	-2.556 (7.307)	-0.860 (2.217)	1.418 (7.580)	0.556 (3.119)
Overijssel	-30.851*** (10.720)	-6.690*** (1.474)	-30.125*** (11.186)	-6.634*** (1.753)	-28.560** (11.639)	-6.440*** (1.835)
South Holland	19.485** (9.603)	12.489 (7.996)	3.221 (13.546)	1.336 (6.217)	10.530 (13.435)	5.428 (8.802)
North Holland	68.062*** (14.441)	58.623*** (13.695)	62.277*** (17.924)	53.258*** (17.331)	62.491*** (18.250)	53.395*** (17.655)
Retail guild	-2.735 (3.649)	-0.982 (1.161)	-3.842 (4.771)	-1.218 (1.255)	-3.134 (4.956)	-1.029 (1.408)
Female headship	n/a n/a	n/a n/a	0.328*** (0.100)	0.122*** (0.038)	n/a n/a	n/a n/a
Constant	-41.201*** (6.738)		-33.956*** (9.143)		-36.259*** (9.148)	
Pseudo R-sq	0.1193		0.1216		0.1178	

Notes:

As for Table 3.

Table 5: Predicted Effect of Province on 'Maximal' Retail Ratio at Different Population Levels

Province	Population = 100 (20th percentile)			Population = 200 (39th percentile)			Population = 500 (67th percentile)			Population = 750 (77th percentile)			Population = 1000 (84th percentile)		
	Predicted value	95% Conf. Interval		Predicted value	95% Conf. Interval		Predicted value	95% Conf. Interval		Predicted value	95% Conf. Interval		Predicted value	95% Conf. Interval	
North Holland	30.53	20.63	40.43	28.75	21.14	36.36	26.43	20.80	32.06	25.42	19.99	30.84	24.70	19.12	30.28
South Holland	8.72	2.04	15.41	10.58	3.92	17.24	13.32	6.76	19.87	14.62	8.08	21.16	15.57	9.02	22.13
Friesland	2.12	0.82	3.43	4.34	2.21	6.47	9.18	5.69	12.67	12.02	7.86	16.17	14.25	9.61	18.89
Gelderland	1.80	0.36	3.25	3.80	1.36	6.23	8.29	4.21	12.37	10.99	6.13	15.85	13.14	7.71	18.56
Limburg	0.75	-0.24	1.74	1.83	-0.12	3.78	4.73	0.95	8.51	6.70	1.99	11.40	8.36	3.00	13.72
Overijssel	0.45	-0.20	1.11	1.62	-0.14	3.38	5.78	1.46	10.11	8.90	3.20	14.60	11.59	4.92	18.26

Note:

Based on Table 3, Regression 1.

Assessed at the sample mean of all other independent variables and at the value of logpop corresponding to the given population size.

Table 6: Predicted Effect of Province on 'Minimal' Retail Ratio at Different Population Levels

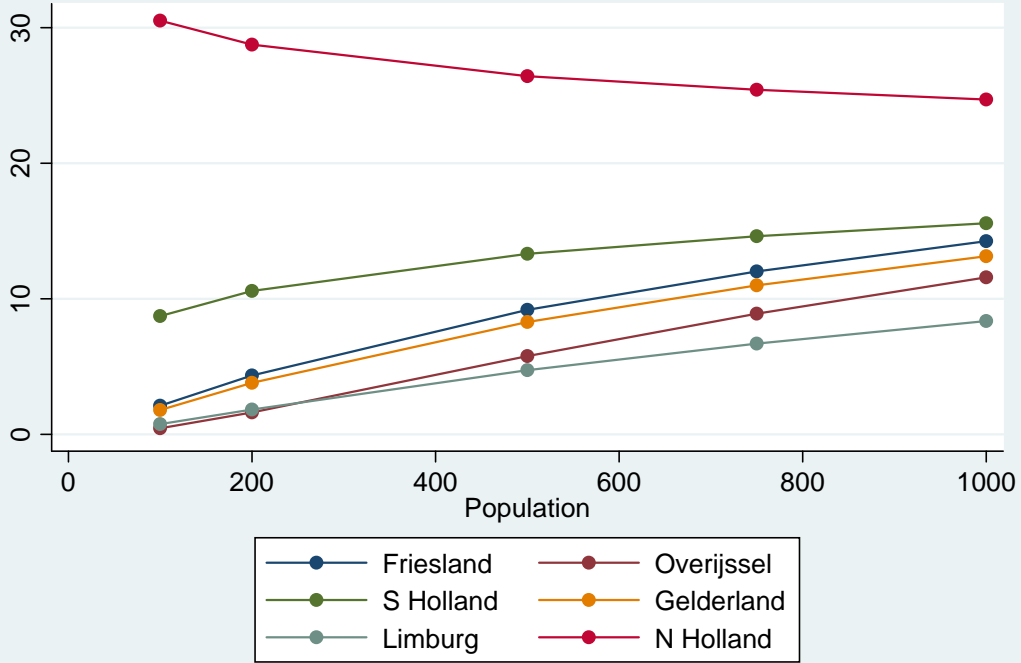
Province	Population = 100 (20th percentile)			Population = 200 (39th percentile)			Population = 500 (67th percentile)			Population = 750 (77th percentile)			Population = 1000 (84th percentile)		
	Predicted value	95% Conf. Interval		Predicted value	95% Conf. Interval		Predicted value	95% Conf. Interval		Predicted value	95% Conf. Interval		Predicted value	95% Conf. Interval	
North Holland	18.58	9.57	27.59	18.68	11.88	25.48	18.82	14.10	23.54	18.88	14.43	23.33	18.92	14.33	23.51
South Holland	2.30	-0.59	5.19	3.56	-0.06	7.18	5.84	1.33	10.35	7.08	2.21	11.95	8.05	2.94	13.15
Friesland	1.86	0.64	3.07	3.98	1.96	5.99	8.66	5.44	11.88	11.39	7.64	15.13	13.52	9.41	17.63
Gelderland	0.93	0.11	1.75	2.27	0.68	3.86	5.71	2.71	8.72	7.93	4.24	11.63	9.75	5.57	13.94
Limburg	0.38	-0.17	0.94	1.09	-0.20	2.38	3.29	0.36	6.22	4.90	1.06	8.73	6.30	1.80	10.80
Overijssel	0.17	-0.12	0.46	0.82	-0.20	1.84	3.85	0.73	6.96	6.42	2.10	10.75	8.75	3.56	13.94

Note:

Based on Table 4, Regression 1.

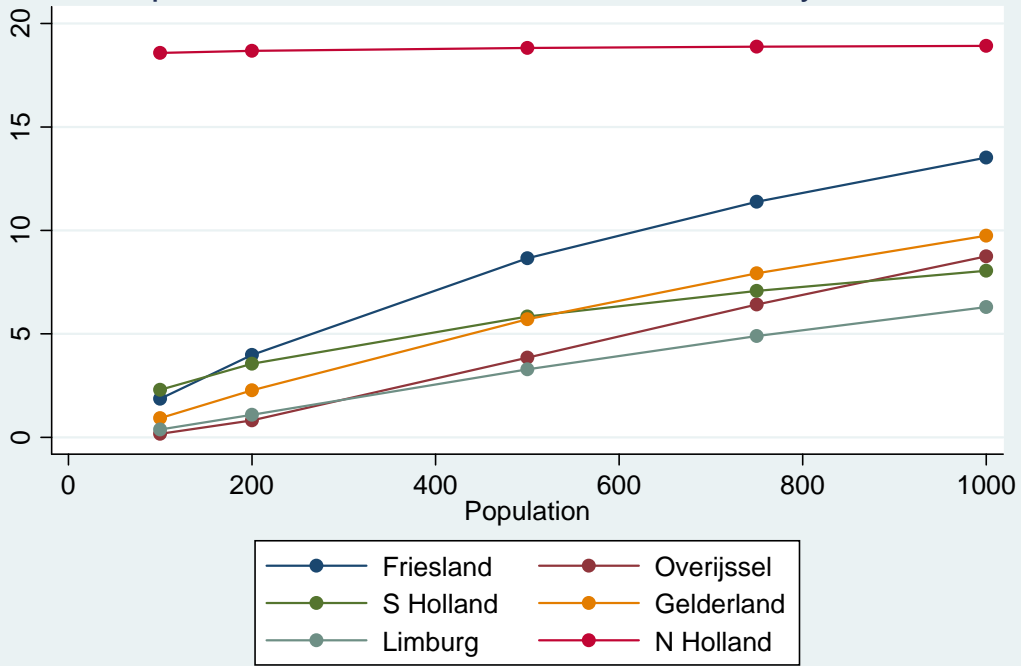
Assessed at the sample mean of all other independent variables and at the value of logpop corresponding to the given population size.

Graph 1: Predicted 'Maximal' Retail Ratio, by Province



STATA™

Graph 2: Predicted 'Minimal' Retail Ratio, by Province



STATA™

Map 1: Settlements in the dataset, 1639-1813

