

People and land: rural population developments and property structures in the Low Countries, c. 1300–c. 1600

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ABSTRACT. Population developments in the western European countryside not only show strong fluctuations during the later Middle Ages, but they also exhibit sharp regional differences. By investigating and comparing developments in three parts of the Low Countries this study tries to shed more light on the causes underlying these regional diversities. In this connection, particular attention will be paid to differences in the social distribution of landownership. Examination of the data at regional level indicates that property structures were indeed an important factor in late-medieval population trends. Later sections of the article investigate the various factors which shaped the interrelationships between population growth, density and property structures, thus contributing to a clearer comprehension of the different demographic histories of the three regions and a better understanding of regional diversities in late-medieval population developments in general.

I. INTRODUCTION

The late Middle Ages is one of the most intriguing periods as far as demographic developments in the western European countryside are concerned. Population fluctuations in this period were strong, with an alternation of periods of rapid growth and steep decline. The general pattern of these fluctuations is well established in recent literature: a demographic expansion in the twelfth and thirteenth centuries, broken off by a dramatic downturn in the fourteenth century. This downturn was followed by a hesitant recovery in the early fifteenth century and a subsequent period of growth, gradually gaining momentum and continuing to the end of the sixteenth century, when population numbers had

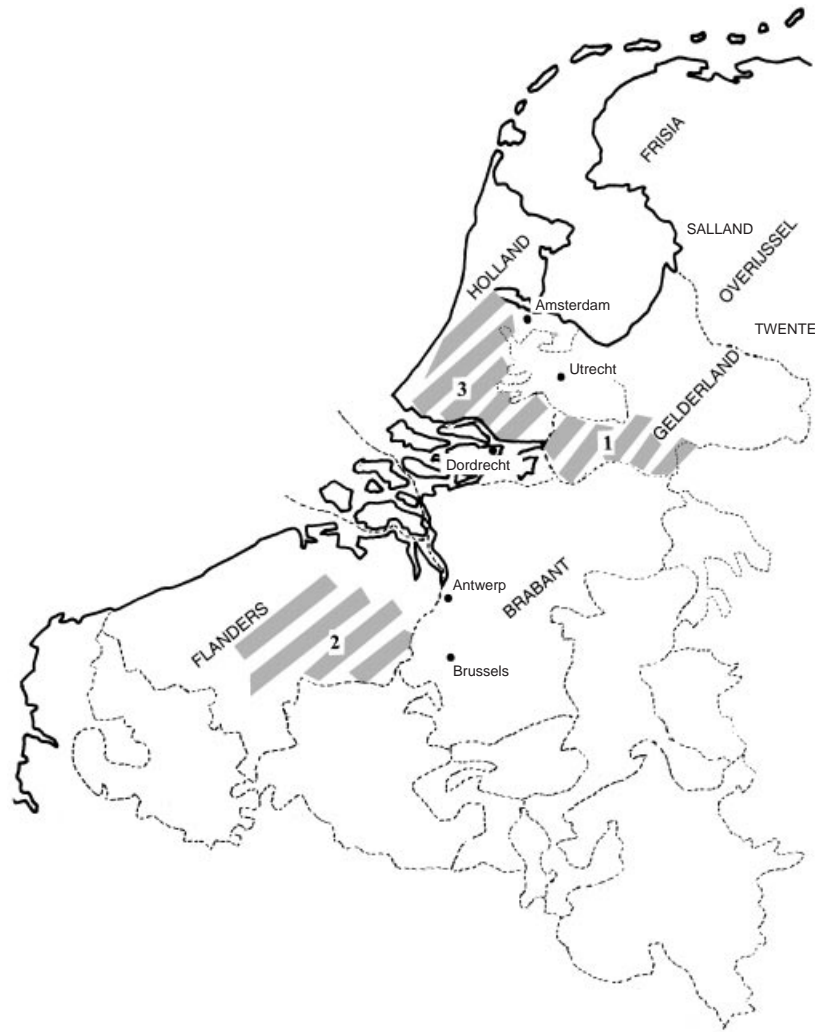
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reached a level somewhat higher than at the beginning of the fourteenth century.

This pattern of population development seems to fit well into a neo-Malthusian framework. The neo-Malthusian model, which came into vogue under the influence of such prominent historians as Abel, Postan and Le Roy Ladurie,¹ focuses on the relationship between population and agrarian resources. For the pre-industrial period, it identifies a continuous cycle of population growth and decline, in which the former always reaches an upper limit determined by soil condition, size of cultivated acreage, agricultural techniques and other production-determining factors. Some authors have inserted the effect of the fourteenth-century Black Death into this model. They interpret the Black Death as part of an inevitable Malthusian crisis caused by exceeding the upper limit, although other authors consider the plague rather as an exogenous factor, independent of the social and demographic framework.²

At this moment, the neo-Malthusian approach still holds a fairly strong position in the science of history. Indeed, it is possible to discern Malthusian cycles in the population developments of the pre-industrial period. The alternation of periods of growth and decline during the eleventh to sixteenth centuries described above is often cited as an example of these cycles. However, this model has difficulty explaining the strong regional differences which can be observed in late-medieval population developments. In the fourteenth century, many regions witnessed a dramatic decline in population, but in other regions the decline was only moderate. Densely populated regions such as Flanders and Holland, where the crisis should have hit hardest, were not hit so hard at all.³ Even stronger differences can be observed in the fifteenth and sixteenth centuries. In some regions, population numbers indeed recovered rapidly, but in others there was stagnation or even further contraction, which in some cases persisted well into the eighteenth century. The latter was the case, for instance, in parts of England and the Low Countries.⁴ Within the orthodox neo-Malthusian model it remains inexplicable why the crisis was so prolonged there,⁵ and why the demographic recovery took so long to materialize, while the balance between population and potential production had already recovered due to the enormous decline in population.

Not only were regional diversities in population developments sharp,⁶ but the same applies to rural population densities in this period. Sometimes there were striking differences between adjacent regions, even between those which at first sight look very similar as far as their agrarian potential and resources are concerned. In this respect, the neo-Malthusian model seems to fall short of the mark somewhat. In the present study, I shall attempt to shed more light on the causes underlying these regional



MAP 1. Map of the late-medieval Low Countries, indicating the regions and places mentioned in the text. The research areas are: the Gelderland river area (Region 1), inland Flanders (Region 2) and the Holland peatlands (Region 3).

differences. I will do so by investigating rural population developments in the Low Countries, a relatively small territory which shows sharply contrasting developments, sometimes in close proximity to each other. This certainly applies to the three regions which are central to the present investigation: the Gelderland river area (Region 1), inland Flanders (Region 2), and the Holland peatlands (Region 3). These three parts of the

Low Countries have been chosen as test regions here, mainly on account of the richness of the source material and the abundance of studies published in recent years. First, I shall compare the findings on rural population developments and population densities in these regions, in order to establish possible patterns. Next I will try to explain the differences observed. In this connection, I will pay particular attention to differences in the social distribution of landownership, which we hold to be an important factor in late-medieval population developments. By explicitly taking this element into consideration, which has not previously been done for the Low Countries, more insight will be provided on the causes underlying the regional differences in rural population developments.

II. POPULATION DEVELOPMENTS

In recent years, our knowledge of population developments in the pre-industrial Low Countries has advanced considerably, as the result of a series of investigations by Dutch and Belgian historians.⁷ In their research, they have chiefly utilized the often extensive records of fiscal administration, which were kept by urban, regional and state authorities from the fourteenth century onwards. Most of these sources enumerate the number of taxable households or hearths, only leaving out the paupers who were exempt from taxes. Although these sources cannot offer any insight into more detailed demographic parameters on the individual level, they do enable us to reconstruct population developments on an aggregate level, on which I will concentrate here. Apart from the paupers who were sometimes left out of the lists, and whose share in the total population can only be guesstimated, these sources offer a full and rather reliable overview of late-medieval population numbers. This certainly applies to the three research areas here. For the first region under consideration, the Gelderland river area, population figures are available from 1369 onwards. These figures clearly show a long-term stagnation (see Table 1).

No data on population numbers in the Gelderland river area are available for the period prior to the Black Death. However, from other indicators (such as the enormous share of the area devoted to the cultivation of bread-grains and its strong decline in the second half of the fourteenth century), it may be surmised that a population peak had been reached here before the middle of the fourteenth century, followed by a decline. After that, population numbers in the region experienced a protracted period of stagnation, which is clear from the figures in Table 1. It was not until the end of the eighteenth century that the population

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TABLE 1
Estimates of rural population figures in various parts of the Gelderland river area (Region 1), 1369–1770

	<i>Tielerwaard</i>	<i>Bommelerwaard</i>	<i>Neder-Betuwe</i>	<i>Over-Betuwe</i>
1369	5,800	5,800	6,200	—
1382/1394	5,400	6,900	6,600	—
1470	6,400	—	6,400	7,300
1630/1650	5,600	6,200	6,400	6,700
1770	6,400	7,100	7,300	10,000

Sources: Paul Brusse, *Overleven door ondernemen. De agrarische geschiedenis van de Over-Betuwe, 1650–1850*, A.A.G. Bijdragen 38 (Wageningen, 1999), 28–32, and Remi van Schaik, *Belasting, bevolking en bezit in Gelre en Zutphen, 1350–1550* (Hilversum, 1987), 273–7.

TABLE 2
Estimates of rural population figures in various administrative districts of inland Flanders (Region 2), 1394–1570

	<i>Kasselrij Oudenaarde</i>	<i>Land van Aalst</i>
1394/1396	—	46,700
1458	19,000	—
1482	19,900	—
1552	23,100	—
1565/1570	23,600	c. 80,000
c. 1580	—	c. 30,000 [?]
1646/1655	—	77,000

Sources: Erik Thoen, *Landbouweconomie en bevolking in Vlaanderen gedurende de late middeleeuwen en het begin van de moderne tijden. Testregio: de kasselrijen van Oudenaarde en Aalst, eind 13de – eerste helft van de 16de eeuw* (Ghent, 1988), 36–40 and 155–64, and J. de Brouwer, *Demografische evolutie van het Land van Aalst, 1570–1800*. Historische uitgaven Pro Civitate 18 (Brussels, 1968), 108–11 and 140–54.

had increased to a size larger than that in the fourteenth century. The area is thus an example of those western European regions where population recovery or growth took a long time to occur.

In inland Flanders (Region 2) population developments were clearly different. First of all, this region was not hit hard during the fourteenth-century crisis. It was once thought that Flanders had hardly been hit by the Black Death, or even not at all.⁸ Although this idea was abandoned when some evidence of the plague in Flanders was found,⁹ it is still clear that the impact of the Black Death must have been relatively small there. Moreover, from as early as c. 1380 rural population numbers in inland

TABLE 3
*Estimates of rural population figures in various parts of Holland
 (Region 3), 1335–1795*

	<i>West Friesland</i>	<i>Holland north of the IJ</i>	<i>Holland south of the IJ</i>
1335	19,600	—	—
1477	26,100	—	—
1494	20,900	—	—
1514	23,700	52,000	89,000
1561/1562	38,100	—	—
1622	47,400	106,000	183,000
1731	27,100	65,000	—
1795	27,300	68,000	228,000

Sources: C. M. Lesger, *Hoorn als stedelijk knooppunt. Stedensystemen tijdens de late middeleeuwen en vroegmoderne tijd* (Hilversum, 1990), 217–23, and Jan de Vries and Ad van der Woude, *The first modern economy: success, failure, and perseverance of the Dutch economy, 1500–1815* (Cambridge, 1997), 52.

Flanders started to rise rapidly. This sharp and prolonged rise was only stopped by acts of war and the havoc made of the countryside during the political and religious troubles at the end of the sixteenth century. The population losses of this dramatic period, however, were repaired again in the first half of the seventeenth century (see Table 2).

Although the Black Death and particularly the echo-epidemics later in the fourteenth century took their toll,¹⁰ the Holland peat region (Region 3) was also hit relatively mildly by the fourteenth-century crisis. Moreover, rural population numbers recovered rather quickly. The peat region, covering the largest part of the county of Holland, experienced a major population explosion during the sixteenth century, as population figures rapidly surpassed those of the early fourteenth century. Around 1600 this growth came to a standstill, first in the southern part and later also in the northern part of the Holland region. Rural population numbers then stagnated or even contracted, a process continuing well into the final decades of the eighteenth century (see Table 3).

With respect to rural population densities differences between the regions were also strong. Most striking are the relatively low population densities in the Gelderland river area, a region consisting of fertile river-clay land. Especially on the stream ridges (the relatively high land near the rivers) the conditions for agriculture were rather favourable. However, in the later-medieval period the region accommodated no more than c. 25 persons per km², or some 40 persons per km² of agricultural land.¹¹ Compared to the marshy peatlands in the Holland region located

immediately to the west of the area, where there were as many as c. 50 persons per km², or 80 to 100 persons per km² of agricultural land,¹² the population density in the Gelderland region was rather low. In the course of the sixteenth century, as rural Holland witnessed strong population growth, differences between the regions increased even further. In inland Flanders rural population densities also were much higher than in the Gelderland region. This area, consisting mainly of loamy soils of a mediocre quality, counted some 60 to 90 persons per km²,¹³ or well over 100 persons per km² of agricultural land. There is another aspect which deserves mentioning here: the decrease of rural population densities in large parts of Holland occurring from c. 1600 onwards. In this period the area of agricultural land was enlarged considerably as a result of large-scale drainage projects and the reclamation of newly won polders, but rural population numbers were stagnating or even contracting, resulting in a decrease of average population densities in the Holland countryside.

III. DISTRIBUTION OF LANDOWNERSHIP

Each of the regions thus possessed its own demographic characteristics. Despite their proximity, differences between the three regions were strong in another respect, namely in the field of the social distribution of landownership, which also shows strong diversity among the three regions. Ownership of the land – and the tenorial relations connected with this (see Section IV, below) – determined to a large extent the access to land. Since land was by far the most important means of production in the countryside, and the major source of wealth, this element can be held to have been a crucial factor in late-medieval population developments, and more specifically in the divergent developments observed above. I will investigate this possible link here, first by reconstructing ownership patterns in the three regions in question.

Ownership of the land – defined here as the strongest right to the land, as appears from the right to sell it or pass it to an heir – could vary sharply from region to region. Recent investigations into ownership structures in the Low Countries have brought diversities to light more sharply.¹⁴ The Holland peat region and inland Flanders appear to have been dominated by peasant landownership: around the middle of the sixteenth century 60–90 per cent of the cultivated land there was owned by peasants. In the Gelderland river area, on the other hand, three-quarters of the land was owned by large landowners, such as sovereign lords, noblemen and religious institutions. Additionally, burghers held well over a tenth of the land, so that no more than about a sixth remained for the peasant population.

These landownership structures show strong stability over the centuries.¹⁵ However, in the Low Countries there was one notable exception to this stability: Holland. In large parts of the heavily urbanized Holland region, a strong change in property structures occurred from the middle of the sixteenth century onwards, as wealthy town-dwellers began to accumulate land by making large-scale investments. In addition, after the outbreak of the Dutch Revolt (in 1568) many peasants saw themselves compelled to sell their lands to urban investors, as their financial position deteriorated due to acts of war and high tax burdens. The rise of proto-industry, in which the main part of the rural population in Holland became engaged, probably further accelerated this process.¹⁶ The impact was enhanced because of the specific course of proto-industrial development in Holland, which was characterized by strong socio-economic polarization.¹⁷ All this led to a transformation of the property structure in this area, which until then had been dominated by small peasant landholding. At the same time, a pattern of large landholding also emerged elsewhere in Holland: in the new polders. These were reclaimed by large-scale investments, chiefly made by wealthy burghers, which made large landholding dominant there from the outset.

A tentative comparison between these regional structures of landownership and population developments indicates that a correlation between the two might exist. The region dominated by large landownership, the Gelderland river area (Region 1), experienced a long stagnation of rural population numbers, and population densities were relatively low there. This differs strongly from the demographic situation in inland Flanders (Region 2), a peasant dominated region. The case of the Holland peat region (Region 3), showing a simultaneous change in both landownership and population densities, also points to a possible correlation. The areas in question, each with its own distinct pattern of landownership and population development, are regions or sub-regions: these rather than the larger national units are therefore the relevant units in this field of research.¹⁸ Thus it is on the regional and sub-regional levels that we have to test whether the social distribution of landownership really was a factor in population developments.

I will undertake this test by first investigating a possible link between property structures and rural population density. Such a link is sometimes assumed, but empirical tests on the regional level are scarce. I will start by examining the Gelderland river area (Region 1) more closely. As we move from east to west through this area, a change is visible in the landscape. In the western part the levees become increasingly smaller and lower, the backswamps become more extensive and the peat in the subsoil lies closer and closer to the surface. In this respect, the extreme western

part of the area thus links up with the adjacent Holland peatlands, whereas the rest links up with the central Dutch river-clay area. The same applies to the social distribution of landownership. Most of the Gelderland river area – particularly the eastern part of it, where the best agricultural lands were located – was completely dominated by the large landholdings of sovereign lords, noblemen and religious institutions. There was, however, one exception to this, the western part of the area, where over half of the land was in the hands of peasants. Large landowners – such as sovereign lords, noblemen, monasteries and chapters – were almost entirely absent there: they held less than a fifth of the land. It can also be observed that the land was divided very evenly among the owners, in contrast to the polarized distribution in other parts of the river area. All this is rather similar to property relations in the nearby Holland peatlands.

Overlapping differences within the area can be observed in the field of rural population densities. As a whole the Gelderland river area had a density of approximately 40 persons per km² of agricultural land. However, differences in population density within the area were great. In the central and eastern part of the Gelderland river area, with its excellent stream-ridge soils, there were no more than about 35 persons per km² of agricultural land. In the western peat-on-clay area, with its marshy soil, the figure was nearly three times as high: up to 110 persons per km², similar to the high population densities observed for the Holland peatlands. In the northwestern part, where by far the largest proportion of the land was held by peasants, the population density was two to three times higher than in the rest of the river area, despite the unfavourable physico-geographical situation.

Such a connection between the peasants' share of the land and population density can also be determined from sixteenth-century data from the Land van Heusden, situated in the southeastern corner of the Holland peatlands.¹⁹ In the eight jurisdictions where over half the land (55–89 per cent) was held by peasants, the average population density was as high as 105 persons per km² of agricultural land. However, in the seven jurisdictions where peasant holdings occupied less than half of the area (with a minimum of 14 per cent), the average density was no more than 45 persons per km². Even for the separate jurisdictions there was a clear positive correlation: the jurisdiction with the most peasant holdings also had the highest population density, and that with the least peasant holdings had the lowest population density. This correlation is confirmed by the results of a formal regression exercise, on the basis of the data on population density and peasant landownership for the 15 jurisdictions in this region. The result, which is statistically very significant, clearly points to a positive correlation, as can be seen in the summary in Table 4.

TABLE 4

The correlation between population density (households per km²) and peasant landownership (in percentages of the surface area) in the Land van Heusden, mid-sixteenth-century: results of the formal regression exercise; x = share of peasant landownership (standard error in brackets)

<i>N</i>	<i>Se</i>	<i>r</i> ²	<i>Intercept</i>	<i>X</i>
15	4.57	0.67	−0.89 (3.16)	0.29** (0.06)

These tests on the regional level seem to indicate that a link between peasant landownership and population density indeed existed in the sixteenth century. In general, the higher the peasants' share of the land, the higher the population density. This impression is confirmed by other cases, for instance in the county of Flanders. The inland parts of Flanders (Region 2), which were dominated by peasant landownership, had much higher population densities than the coastal parts, where there was relatively little peasant landownership. As we have observed above, the highest rural population densities (well over 100 inhabitants per km²) could be found in the southeastern part of Flanders, where peasant landownership was the strongest. These differences can also be observed very clearly within the Flemish castellany of Furnes.²⁰ The fertile polders, where peasant landownership accounted for somewhat less than half of the surface area, had a population density of less than 40 persons per km², whereas the less fertile sandy loam soils, located more inland, where three-quarters of the land was owned by peasants, had more than 80 persons per km².

Although the data are often less precise for regions other than the three research regions here, they do reveal the same picture. Within the present-day province of Overijssel, for instance, demographic differences were also strong. On the fertile clay soils in the west (Salland), which were dominated by large landownership, population figures steadily declined during the period c. 1450–1600. Around 1600, the population density in this region was c. 50 persons per km² of cultivated land.²¹ On the other hand, in the eastern, sandy parts of Overijssel (Twente), where peasant landownership was relatively strong and peasants also had access to common lands, population numbers increased continuously from c. 1500 onwards; in around 1600, population densities reached 110 persons per km² of cultivated land (excluding the wastelands).

These cases all point in the same direction: the correlation between the peasants' share in landownership and the density of the population appears to be remarkably high.²² This certainly applies when comparing units which had fairly similar soil conditions. In some cases, the relationship between peasants' share and population density seems to be even stronger than that between soil condition and population density. The above-mentioned case of the castellany of Furnes is striking in this respect, but that of the Holland peat areas is even more so. After the deterioration of soil conditions in the thirteenth and fourteenth centuries – when the subsidence of the peat soils made arable farming increasingly difficult – this region still had an exceptionally high population density, which seems to be associated with the enormous share of the land the peasants held. Conversely, the areas with a favourable soil situation, which were often dominated by large landholdings,²³ usually had a fairly low population density. These paradoxical differences, which cannot be reconciled with the neo-Malthusian model, indicate a strong, positive correlation between the peasants' share of the land and population density.

IV. TENURIAL RELATIONS

We will now investigate how this correlation between property relations and population density took shape. Various elements, which mutually influenced and reinforced each other, appear to have played a role in this. The first to be considered here are the tenurial relation of the land-users to the land and the development of the average farm size.

In areas dominated by peasant landowning, such as inland Flanders (Region 2) and the Holland peatlands (Region 3), the land-users had a strong grip on the land. If they so desired, they could divide their farms among their children. In any case, their room for manoeuvre with respect to the division of their landownership was large. This room was further enlarged by the fact that customary law in these regions tended to favour partible inheritance rather than any form of monogeniture.²⁴ Thus, at least potentially, all children in these peasant families – in contrast to children of tenant farmers, for instance – had direct access to a small piece of land. Landownership and inheritance patterns here therefore offered a relatively large group the prospect of owning at least some land, securing their subsistence and the possibility of supporting a household, so that they could marry and establish their own families relatively early, that is, early compared to children in regions dominated by large landownership.²⁵ Moreover, in areas dominated by peasant landowning, the land appears to have been divided relatively evenly among the owners, and accumulation processes barely had a chance to take place. Although

late-medieval peasants were heavily involved in land markets and transfers of land between families were numerous – as can be concluded from the late-fifteenth- and sixteenth-century registration of voluntary jurisdiction – in the long term hardly any polarization or accumulation of landownership resulted from this.²⁶ From this, and from the chronological distribution of purchases and sales of land by individual persons, as recorded in the registration, it can be inferred that transfers of land among peasants remained mainly connected with cycles of growth and decreases in available labour within peasant families.²⁷ In addition, the high population pressure characteristic of peasant-dominated regions resulted in high land prices, which sometimes rose above the economic value. This also prevented the accumulation of land. Thus, relatively many country-dwellers in these regions had access to a piece of land large enough to support a family. This gave rise to a demographic regime characterized by relatively high nuptiality and early marital age, and strong population growth, combined with the subdivision of farms.

It is not easy to establish the demographic parameters empirically for the Low Countries, since data on this detailed level are scarce, or even absent before the fifteenth century. However, some scattered fifteenth- and early-sixteenth-century data are available for the regions in question; they are collected from the administration of outburghers (country-dwellers with burgher rights) of Oudenaarde in inland Flanders (Region 2) and from the reports of inquiries into the economic situation in some localities around Leiden in peatland Holland (Region 3). The data from these peasant-dominated regions do indeed indicate that age at first marriage was relatively low and nuptiality high there. In the 77 households described in the report on the countryside around Leiden, all women older than 40 were married or had been married, and almost the same applied to the women of ages 30–39, of whom only one had never been married.²⁸ These people, who were born between c. 1490 and 1525, had mostly married young: on average at the age of 23.1 for men and 20.4 for women. This tallies with the data on the alternation of generations among the rural outburghers of Oudenaarde in the period 1401–1528.²⁹ On the basis of a reconstruction of 73 family trees, the average age at marriage of male outburghers could be estimated at 20 to 25 years, which also is relatively young. From these data, however small their numbers may be, it can indeed be concluded that age at first marriage was low and nuptiality high in these peasant-dominated regions. The high population densities and fragmentation of farms in these regions resulting from this were discussed above. In Holland, however, this demographic regime changed (with nuptiality decreasing and age at marriage rising substantially) during the course of the sixteenth and seventeenth centuries, probably due to the

simultaneous changes in property structures and the rise of large landownership, as will be further elaborated below.³⁰

By contrast, in regions dominated by large landownership, such as the Gelderland river area (Region 1), the users of the land did not have a strong grip on it. After the decline of the manorial system, which was gradually dissolved here between the eleventh and the fourteenth centuries, the former manorial lords and other large landowners had retained control over most of the land, which they now started to lease out. These parts of the Low Countries thus witnessed a strong increase in use of the lease, or more specifically, of the term lease, such as short-term leasing for an adjustable rent without the tenant having permanent rights to the land. From c. 1300 onwards, this type of lease acquired a dominant role in the exploitation of landownership there. A picture of this development can be obtained for the Gelderland river area.³¹ In 1400 it appears that 55 per cent of the cultivated acreage had already been put out to lease, and by around 1570 this figure had increased to 69 per cent, which is comparable to other areas in the Low Countries that were dominated by large landownership.

An entirely different picture emerges for areas where small-scale peasant landownership was dominant, such as in inland Flanders (Region 2), the Holland peatlands (Region 3), and also in Brabant. There, the lease seems to have been introduced relatively early. However, the amount of land leased in these regions increased only slowly, and the importance of the lease remained relatively limited. Apart from in some heavily urbanized parts, the extent of leasing here around the mid-sixteenth century was less than half, and sometimes as little as a quarter, of the cultivated acreage.³² In these areas dominated by peasant landholding the situation was paradoxical in that although the lease had been introduced early, it then hardly grew in significance. Thus, the rise of the lease there did not bring about a total revolution in landownership exploitation. In regions like the Gelderland river area, on the other hand, the lease was introduced relatively late, but then it immediately acquired a large significance. This was to have radical socio-economic consequences, felt particularly by the land users, who saw their grip on the land becoming weakened, and from then on they had to compete fiercely for the land.

V. FARM SIZES AND AGRICULTURE

In those areas dominated by large landownership, where lease land predominated, the division of tenant farms between a tenant's offspring was not simple or was even not possible at all, which meant that they acquired a farm at a rather late age or not at all. Moreover, in some of

these regions a strong accumulation of lease land took place in the fifteenth and sixteenth centuries, as a result of the rise of large tenant farms. In the Gelderland river area (Region 1) these farms, some 35 to 70 hectares in size, started to emerge around the mid-fifteenth century and had acquired a dominant position in the agrarian landscape in the second half of the sixteenth century.³³ This development primarily occurred at the expense of small and medium-sized tenants, who increasingly lost their lease lands and largely disappeared from the scene. A similar process of accumulation of land on the user level can also be observed in other regions dominated by large landownership, such as the Frisian clay areas and Salland. On the other hand, in regions characterized by peasant landownership, the opposite development occurred. Farms in most of these areas underwent strong fragmentation in the transitional period from the Middle Ages to the modern era. This was the case, for example, in large parts of Flanders and Holland,³⁴ regions dominated by peasant holdings, where most farms were merely a few hectares in size and large farms were almost absent.

In view of the almost neighbouring position of these regions, their similarities in the trends in wages and prices and their almost equal distance to urban markets, these striking regional differences can only be explained by their differences in property structures.³⁵ In the regions dominated by large landownership, like the Gelderland river area, most of the agricultural land was leased out for short terms, for terms of only six to ten years. This led to the frequent transfer of landholdings, a fierce and continuous competition for land and ample possibilities for accumulation. The tendency towards an accumulation of lease land was intensified by the wage–price scissors. During the period 1440–1580, and particularly from c. 1500 onwards, food prices rose almost continuously and real wages decreased (see Table 5). This was to the advantage of the large tenant farmers, who used wage labour and brought large surpluses of agricultural products onto the market. In addition, the large tenant farmers were able to strengthen their position further by specializing in non-labour-intensive crops and breeding programmes, whereby they could reduce labour input and increase profits. In these parts of the Low Countries, where market demand was strong and market structures were favourable, all the possibilities for this sort of market-oriented specialization were available.

In highly urbanized Holland and Flanders the market demand was even stronger than in the Gelderland river area. Nevertheless, accumulation of land did not take place there, but instead there was strong fragmentation. The reason for this lies in the dominance of small peasant landholding in these regions. Peasant holdings were less mobile than lease land and

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TABLE 5

Development of wages (one daily wage of a carpenter in grammes of silver) and the price of rye (1 hectolitre of rye in grammes of silver) in Leiden/Holland,^a 1340–1349 to 1550–1559

	<i>Wages</i>	<i>Index 1</i> (1340–1349 = 100)	<i>Price of rye</i>	<i>Index 2</i> (1340–1349 = 100)	<i>Ratio 1:2</i>
1340–1349	8.81	100	32.6	100	1.00
1350–1359	11.66	132	35.5	109	1.21
1360–1369	10.78	122	36.1	111	1.10
1370–1379	11.00	125	27.8	85	1.47
1380–1389	11.18	127	29.9	92	1.38
1390–1399	9.48	108	21.2	65	1.66
1400–1409	9.56	109	27.2	84	1.30
1410–1419	8.39	95	23.9	73	1.30
1420–1429	7.50	85	26.8	82	1.04
1430–1439	8.69	99	27.3	84	1.18
1440–1449	8.15	93	20.5	63	1.48
1450–1459	8.15	93	19.5	60	1.55
1460–1469	7.77	88	17.7	54	1.63
1470–1479	6.42	73	16.3	50	1.46
1480–1489	4.99	57	26.3	81	0.70
1490–1497	5.47	62	20.4	63	0.98
1500–1509	4.76	54	15.9	49	1.10
1510–1519	4.76	54	17.7	54	1.00
1520–1529	4.51	51	21.6	66	0.77
1530–1539	4.59	52	23.5	72	0.72
1540–1549	4.59	52	27.8	85	0.61
1550–1559	4.44	50	33.3	102	0.49

^a Most data are for Leiden, but these are combined with some from other parts of Holland.

Sources: Based on the data calculated by Jan Luiten van Zanden, 'A third road to capitalism? Proto-industrialisation and the moderate nature of the late medieval crisis in Flanders and Holland, 1350–1550', in Peter Hoppenbrouwers and Jan Luiten van Zanden eds., *Peasants into farmers? The transformation of rural economy and society in the Low Countries (Middle Ages–19th century) in the light in the Brenner debate*, CORN Publication series 4 (Turnhout, 2001), 85–101, esp. Table 5.1.

their accumulation was more difficult. Moreover, these lands were largely used by the peasants themselves, so that lease land was scarce. The dominance of peasant landowning also led to high population density and strong fragmentation of land, as is becoming clear. This situation brought about fierce competition among the peasants for the scarce lease land, resulting in relatively high rents,³⁶ which could rise above the economic value. This hindered the emergence of large commercialized farms; the lease land remained split up in small parcels, worked by numerous

peasants and leased out for high rents. The division of agricultural land in these regions (both owned and leased land) was thus to a high degree linked to the size of the population.

In large parts of Holland (Region 3), this situation changed in the decades around 1600. As a result of large-scale investment in land by wealthy burghers, a strong shift in property relations took place there, as described above. In this period, peasant landownership was displaced by large landownership, which was usually leased out, so that the amount of lease land increased sharply. This set the above process in motion, and, not much later, many large, specialized farms employing wage labour appeared in the countryside of Holland. In regions dominated by large landownership – such as the Gelderland river area – this process occurred much earlier. Large amounts of lease land were in fact available there from the mid-fourteenth century. The accumulation process itself began in the fifteenth century and gathered pace around the mid-sixteenth century, which from a western-European standpoint is early. This process had far-reaching consequences for the rural population. Medium-sized family farms, which were still dominant there at the beginning of the fifteenth century, mostly disappeared from the scene. The number of farms in the region probably decreased by about half in the course of this process. Thousands of families lost their lease land and hence the possibility to operate a farm independently. From now on they were dependent on income from wage labour, which did not amount to much due to the simultaneous decline of real wages. In view of the fact that at the same time the large tenant farmers were increasingly able to strengthen their position, the socio-economic polarization among the rural population in these areas was enormous. Village communities increasingly became divided into a small group of wealthy lease farmers and a large group of pauperized farm workers.

Not only did the latter have to cope with a decrease in earnings, but they also lost their economic independence, had hardly any or no land left and were not able to transfer any land to their children. In regions like these, access to one's own agricultural holding was thus increasingly limited. This situation perhaps led to migration from the countryside, for instance to nearby cities,³⁷ and also to lower nuptiality and a rise in the average age at first marriage, resulting in a decrease in the average number of children. Indeed, the country-dwellers with hardly any or no land – a group which was steadily growing in number in the regions in question – appear to have had a significantly lower number of children than other rural population groups. The difference between these groups could amount to no fewer than 1.5 to 2 children per household.³⁸ Moreover, if these near-landless countrymen were confronted with a

deterioration of possibilities for earning a living in the countryside as wage labourers – which was the case in many of these regions, as will become clear below – then they would have further adjusted their marriage pattern, resulting in an even lower number of children. In regions dominated by large landownership where large farms emerged, all this would have had strong negative effects on the long-term growth of the population.

VI. INVESTMENT AND LABOUR INPUT

Another possible element in the relationships between property relations and population density – which in turn is also partly connected with farm size – consists of investment in the agrarian sector. It is sometimes thought that this was lower in regions where the lords dominated property relations as a result of a higher degree of surplus extraction, which served to satisfy the lords' non-productive needs.³⁹ Consequently, the farmers would have had fewer opportunities to innovate and increase production through investments.⁴⁰ In areas where property and surplus-extraction relations were dominated by lords, the productivity of the land would, according to this reasoning, have remained relatively low and the population relatively small.

Further investigation, however, has shown that this reasoning is not correct. On the contrary, the combination of large landowner and large tenant farmer that emerged in these areas rather appears to have had a positive effect on the level of investment. Large landowners actually were inclined to reinvest a substantial portion of their lease income. In the Gelderland river area, they spent about 16–20 per cent of their gross income on investments in agricultural holdings, which seems to be rather a lot, at least in comparison to the figures known for large landowners in peasant-dominated areas.⁴¹ These percentages even showed an upward trend in the course of the sixteenth century. In addition, tenants also spent large sums of money on their holdings: for the maintenance and construction of hydraulic works, for maintenance of the farm buildings and for the costs of cattle, sowing seed, implements and wages. Due to a lack of data, little can be said specifically about the level of tenants' expenditures and investments, but one can suppose that the big tenants especially used their relatively large financial resources for that purpose, partly compelled to do so by the fierce competition for leasehold land.⁴² It is to be expected that they made substantially higher capital investments than the small landowning farmers, the peasants. Not only did the peasants not have to compete continuously for lease land, but the population numbers in areas dominated by small landowning farmers

often grew to a biological maximum – as can be surmised from what I said in Section II and will be further elaborated upon below – so that there were hardly any surpluses and possibilities for capital investment were limited. The peasants were more likely to have used the surplus labour force they had available within their own families and to have increased labour input, as will be evident below from the account of the agricultural developments in peasant areas in the peatlands of Holland and in inland Flanders.

It was therefore not the level of investment that influenced the density of the population, but the nature and the objective of the investment. Small freeholders, who usually had little land, principally strove to increase the physical yield of the land through their investment. This certainly applied in situations of high population pressure and the strong fragmentation of farms – which was a direct consequence of peasant dominance in landownership, as now becomes clear. Small-scale peasant farmers achieved an increase in yields especially by turning to intensive agriculture.⁴³ By applying labour-intensive tillage of the soil and intensive manuring they were able to obtain enormously high yields, in several cases as much as 16–20 hectolitres of wheat or rye per sown hectare, as has been established for inland Flanders and other regions.⁴⁴ These yields could thus be 50 per cent or more higher than in other parts of western Europe, sometimes despite mediocre soil conditions. In this respect, the possibilities for obtaining high yields on these mini-farms by increasing the labour input seem to have been large.

To better utilize the manpower available within the family, these peasant farmers would also have specialized in such labour-intensive commercial crops as flax, hemp, mustard and hops. This can be observed in inland Flanders (Region 2) and the Holland peatlands (Region 3),⁴⁵ where specialization on the small family farms was labour-intensive. Peasant farmers in these regions also developed proto-industrial and related non-agrarian activities in order to obtain additional income. In the countryside of inland Flanders, particularly, the processing of flax, spinning and linen-weaving developed strongly from the fourteenth century onwards.⁴⁶ These labour-intensive cottage industries were a logical extension of the peasant economy. They enabled the peasants to employ the surplus labour of all household members, using raw materials produced partly on their own holdings and inexpensive tools which they usually owned themselves. The expansion of such cottage industries, which was aided by strong demand from urban markets, perhaps in some cases resulted in an adaptation of the reproduction pattern. Proto-industrial families had alternative earnings which diminished the need to delay marriage until some land had been acquired (for instance through

inheritance), and a larger number of children possibly became an advantage in carrying out these household activities.⁴⁷ Proto-industrialization thus might lead to stronger population growth and higher population densities, although this supposition is not in all cases corroborated by empirical research.⁴⁸ But even apart from a possible direct influence, it is clear that proto-industrial families were broadening their possibilities to earn a living by tapping these additional sources of income. Thus, yet smaller farms became viable and population numbers increased even further, as occurred in the already densely populated Flemish countryside, particularly in the course of the sixteenth century.

The same applied to the Holland peatlands, where such activities as spinning, weaving, peat-digging, brick-making, fishing and shipping developed strongly in the late-medieval period. Many of these non-agricultural activities were performed by peasants, thus supplementing their earnings from the cultivation of their own small holdings. In Holland too the rise of these activities in the countryside had a positive effect on rural population growth.⁴⁹ In the course of the sixteenth century, however, this situation changed drastically, as the character of non-agricultural activities in the Holland countryside underwent a strong transformation. The peasant element in these activities largely disappeared as a result of the tendency towards an increase in the size of production structures, the increasing use of expensive capital goods and the growing importance of urban investors and entrepreneurs.⁵⁰ At the same time, the focus of many of these industries shifted to the cities. As far as activities remained in the countryside, the workforce consisted more and more of wage labourers instead of peasants. It is interesting to note that these changes occurred simultaneously with the transformation of property structures noted above. It is probable that the two developments had reinforced each other. At any rate, the possibilities for the rural population to combine small-scale farming with non-agricultural activities rapidly evaporated. This probably had important consequences for population growth, as will become more clear below.

A completely different development occurred in areas which had always been dominated by large landownership. Under the conditions described above, large tenant farms came to dominate the agrarian landscape there. The large-scale tenant farmers who operated on a capitalistic basis endeavoured to maximize their profits, partly in order to continue to win the competition for the lease land. They achieved this through specialization and the reduction of labour input, whereby they were able to improve the relationship between output and wage costs, by far the chief variable cost. Consequently, they invested in an increase of labour productivity by opting for non-labour-intensive sorts of crop

cultivation and livestock farming, and by using capital investments to further reduce labour input.⁵¹ The large tenant farmers and their landlords also utilized their financial reserves to make the investment necessary for this type of specialization and the reduction of labour input.

The consequences of this development can be observed in regions such as the Gelderland river area (Region 1), where agriculture indeed experienced a major transformation. From the fourteenth century, the significance of arable farming in the area had become quite small, and an increasing part of the arable land was used to grow fodder crops (such as beans and rape-seed), and especially oats, the most important arable crop in this region.⁵² Oats were usually grown using a form of convertible husbandry, which emerged there in the sixteenth century. In this system, farmers were able to maintain grain production at a certain level, while dairy and meat production could be increased. At the same time, the number of ploughings could be reduced, so that labour productivity rose.⁵³ A reduction of labour input can also be inferred from the drop in the physical yields of grain-growing.⁵⁴ Most yields showed a downward trend in the course of this period, despite an improvement in conditions, such as the restriction of arable farming to the best lands and growing investment in manuring and polder drainage.

Stock farming in this region also became increasingly more non-labour-intensive and capital-intensive during the course of the fifteenth and sixteenth centuries. This applied particularly to the sectors that developed strongly there, such as horse-breeding and ox-fattening on pastures. Such branches of livestock farming were very suitable for large-scale farmers, who usually had large capital reserves, who endeavoured to reduce labour input and who had good contacts with the market. Labour-intensive commercial crops, however, had little significance, in contrast to areas dominated by small family farms.

The nature and significance of agricultural specialization thus differed sharply from region to region, because the degree to which farmers reacted to market demands, and especially the direction they gave to market specialization, was to a large extent dependent on factors from the production side. In this region the development of the production structures resulted in a strong decline in agricultural employment. As has been demonstrated, for example, for the large enclosed farms in the eighteenth century in the English Midlands,⁵⁵ where employment per hectare declined as the surface area increased, it indeed seems that labour input on the large farms in the Gelderland river area was sharply reduced. In two sixteenth-century examples, it appears that only 0.1 man-year of labour per hectare was used. This corresponds with the figures found for large farms in the eighteenth and nineteenth centuries,⁵⁶ that is 0.1 to 0.15

per hectare, whereas on family farms it averaged between 0.25 and 0.5 man year per hectare, and on mini-farms up to 1.0 or even 1.2. Whereas labour productivity would probably have increased as a result of these developments, demand for agricultural labour was sharply reduced, maybe even by more than half, if we use the eighteenth/nineteenth-century figures as a yardstick.

The numerous country-dwellers in the Gelderland river area who lost their lease lands due to the accumulation of land in the hands of large tenant farmers and who could no longer operate their farms independently would therefore also have been hard put to find work as wage labourers. Alternative sources of employment hardly developed or did not develop at all here either in the fifteenth and sixteenth centuries. Apart from spinning, rural industries and other non-agricultural activities were conspicuously limited or even absent in the Gelderland river area. Although the area counted increasing numbers of pauperized wage labourers in need of alternative sources of income, no non-agricultural activities to speak of emerged here, in sharp contrast to the Holland peat region and inland Flanders. Apparently, the presence of numerous peasants having small farms to rely on (at least partly) for their subsistence was an essential condition for proto-industrial development.⁵⁷ With the demand for agricultural labour already declining, this potential source of employment was thus closed off too. On top of this, as a result of price inflation real wages decreased during most of the period 1440–1580 (as can be seen from Table 5), thus reducing potential earnings of wage labourers even further. As nuptiality and the age of marriage of wage labourers depended strongly on possibilities for obtaining wages,⁵⁸ and both real wages and demand for labour were declining sharply in the Gelderland river area, this will have led to a further decrease in the number of children and will have induced population decline.

VII. CONCLUDING REMARKS

In the present investigation, I have analysed three essentially different paths of rural development in the late medieval period: one in a region dominated by large landownership, one in a region dominated by a stable structure of peasant landownership and one in a region which underwent a transformation in property structure, as peasant landownership was displaced relatively quickly by large landholdings there. The analysis of these regions here does not embrace all relevant factors, but it does extend and refine the neo-Malthusian model, which is unable to give a satisfactory explanation of population developments in the period in question. On the basis of the elements described above, it is possible to obtain a better

insight into the divergent evolutions of population in the various regions. Regions such as inland Flanders and the Holland peat area, which were dominated by peasant landownership, were characterized by high to exceedingly high population densities and fragmentation of farms. In these regions, there was high population pressure, highly labour-intensive agriculture and probably a decrease in labour productivity, a situation which in inland Flanders essentially remained the same until into the nineteenth century,⁵⁹ and which in Holland only changed after the transformation of property relations around 1600.

These regions had exceptionally high rural population densities, certainly when one considers the mediocre soil quality in some parts of them. Thus, in these areas there was an enormous rural population reservoir which could continually swell the masses of the urban population. Under certain circumstances this reservoir spilled into the towns, as occurred, for example, as a result of the deterioration of physico-geographical conditions in the Holland countryside in the thirteenth and fourteenth centuries. This helps explain the strong wave of urbanization in this period.⁶⁰ Particularly because property relations were unaffected, rural population density in Holland later recovered and reached the high values observed around the mid-sixteenth century. However, this changed in the decades either side of 1600. As a result of the accumulation of large holdings by wealthy town-dwellers and the major increase in leasing, property relations and the exploitation of land then underwent radical changes. The Holland countryside, which, despite the tendencies to commercialization, still had many features of a peasant economy, thus moved towards a system of agrarian capitalism within a relatively short space of time.

This led, in the ways mentioned above, to a decline in population and an expulsion of people from the countryside, which in part explains the simultaneous acceleration in urban growth and the increase in the rate of urbanization in Holland from c. 1570 onwards, which reached 55 per cent in 1622.⁶¹ The pattern of urbanisation and the size distribution of cities in the early-sixteenth century clearly reflect the fact that urbanization in Holland was to a large extent driven by push factors in the countryside,⁶² but presumably this also applied to the wave of urbanization at the end of the sixteenth century, at least to a certain extent. As can be expected from the preceding discussion, in the same period rural population growth in Holland slowed and then stopped or even turned into decline,⁶³ starting somewhere around 1570 in the southern part of Holland – where changes in property and production structures were most notable in the second half of the sixteenth century – followed around 1650 by the northern parts of Holland, where these changes occurred mainly in the seventeenth

century. This decline seems to have been the result of migration to the cities, as well as changes in marriage patterns. In this period the average marital age in the Holland countryside rose to a considerably higher level, as has been demonstrated empirically for some localities. For instance, in the village of Maasland, situated in the Holland peatlands, the average age at first marriage in the second half of the seventeenth century was 32.8 for men and 29.7 for women.⁶⁴ These figures are surprisingly high; almost ten years higher than the figures found for the areas adjacent to Leiden in 1540.

In the same period, and particularly in the course of the sixteenth century, the age of majority in Holland was raised considerably. In the fifteenth century, as regional differences in Holland were still strong in this field, girls attained their majority between 13 and 20 and boys between 12 and 22. At the end of the sixteenth century, however, the upper age had increased to no less than 25, which applied both to the cities and the rural areas in Holland.⁶⁵ This contrasted clearly with neighbouring regions, where the raising of the age of majority was more limited, or even absent altogether. The marked rise in Holland was perhaps due in part to the growing influence of Roman law, which also sets majority at 25, but probably more important were the simultaneous demographic and economic changes in Holland, as can also be gathered from the sharp difference from other regions. Illustrative of demographic changes in Holland is also the fact that in the Krimpenerwaard, a rural part of the Holland peatlands, the number of co-resident children per household declined from 2.72 in 1622 to a mere 2.08 in 1680.⁶⁶ All the data thus point to a transformation in demographic patterns in Holland. This transformation occurred simultaneously with radical changes in property and production structures, a simultaneity which corresponds with the above line of reasoning.

The major impact of property relations on the density and evolution of the pre-industrial rural population in the Low Countries can also be applied to the regions dominated by large landownership, such as the Gelderland river area, where property relationships were dominated by the lease. In the fifteenth and sixteenth centuries, and in particular around the mid-sixteenth century, the accumulation of leased land by large tenant farmers led to a development towards capital-intensive, non-labour-intensive agriculture. As a result, large parts of the rural population lost their farms and also experienced increasing difficulties in finding employment as wage labourers. This had a negative impact on population growth.

However, within the process by which the connection between property relations, lease-holding and population density took shape, this con-

stituted the second phase. The first phase occurred in the first half of the fourteenth century. In such regions as the Gelderland river area, where the density of the population was probably still fairly high, there was a major increase in short-term leasing in the decades around 1300. As a result the mobility of landholdings increased, the competition for land became more marked and the potential for accumulation greater. Moreover, in the same period the institutions and noblemen were able to profit from the low wages and high food prices, thus giving them a much stronger position in the land market than the small farmer-owners. The effects of these developments were not yet as forceful as in the fifteenth and sixteenth centuries, when the accumulation of land occurred on a large scale and the market structure had developed further, thereby increasing the possibilities for market specialization. Nevertheless, these developments were certainly radical, and moreover acquired special weight due to population pressures of the Malthusian type, which at that time had reached a peak. The changes that took place in the decades around 1300 with respect to the tenure and exploitation of land, by far the most important means of production in the countryside, may in these circumstances have acted as a catalyst, and they probably heightened the population crisis considerably.

The preceding discussion can thus help us understand why the Gelderland river area, and similar regions, were hit so hard by the late-medieval population crisis, and why recovery took so long to materialize, resulting in their relatively low population densities in the seventeenth century. It also explains why such regions as Holland and inland Flanders, which were very densely populated, largely managed to escape this population crisis. In these regions the structures of tenure and production, dominated by family farmers on their own land, remained largely unchanged in the period from the high Middle Ages until well into the sixteenth century (in Holland) or even into the nineteenth century (in Flanders). In fact, the existing exploitation and production structure was further extended and refined in the later-medieval period, allowing for more growth in rural population numbers. In the Gelderland river area and some other regions dominated by large landownership, on the other hand, between the thirteenth and the late sixteenth centuries a structural rupture occurred in property exploitation, production structures and land use. This transition to a new socio-economic structure in the countryside, which was closely linked to specific property structures, had a strong negative effect on rural population growth in the region in question. The analysis of our three cases thus confirms the correlation between property structures and rural population developments observed above, and provides us with a better understanding of the different factors which shaped this correlation.

This comparative investigation thus also illustrates the fact that pre-industrial population trends did not encounter a fixed upper limit or population ceiling, but reached a limit which to a large extent was determined by the social distribution of landownership as well as tenurial relationships and the relativities of scale of structures of production (for instance, farm sizes). The limit could shift considerably when changes took place in these regional structures, thus influencing the development of rural population densities to a large extent. This can help explain why it took several centuries before rural population numbers in some western European regions had recovered from the demographic crisis of the fourteenth century. It can also help explain why some regions supported high population densities on relatively mediocre soils, whereas other regions with more favourable soils were much more sparsely populated. More generally, it leads to a better understanding of the substantial regional differences in population developments observed in the late-medieval period.

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ENDNOTES

- 1 See Wilhelm Abel, *Agrarkrisen und Agrarkonjunktur* (Hamburg/Berlin, 1966), esp. pp. 13–17 and 265–9, M. M. Postan, *The medieval economy and society: an economic history of Britain in the Middle Ages* (London, 1972), 27–40, 61–72 and 224–46, and Emmanuel le Roy Ladurie, 'L'histoire immobile', *Annales E.S.C.* **29** (1974), 673–92.
- 2 See for the first view M. M. Postan, *Essays on medieval agriculture and general problems of the medieval economy* (Cambridge, 1973), esp. pp. 12–16 and 213, and for the latter David Herlihy, *The Black Death and the transformation of the West* (Cambridge/London, 1999), 38.
- 3 See below, Section II.
- 4 Again, see below, Section II.
- 5 Although their explanations differ strongly, this problem has been noted by such authors as John Hatcher (*Plague, population and the English economy, 1348–1530* (London, 1977), 11–13 and 55), Guy Bois (*Crise du féodalisme: économie rurale et démographie en Normandie orientale du début du 14e siècle au milieu du 16e siècle* (Paris, 1976), 71) and Bruce M. S. Campbell ('Population pressure, inheritance and the land market in a fourteenth-century peasant community', in Richard M. Smith ed., *Land, kinship and life-cycle* (Cambridge, 1986), 87–134, esp. pp. 126–9).
- 6 This notion seems to clash with the geographical homogeneity of population developments as established by Massimo Livi-Bacci, in *Population and nutrition: an essay on European demographic history* (Cambridge, 1991), 3–5. His analysis, however, concerns large national units, not regions.
- 7 See the older overview by W. P. Blockmans, G. Pieters, W. Prevenier and R. W. M. van

- Schaik, in 'Tussen crisis en welvaart: sociale veranderingen 1300–1500', *Algemene geschiedenis der Nederlanden* 4 (1980) pp. 42–86, esp. 42–60. Their references can now be amplified by the recent literature referred to in notes 9–14.
- 8 H. van Werveke, 'De Zwarte Dood in de zuidelijke Nederlanden (1349–1351)', *Mededelingen van de Koninklijke Vlaamse Academie voor Wetenschappen, klasse der letteren* 12, 3 (1950).
- 9 The evidence was collected by W. P. Blockmans, in 'The social and economic effects of plague in the Low Countries, 1349–1500', *Belgisch tijdschrift voor filologie en geschiedenis* 58 (1980), 833–63. See also E. Thoen and I. Devos, 'Pest in de Zuidelijke Nederlanden tijdens de middeleeuwen en de moderne tijden', in *De pest in de Nederlanden*, Koninklijke Academie voor Geneeskunde van België, Verhandelingen 61 (1999), 109–33.
- 10 Dick E. H. de Boer, *Graaf en grafiek. Sociale en economische ontwikkelingen in het middeleeuwse "Noordholland" tussen plusminus 1345 en plusminus 1415* (Leiden, 1978), 29–133.
- 11 Van Schaik, *Belasting, bevolking en bezit*, 168–82 and 188–92. His data are supplemented by additional research on the surfaces of cultivated land, carried out in the Rijksarchief in Gelderland (RAG, Arnhem), Hertogelijk archief nr. 1360; RAG, Rekenkamer, nr. 1027; and RAG, Heren van Culemborg, inv. nrs 3083, 2369 and 2389.
- 12 J. C. Naber, 'Een terugblik', *Bijdragen van het statistisch instituut* 4 (1885), 1–48, esp. pp. 22–3 and annexes XI–XV. See also K. P. J. Janse, 'De zes Waterlandse dorpen. Een onderzoek naar de middelen van bestaan op het platteland van Waterland tot in het begin van de 19e eeuw' (Master's thesis, University of Amsterdam, 1980).
- 13 Thoen, *Landbouweconomie en bevolking in Vlaanderen gedurende de late middeleeuwen en het begin van de moderne tijden. Testregio: de kasselrijen van Oudenaarde en Aalst, eind 13^{de}–eerste helft van de 16^{de} eeuw* (Ghent, 1988), 39. See also the data in C. de Rammelaere, 'Bijdrage tot de landbouwgeschiedenis in Zuid-Oostvlaanderen, 1570–1790', *Handelingen der maatschappij voor geschiedenis en oudheidkunde te Gent* 16 (1962), 21–40.
- 14 For an overview of these investigations see Bas J. P. van Bavel, 'Structures of landownership, mobility of land, and farm sizes: diverging developments in the northern parts of the Low Countries, c. 1300–c. 1650', in Peter Hoppenbrouwers and Erik Thoen eds., *Access to land in the North Sea Area*, CORN publication series 5 (forthcoming).
- 15 Bas J. P. van Bavel, 'Land, lease and agriculture: the transition of the rural economy in the Dutch river area from the fourteenth to the sixteenth century', *Past & Present* 172 (2001), 3–43, esp. pp. 10–23. See the same work for the exceptional case of Holland.
- 16 J. L. van Zanden, *The rise and decline of Holland's economy: merchant capitalism and the labour market* (Manchester, 1993), 32–5.
- 17 See below, Section VI.
- 18 See Rebecca Jean Emigh, 'Land tenure, household structure, and age at marriage in fifteenth-century Tuscany', *Journal of Interdisciplinary History* 27 (1997), 613–35, esp. pp. 620–1 and 634, where she urges the comparison of regions which are homogeneous with respect to landownership/land tenure.
- 19 On the basis of the data gathered by P. C. M. Hoppenbrouwers, *Een middeleeuwse samenleving. Het Land van Heusden, ca. 1360–ca. 1515* (Wageningen, 1992), 55, 276 and 296.
- 20 By combining the data (for the period 1550–1570) provided by P. Vandewalle, *De geschiedenis van de landbouw in de kasselrij Veurne, 1550–1645* (Ghent, 1986), 53–4, 90, 95 and 134.

- 21 Calculated on the basis of the data provided by B. H. Slicher van Bath, *Een samenleving onder spanning. Geschiedenis van het platteland in Overijssel* (Assen, 1957), 33–51, 401–6 and 612–35.
- 22 Although tenurial relations are more complex and harder to assess there, a similar relationship can be expected to have existed in sixteenth-century England. See for instance Jane Whittle and Margaret Yates, “‘Pays réel’ or ‘Pays légal’?” Contrasting patterns of land tenure and social structure in eastern Norfolk and western Berkshire, 1400–1600’, *Agricultural History Review* **48** (2000), 1–26, esp. pp. 17–19.
- 23 On this link: see van Bavel, ‘Land, lease and agriculture’.
- 24 P. C. M. Hoppenbrouwers, ‘Doorgifte van erfgoed op het laat-middeleeuwse platteland’, *Madoc* **8** (1994), 88–98.
- 25 This would be in line with Robert Brenner, ‘The agrarian roots of European capitalism’, *Past & Present* **97** (1982), 16–113, esp. pp. 29–31, although more and different elements seem to have played a role in this than those taken into account by Brenner, as will become clear below.
- 26 B. J. P. van Bavel, *Transitie en continuïteit. De bezitsverhoudingen en de plattelands-economie in het westelijke gedeelte van het Gelderse rivierengebied, ca. 1300–ca. 1570* (Hilversum, 1999), 393–4 and 418–23.
- 27 This would be in line with A. V. Chayanov (translated by R. E. F. Smith), ‘Peasant farm organization’, in: Daniel Thorner et al. eds., *A. V. Chayanov on the theory of peasant economy* (Manchester, 1986), 29–269, esp. pp. 67–9 and 132–3. See however the critical discussion by Richard M. Smith, ‘Some issues concerning families and their property in rural England, 1250–1800’, in Richard M. Smith ed., *Land, kinship and life-cycle* (Cambridge, 1986), 1–86, esp. pp. 6–38.
- 28 J. L. van Zanden, ‘Op zoek naar de “missing link”. Hypothesen over de opkomst van Holland in de late middeleeuwen en de vroeg-moderne tijd’, *Tijdschrift voor Sociale Geschiedenis* **14** (1988), 359–86, esp. pp. 369–71. See also below, Section VII.
- 29 Thoen, *Landbouweconomie*, 171–4.
- 30 See below, Section VII.
- 31 Van Bavel, ‘Land, lease and agriculture’.
- 32 H. A. Enno van Gelder, *Nederlandse dorpen in de 16e eeuw*. Verhandelingen der KNAW, afdeling letterkunde nieuwe reeks 59 (Amsterdam, 1953), 18; Willem Jacob Diepeveen, *De vervening van Delfland en Schieland tot het einde der zestiende eeuw* (Leiden, 1950), 57–63.
- 33 Bas van Bavel, ‘Elements in the transition of the rural economy: factors contributing to the emergence of large farms in the Dutch river area (15th–16th centuries)’, in Peter Hoppenbrouwers and Jan Luiten van Zanden eds., *Peasants into farmers? The transformation of rural economy and society in the Low Countries (Middle Ages–19th century) in the light in the Brenner debate*, CORN Publication series 4 (Turnhout, 2001), 179–201.
- 34 Jan de Vries, *Dutch rural economy in the Golden Age, 1500–1700* (New Haven, 1974), 63–7, Thoen, *Landbouweconomie*, 862–6 and 872, and Eddy van Cauwenberghe and Herman van der Wee, ‘Productivity, evolution of rents and farm size in the southern Netherlands agriculture from the fourteenth to the seventeenth century’, in Eddy van Cauwenberghe and Herman van der Wee eds., *Productivity of land and agricultural innovation in the Low Countries, 1250–1800* (Leuven, 1978), 125–61, esp. pp. 151–7.
- 35 For this and for the following see van Bavel, ‘Elements in the transition’, and *Transitie en continuïteit*, 578–84.
- 36 See J. Jacquart, ‘La rente foncière, indice conjoncturel?’, *Revue historique* **99** (1975), 355–76, esp. pp. 373–4.

- 37 See also below, Section VII.
- 38 As demonstrated for inland Flanders in the period 1400–1540 in Thoen, *Landbouweconomie*, 204–10. See also Zvi Razi, *Life, marriage and death in a medieval parish: economy, society and demography in Halesowen, 1270–1400* (Cambridge, 1980), 58–60 and 74–88.
- 39 Robert Brenner, ‘The agrarian roots’, 25.
- 40 See also Bois, *Crise du féodalisme*, 191–4 and 358–64, and Rodney Hilton, *Class conflict and the crisis of feudalism: essays in medieval social history* (London, 1985), 242–4.
- 41 Van Bavel, *Transitie en continuïteit*, 539–51. This can be compared with figures provided by Thoen in *Landbouweconomie*, 597–603, and Guy Fourquin, *Les campagnes de la région Parisienne à la fin du Moyen Age* (Paris, 1964), 421–2. Of course, figures for actual peasant investment would be more interesting, but these are not available.
- 42 For the latter see Brenner, ‘The agrarian roots’, 33–6 and 96–9.
- 43 See Ester Boserup, *The conditions of agricultural growth: the economics of agrarian change under population growth* (London/Chicago, 1966), 116–18, and also B. H. Slicher van Bath, *The rise of intensive husbandry in the Low Countries, Britain and the Netherlands I* (London, 1960), 130–53, esp. pp. 136–7 and 148–9.
- 44 Guy Dejongh and Erik Thoen, ‘Arable productivity in Flanders’, in Bas J. P. van Bavel and Erik Thoen eds., *Land productivity and agro-systems in the North Sea Area: elements for comparison*, CORN publication series 2 (Turnhout, 1999), 30–64, esp. pp. 40–2.
- 45 Jan Bieleman, *Geschiedenis van de landbouw in Nederland, 1500–1950* (Meppel/Amsterdam, 1992), 52–5, 65–7, 73–5, 96–120 and 144, Hoppenbrouwers, *Een middeleeuwse samenleving*, 258–61, and Thoen, *Landbouweconomie*, 722–5 and 982–1000.
- 46 Etienne Sabbe, *De Belgische vlasnijverheid*, part I (Kortrijk, 1975), 74–85 and 125–9, and Thoen, *Landbouweconomie*, 980–1020.
- 47 See Hans Medick, ‘The proto-industrial family economy: the structural function of household and family during the transition from peasant society to industrial capitalism’, *Social History* 3 (1976), 291–315, esp. pp. 302–6.
- 48 This conflicting evidence has provoked serious criticism of Medick’s thesis; see Rab Houston and K. D. M. Snell, ‘Proto-industrialization? Cottage industry, social change, and industrial revolution’, *The Historical Journal* 27 (1984), 473–92, esp. pp. 479–83. This has led to a more differentiated approach (but not to an abandonment of their original thesis) by Peter Kriedte, Hans Medick and Jürgen Schlumbohm, in ‘Proto-industrialization revisited: demography, social structure and modern domestic industry’, *Continuity and Change* 8 (1993), 217–52, esp. pp. 219–26.
- 49 See van Zanden, *The rise and decline*, 32–5 and 103–9, and ‘A third road to capitalism? Proto-industrialization and the moderate nature of the late medieval crisis in Flanders and Holland, 1350–1550’, in Hoppenbrouwers and van Zanden eds., *Peasants into farmers?*, 85–101.
- 50 Van Zanden, *The rise and decline*, 35–40. This development awaits further investigation, but probably the favourable market structures in Holland and the absence of strong obstacles and economic restrictions played a role in this.
- 51 See van Bavel, ‘Land, lease and agriculture’.
- 52 Peter Hoppenbrouwers, ‘Agricultural production and technology in the Netherlands, c. 1000–1500’, in Grenville Astill and John Langdon eds., *Medieval farming and technology: the impact of agrarian change in Northwest Europe* (Leiden, 1997), 89–114, esp. pp. 100–1.
- 53 See Eric Kerridge, *The agricultural revolution* (New York, 1968), esp. pp. 208–9.

- 54 Bas J. P. van Bavel, 'A valuation of arable productivity in the central part of the Dutch river area, c. 1360–c. 1570', in van Bavel and Thoen eds., *Land productivity and agro-systems*, 297–309.
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- 59 Erik Thoen and Eric Vanhaute, 'The "Flemish husbandry" at the edge', in van Bavel and Thoen eds., *Land productivity and agro-systems*, 271–96.
- 60 De Boer, *Graaf en grafiek*, 333–8.
- 61 A. M. van der Woude, 'Demografische ontwikkeling van de Noordelijke Nederlanden, 1500–1800', *Algemene geschiedenis der Nederlanden* **5** (1982), 102–68, esp. pp. 131–5, and Jan de Vries, *Dutch rural economy*, 84–9.
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- 63 Van Zanden, 'Op zoek naar de "missing link"', 369–71, and de Vries, *Dutch rural economy*, 88–96.
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- 65 Hans Ankum, 'Études sur le statut juridique des enfants mineurs dans l'histoire du droit privé néerlandais à partir du treizième siècle', *Tijdschrift voor rechtsgeschiedenis* **44** (1976), 291–335, esp. pp. 295–8, with reference to the rural areas of Rijnland (1586) and the Land van Putten (1587).
- 66 A. M. van der Woude, 'Population developments in the northern Netherlands (1500–1800) and the validity of the "urban graveyard" effect', *Annales de Démographie Historique* (1982), 55–75, esp. p. 69, Table 4.