Famines in the Low Countries, fourteenth to nineteenth centuries

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Introduction

Episodes of dearth and famine can be discerned in documents from the Low Countries from as early as the late Carolingian period. Though as with other parts of Europe at this time, we rely ultimately on the perception and opinion of contemporary chroniclers, making it difficult to say anything particularly quantifiable or comparative. For example, one seventeenth-century humanist writer compiled a number of medieval chronicles detailing '*twere zeit*' (hard times) in Frisia from as early as 851, and then intermittently disrupting the eleventh century in years 1006, 1051, 1062, and 1069 (Sax 1986: 145). Medieval chroniclers further noted serious periods of dearth in the twelfth century; one in 1146-47 connected with '*carestia*' (pestilence or disease) and the 'darkening of the skies', suggestive of abnormal climatic conditions, while another in 1191 apparently was noted for its wide geographical impact (Kuys 1983: nos 220, 251; De Ram 1861: II, bk. 14, no. 2). Chronicles from ecclesiastical institutions are our main evidence for harvest failures and dearth in the thirteenth century too: abbot Menko of the monastery of Wittewierum remarked in Groningen in 1250 that city officials had imported grain from unknown 'other lands' to compensate for scarcity (Jansen and Janse 1991: 380-1).

Quantifiable data appear from the fourteenth century onwards in the Low Countries, and then with increasing frequency in the transition into the early modern period. However, it is clear that research into the interaction between food availability and mortality in the late-medieval and early modern period is still a task fraught with source limitations and methodological difficulties. Moreover, the region of the Low Countries, roughly comprising the modern countries of the Netherlands and Belgium (and Luxembourg), underwent profound political transformations. Up to the 16th century the region was referred to as the Burgundian Netherlands or the Seventeen Provinces. After the political secession of the autonomous Dutch Republic in 1581 in the North,

the Southern Netherlands remained under political control of the Spanish and Austrian courts. The North and the South were temporarily reunited between 1815 and 1830 as the United Kingdom of the Netherlands, to be divided thereafter in two autonomous countries. Data on prices are available from the fourteenth century, though in greater amounts for the South than the North. From the fifteenth century onwards, however, both the North and the South are well served with excellent price series for different grains and other agricultural products. More problems exist with the reconstruction of mortality rates. The Northern Low Countries has notoriously scarce sources for reconstructing demographic trends in the medieval period, especially for the countryside (exceptions are Van Schaïk 1987; De Boer 1978), though the situation is slightly better with regard to the South (see the survey in Thoen 1995). Nonetheless, while some towns have burial records starting in the second half of the sixteenth century, systematic registration of burials only really begins in the early stages of the seventeenth century for many villages. Significant time series for mortalities, therefore, can only be done for the countryside from the seventeenth and eighteenth centuries. Before the period of systematic burial registration, historians are forced to use indirect measures for rising mortalities such as numbers of probate inventories recorded by city and village magistrates and the revenues from post-mortem taxes raised by lords (Thoen 1988). As with other parts of Europe, one methodological difficulty is distinguishing between mortality rises caused by subsistence crises and poor access to food, and mortality rises caused by diseases such as plague and dysentery. Given the almost 'endemic' quality of plague in the late-medieval and early modern Low Countries (appearing repeatedly over again in the same places) (Rommes 1990; Noordegraaf and Valk 1988), it is inevitable to have some overlapping plague years and harvest failures. These problems are further exacerbated by the fact that it is now well known that medieval and early modern populations did not necessarily die directly from starvation, but from diseases and illnesses caused by the knock-on effects of sustained exposure to poor nutrition.

The Great Famine, 1315-17

The first abundant wealth of information we have on severe famine in the Low Countries comes from the period 1315-17 (or even 1315-22) with the 'Great Famine' – labelled 'great' on account of its longevity and scale (Jordan 1996: 7). Partially at least, this was connected to the terrible and

prolonged abnormal weather conditions in the North Sea Area, including large amounts of rain and wind. Although like with earlier episodes of famine, we are reliant on contemporary commentary, we also have quantifiable information in the reporting of prices and the fates and fortunes of ecclesiastical institutions – particularly from the South. Scholarly tradition has tended to suggest that the Southern Low Countries were particularly hard hit by the early fourteenth-century famine, with the scale of human suffering at some of the highest levels seen across Europe (Jordan 1996). In contrast, an impression has also been created that the North got off 'relatively lightly' from the terrible crisis period, though likely this is to some extent a function of the relative inequality in the distribution of quantifiable sources. Indeed, the premier book and synthesis on the subject by William Chester Jordan barely cites any material from the area roughly comprising the present-day Netherlands.

Demographic evidence for the famine is patchy in both North and South. It has been calculated that just under 10% of farms were abandoned after the famine hit in the easternmost region of Twente in Overijssel (Slicher van Bath 1970: 97), while in rural coastal Flanders it has been said that settlements lost anything from 10 to 30% of their populations on the basis of archaeological evidence for shrinkage and desertion (Verhaege 1984: 152-6). In such extreme weather conditions, however, depopulation of coastal regions was likely as much related to the effects of flooding as it was to harvest failure (Soens 2009). It is possible that there were regional variations in the demographic impact of the 1315-17 famine, but the evidence is so fragmentary and unevenly distributed that no real patterns can be confirmed. Larger population contractions seem to have occurred in the cities and towns of the southern-most parts of the Low Countries such as the 10% decline cited for Ypres (Carpentier 1962: 1076), compared to Flemish cities further north such as Bruges with a figure less than 5% cited (Blockmans et al. 1980: 56). Going even further north, Utrecht was said to have had 'no noticeable population decline', though this is only from contemporary observations (Struick 1981). Yet the fragmentary and anecdotal information pieced together from other views of contemporaries at least instructs us not to underestimate the demographic impact of the 1315-17 harvest failures in the Northern Low Countries. In some references wage labourers were employed to pick up the corpses of the dead from the public highways for mass burial (Curschmann 1900: 201-1), while chroniclers from St. Egmond Abbey frequently testified to the paupers and beggars left roaming country lanes without food (Aberth 2013: 24). Certainly the 1315-17 famine enhanced the likelihood of the spread of life-

threatening contagious diseases: see the high numbers of deaths in conditions of close contact in the confined monastery of Rijnsburg near Leiden during the period (Ladan 2012: 19).

Information for the Northern Low Countries on agricultural prices is quite rare for the period around the Great Famine – time series for grain are not possible until the late fourteenth century (Dijkman 2011: 288). One chronicle from 1316 did mention that prices for wheat, rye and barley had more than doubled in parts of the Central Dutch River Area of Gelderland (Meister 1901: 51), while further along the Rhine a 'Great Death' was mentioned for the region of Xanten in the same year (Weiler 1935: no. 462). More references can be found for the Southern Low Countries at this time – though still not enough for full time series. Prices in 1315 and 1316 were recorded everywhere as highly volatile – particularly in Antwerp and Liege (Nicholas 1992: 207; Van Werveke 1959: 10; Prims 1933: IV, p. 140). In Louvain, prices for grain had tripled between November 1315 and the summer of 1316 (though caution needs to be heeded with comparing prices for different times of the year) (Lucas 1930: 353-4). Some prices cited by chroniclers such as 17-fold increases were likely exaggerations, particularly from clerics looking to secure special dispensations for their ecclesiastical institutions – many monasteries found the years 1315-17 to be a period of severe crisis culminating in the alienation of landed estates. Evidence recently compiled from Saint John's Hospital in Bruges shows how in years after 1317, the relative expenditure on grains (in relation to dairy, meat and beverages) was suddenly reduced (Dehaeck 2004), while the actual cost per hectolitre of grain increased substantially by a factor of around 2.5 (Thoen and Soens 2010: fig. 4). And while price rises may not have been on the scale suggested by contemporary commentators, scarcity was such that some urban governments resorted to long-distance imports of grain, often from the Mediterranean (Van Werveke 1959: 469, 474, 485). It must be noted too that incessantly poor weather conditions in the late 1310s leading to harvest failures in the Low Countries also had repercussions outside of the cultivation of grains. Wet soils led to murrains and sheep plagues, hitting pastoral economies. Accounts from the southerly rural regions of Luxembourg provide great evidence for declining flocks and herds across this period, while elsewhere the rise in prices for grains was matched by equivalent increases in other products such as salt – a necessary component of dairy production (Jordan 1996: 63).

Overall, based on the compilation of fragmentary source material for the Great famine of 1315-17 in the Low Countries, it seems that the Southern areas were harshly afflicted, while the paucity of sources means that it is impossible to come to a strong conclusion on the fortunes of the North. Probably there were regional divergences in its severity, impact, and consequences –

after all, the medieval Low Countries are already known to have exhibited very sharp differences between regions close together on the basis of agricultural organisation, tenure, socio-political freedoms, and population density (Van Bavel 2010). The fragmentary and anecdotal nature of the evidence remains the biggest obstacle to teasing out regional differences. One thing that may be significant, nonetheless, is that while the 1315-17 harvest failures in other places such as Central and Southeast England and Northern France occurred simultaneous to conditions of widespread rural impoverishment as a result of the extreme fragmentation of peasant landholdings and strong pressures on increasingly restricted common resources (Bailey 1998; Schofield 1997; Fossier 1968), in many regions of the Low Countries such as Holland or Groningen, these 'Malthusian ceilings' had not been reached, courtesy of late paths towards land occupation and colonisation (Curtis and Campopiano 2014). That, at least, may point to a more favourable demographic, socio-political and institutional context for some regions of the Low Countries to escape the worst of the 1315-17 crisis (see the favourable situation presented in Van Bavel and Van Zanden 2004), though it is certainly a matter needing further systematic research.

The Northern Low Countries, fifteenth to nineteenth centuries

Existing literature suggests that the Northern Low Countries managed to escape from hunger from the late sixteenth century due to the central position of Amsterdam in the European grain trade, ensuring a steady supply of cheap wheat and rye (Faber 1976, Noordegraaf 1980, 1985b). In this section, this claim is scrutinized in an analysis of a range of price series from various parts of the Northern Low Countries. Admittedly, grain prices in themselves are not the best indicator of famines, but an analysis of high grain price peaks provides a starting point: it renders a list of years in which famine risk was high. Other indicators can then narrow this list down further.

An analysis of grain price spikes between the early fifteenth- and the early nineteenth century in eleven towns across the Northern Low Countries shows the years during which this staple food was unusually expensive. Rye was the most common bread grain in the Northern Low Countries from the fifteenth century onward. Its prices usually show more and sharper spikes than wheat prices, as in times of dearth demand shifted to the cheaper grains. Table 1 lists the episodes in which rye prices in any of the towns under investigation were at least double the 'normal' rate.

An assessment of the impact of grain price peaks must take into account the development of purchasing power in the long run. As in other parts of Europe, real wages in the Northern Low Countries rose in the fifteenth century but declined sharply in the sixteenth century due to rapidly rising price levels. In contrast to most other parts of Europe (the Southern Low Countries and England excepted) this was followed around 1580 by a recovery owing to the catching up of nominal wages, which continued in the seventeenth- and early eighteenth centuries. After 1750 a gradual decline of real wages set in, which lasted until the middle of the nineteenth century (Allen 2001; Van Zanden 2009). These long-term trends determined how close to the edge the most vulnerable groups in society lived. A more reliable method which allows for comparisons with other European countries is provided by the welfare ratios introduced by Robert Allen: wages expressed as the number of family 'subsistence baskets' the daily wage of an unskilled urban construction labourer would buy**.** In addition to price peaks, Table 1 gives the welfare ratios during these peaks for the Northern Low Countries.

Table 1. Years of high rye prices in eleven towns in the Northern Low Countries: price increase as percentage of the 'normal' price[1]

[1] The 'normal' price level is defined as the average price in the ninth to second year before the crisis, leaving out the highest and the lowest value. Increases of more than 100% above the normal level are printed in bold. For episodes of dearth covering more than one year, the figures in the table are the prices in the most expensive year for each town. The welfare ratios are those of the year in which the ratio was lowest.
Sources: Amsterdam: N.W. Posthumus, Nederlandse prijsgeschiedenis, 2 vols. (Leiden: Brill, 1964), vol I, pp. 573-576; Leiden: Ibidem, vol II, table 233; Utrecht: Ibidem, vol II, tables 21a, pp. 152-153; Groningen: W. Tijms, Groninger graanprijzen: De prijzen van agrarische producten tussen 1546 en 1990 (Historia Agriculturae 31, Groningen: Nederlands Agronomisch Historisch Instituut), table 6; Coevorden: W. Tijms, Prijzen van granen en peulvruchten te Arnhem, Breda, Deventer, 's-Hertogenbosch, Kampen, Koevorden, Maastricht en Nijmegen (Historia Agriculturae 11-1 and 11-2, Groningen: Nederlands Agronomisch Historisch Instituut), vol 2, pp. 28-32; Kampen: Ibidem, vol 1, pp. 313-314; Arnhem: Ibidem, vol 1, pp. 136-144; Nijmegen: Ibidem, vol 2, pp. 313-324; Maastricht: Ibidem, vol 2, pp. 37-40, 47-49, 55-59; Breda: Ibidem, vol 1, pp. 164-169; Roermond: W. Tijms, 'De effractie van Sint Andries te Roermond', Studies over de sociaal-economische geschiedenis van Limburg 34 (1989), pp. 112-163. Welfare ratios: R. Allen, Datafile 'Labourers', available at: http://www.nuffield.ox.ac.uk/People/sites/Allen/SitePages/Biography.aspx (datafile 'labourers', corrected for the years 1544-1594); J.L. Van Zanden, Datafile 'Reconstruction of National Accounts of Holland, 1348-1514', available at: http://www.cgeh.nl/reconstruction-national-accounts-holland-1500-1800-0.

	WEST AND MIDDLE			NORTH		EAST			SOUTH			
	Amsterdam	**Leiden**	**Utrecht**	**Groningen**	**Coevorden**	**Kampen**	**Arnhem**	**Nijmegen**	**Maastricht**	**Breda**	**Roermond**	*Welfare ratio*
1427			59%						**110%**			*1.03*
1438-39			**142%**						**192%**			*1.25*
1457			**118%**						83%			*1.77*
1482-83			**256%**						12%			*0.98*
1491-92			**154%**						**306%**			*1.16*
1517			44%						**138%**			*1.25*
1522			**126%**						**124%**			*1.11*
1556-57			**116%**				**168%**		**301%**	**127%**		*0.66*
1565-66			67%				99%	**127%**	54%	75%		*0.91*
1572-73			**122%**				**122%**		**116%**	**139%**		*0.79*
1586-87			19%				30%	29%	83%	**121%**		*1.23*
1622-23	71%		59%				94%	98%	65%	**122%**		*1.23*
1626	28%	25%	28%				16%	24%	**171%**	53%	68%	*1.16*
1630	81%	58%	66%				**109%**	74%	24%	61%	26%	*0.88*
1649-51	77%	**101%**	66%	92%			87%	82%	58%	74%	**105%**	*1.02*
1661-62	95%	**126%**	**114%**	**157%**	**211%**		**124%**	**121%**	**155%**	**117%**	**119%**	*1.00*
1675-76	91%	**110%**	60%	78%	**110%**	71%	72%	94%	**182%**	83%	**142%**	*1.19*
1692-94	85%	63%	78%	88%	**141%**	83%	92%	**128%**	**109%**	**110%**	**119%**	*1.24*
1698-99	**101%**	**103%**		94%	**137%**	**168%**	**134%**	**164%**	**104%**	**130%**	**154%**	*1.03*
1709-10	**141%**	**158%**		**198%**	**228%**	**170%**	**181%**	**143%**	**121%**	**194%**	**145%**	*1.12*
1724	-5%	-23%		34%	61%	45%	58%	49%	15%	74%	**102%**	*1.56*
1740-41	73%	83%	76%	78%	**114%**	**113%**	**140%**	**110%**	**134%**	**158%**	**121%**	*1.16*
1771	68%		50%	63%	87%	**100%**	96%	93%	89%	90%	71%	*1.15*
1795	**103%**		**104%**	84%	63%	85%	97%	**113%**	**264%**	**183%**	**110%**	*0.98*
1800	66%		63%	**120%**	86%	82%	74%	91%	26%	**100%**	8%	*1.12*
1816-17			66%	49%	56%	49%	62%	94%	**129%**	83%	**131%**	*0.87*
1855					86%		67%	71%	**85%**	81%	**103%**	*0.84*

The highest price peaks, with increases of 250% or more over the normal level, are found in the late fifteenth century (1482-83 and 1491-92) and the middle of the sixteenth century (1556-57). Spikes were not quite as high between the late sixteenth- and the late eighteenth centuries, but they were by no means absent. The years 1661-62, 1698-99, 1709-10 and to a lesser extent also 1740-41 stand out as years of widespread and significant price increases. At least in the South of the country, the price spike of 1795 was as extreme as those of the sixteenth century. This was a year marked by bad weather but it was also the year of the French occupation of the Northern Low Countries: destruction and disruptions of trade were probably at least partly to blame for rising prices. The year 1816/17 witnessed another, more moderate price spike, which appears to have been the last one of significance. Although between 1845 and 1847 rye prices rose, they did

not double, while in the year 1855 the only town where this happened—but only just—was Roermond.

Analysis of the welfare ratios partly confirms these findings, but also provides an additional perspective. They suggest that from a long-term perspective the worst episodes of dearth were those in the third quarter of the sixteenth century. At this point in time standards of living were so low that even a relatively modest price rise, let alone one as sharp as in 1556-57, could cause serious trouble. In the fifteenth- and again in the seventeenth- and early eighteenth centuries wages were higher, so price surges, even if they were as impressive as in 1482-83 or in 1709-10, were less likely to push people over the edge. Only at the end of the eighteenth- and in the early nineteenth century did welfare ratios of unskilled labourers repeatedly drop below the level required to feed and house a family again, even though they did not return to sixteenth-century levels.

Regional differences within the Northern Low Countries were considerable. In general, in the towns in the west and middle and also in the northern town of Groningen price peaks appear to have become less prominent and less frequent after the fifteenth century. The most notable exception is the year 1709-10, when prices all over the Dutch Republic, including the west and middle, rose dramatically. At the opposite end of the scale were the towns in the south—Maastricht, Roermond and Breda—where high price peaks remained a fact of life throughout the early modern period. Coevorden, in the north-east, and the eastern towns of Kampen, Arnhem and Nijmegen took an 'in between' position. One likely explanation for these regional differences is location. Inland towns faced higher transport costs than towns in coastal regions and especially in years of dearth they may have had difficulty ensuring the steady supply of grain.

Price analysis provides a starting point, but by no means gives conclusive evidence for the occurrence of famines. Ideally, mortality figures are needed to measure the impact of the shock. For the medieval period and most of the sixteenth century no mortality rates are available. However, contextual evidence suggests that the three highest fifteenth-century price peaks, those of 1437-38, 1482-83 and 1491-92 must all be assessed as serious crises. The years 1437-38 were marked by famines in many parts of Northern and Western Europe (Jörg 2008). The sources speak of food riots, starvation and disease. Government reactions betray alarm and despair. For the first time, as far as we know, towns did not just issue restrictions on the export of grains or on the quantities to be bought and sold at the local market, but also started buying and storing grain themselves. They also organized inspections of private grain supplies (Van Schaïk 1978: 225-227,

236-237; Unger 1916: 464-465). The crisis of 1437-39 moreover witnessed the first serious interventions of the 'national' authorities in food provisioning. In Holland, the Burgundian government attempted to maximize prices and even tried to put the entire grain trade in the hands of a small number of grain merchants. (Dijkman 2011: 297-298). The crises of 1482-83 and 1491-92 bear similar characteristics. In 1483 a chronicler reported that many died for want of food. The *Enqueste* of 1494, a report on the financial and economic state of the towns in Holland, frequently refers to extreme impoverishment, up to the point where people sold their land in order to buy food (Noordegraaf 1985b: 30, 33). Dearth policies first introduced in 1437-38 were re-applied on a larger scale than before (Van Schaïk 1978: 247).

For the sixteenth century it seems safe to conclude that because of the decline of real wages all price spikes in the first three quarters of the century gave rise to serious trouble. By the late sixteenth century export prohibitions, urban grain storage, grain inspections and other measures to combat dearth had become standard procedures in virtually every town (Unger 1916: 473-479). The years 1556-57 were the worst. Towns desperately tried to acquire grain supplies but frequently failed to do so. In Amsterdam all grain stored within the town was confiscated. Protests from merchants from the Southern Low Countries who had placed orders in Amsterdam were ignored with references to destitution and hunger: people in Delft were eating the refuse of the town's breweries (Friis 1953: 202-206). Although there were also widespread problems in the years 1565-66, marking the beginning of the Dutch Revolt (Kuttner 1949: esp. 228) and in 1572-73, when sieges, stationing of troops, and pillaging of the countryside wrought havoc (e.g. Nijmegen: Offermans 1972: 122), the situation was probably not as catastrophic as it had been in 1556-57 (Friis 1953: 210-213). The earliest mortality figures we have - fragmentary burial series from the second half of the sixteenth century - lend some support to this impression. The number of burials in the main churches of Gouda and Alkmaar, for instance, peaked in 1557, but for the 'hunger year' 1565-66 no significant increase can be discerned (Goudriaan and Ibelings 2002: 43-45). Problems in the 1580s and 1590s appear to have been mainly local in nature. Reports of food riots, raised mortality and starvation for 1586 and 1587, for instance, are all from the south and east of the country, where fighting and plundering caused destruction and disturbance of trade (Noordegraaf 1985a: 74-77).

The possibility of a relation between mortality peaks in the eighteenth- and early nineteenth centuries and food shortages has been the subject of some discussion. Faber's claim that the late eighteenth century witnessed a return of hunger-related mortality (Faber 1976) has

been contested by a series of authors who, in their studies of living standards in a single town or region, were unable to establish firm connections between mortality rates and high food prices (Mentink and Van der Woude 1965; 't Hart 1983; Noordam 1986). However, when information from various towns and regions is combined a somewhat different picture emerges. The best sources for this purpose are studies for towns or regions in the west and middle of the Dutch Republic: Rotterdam, Amsterdam, Alkmaar, Edam and Utrecht. For each of dearth episode rendered by the grain price analysis, as far as it relates to the west and middle of the country, average mortality per year has been calculated. Table 2 summarizes the results, expressing the average number of burials during the crisis as a percentage of the 'normal' level.

Table 2. Years of high prices in the west and middle of the Dutch Republic (as defined in Table 1) combined with excess mortality as a percentage above the normal level[2]

	Rotterdam (1645-1819)	Amsterdam (1701-1800)	Utrecht (1571-1670, 1771-1825)	Alkmaar (1696-1784)	Edam (1650-1784)
1630					
1649-51	23%		7%		
1661-62	-4%		4%		-2%
1675-76	5%				-49%
1692-94	-3%				38%
1698-99	12%				-46%
1709-10	8%	10%		-6%	-8%
1740	6%	21%		-15%	-15%
1771	5%	1%		-11%	-5%
1795	24%	16%	48%		
1800	25%	37%	24%		
1817	25%	(15%)	20%		
1855		(32%)			

[2] The 'normal' level has been calculated from the annual data in the same way as for grain prices: as the average number of burials in the ninth to second year before the crisis, excluding the highest and the lowest value. Sources: Rotterdam: G.J. Mentink and A.M. van der Woude, De demografische ontwikkeling te Rotterdam en Cool in de 17e en 18e eeuw (Rotterdam: Gemeentearchief Rotterdam, 1965) pp. 124-129; Amsterdam: H. Diederiks, Een stad in verval: Amsterdam omstreeks 1800: demografisch, economisch, ruimtelijk (Amsterdam: Historisch Seminarium Universiteit van Amsterdam, 1982), p. 16; Alkmaar and Edam: A.M. Van der Woude, Het Noorderkwartier: een regionaal-historisch onderzoek in de demografische en economische geschiedenis van westelijk Nederland van de late Middeleeuwen tot het begin van de negentiende eeuw (Wageningen: Veenman, 1972), pp. 635-639: Utrecht: R. Rommes, 'Op het spoor van de dood. De pest in en rond Utrecht', Jaarboek Oud-Utrecht (1991), pp. 119-120, and P.D. 't Hart, De stad Utrecht en haar inwoners. Een onderzoek naar samenhangen tussen sociaal-economische ontwikkelingen en de demografische geschiedenis van de stad Utrecht 1771-1825 (Utrecht: Universiteit Utrecht, 1983), pp. 242-243. The Amsterdam figures for 1817 and 1855 are derived from the figures given by P.C. Jansen and J.M.M. de Meere, 'Het sterftepatroon in Amsterdam 1774-1930. Een analyse van de doodsoorzaken', Tijdschrift voor Sociale Geschiedenis 8 (1982), pp. 197-198.

Up until the early eighteenth century, price spikes appear to have left but little marks on mortality figures. Only in the years 1649-51 the number of burials was above normal in more than one town at the same time, but even then the increase was modest. Signs that the tide was turning became increasingly clear through the eighteenth century. In Rotterdam and Amsterdam, all years of high prices from 1740 onward were marked by raised mortality, although never by more than 50%. The same is true for Utrecht in the late eighteenth- and early nineteenth centuries.

Drawing firm conclusions based on such limited data is difficult. Even within the western part of the country there were probably regional differences, for in the small towns in North Holland nothing of note appears before 1780, when the burial series unfortunately stop. Also, some years of high prices in the eighteenth century were marked by epidemics, creating confusion over the actual causes of raised mortality. Some of these epidemics apparently bore no relation to food shortages, but least for 1771 and 1795 the spread of infection due to malnutrition has been suggested as one of the causes of raised mortality (Jansen and De Meere 1982: 197-198; Gerritsma 1981: 386-387). Finally, information on mortality in the north, east and south of the Dutch Republic is even more scarce than for the west and middle. For the time being, the only conclusion that can safely be drawn is that there is no reason to believe that the impact of price peaks on mortality in the east of the Dutch Republic was substantially greater than in the west.

In short, the notion that the Northern Low Countries were not at all affected by hunger-related death in the seventeenth- and eighteenth centuries appears to be not quite true - at least not for the eighteenth century. By combining mortality data from various locations the beginnings of a pattern can be shown. It suggests that conditions worsened in the course of the eighteenth century and confirms Faber's suspicion that at the end of that century, and the beginning of the next, hunger did take a death toll. However, the fact remains that catastrophic famines were absent: hunger-related excess mortality never exceeded the 50%-level. Seen in a broader European perspective this is remarkable, as several of the other contributions in this volume demonstrate. Therefore, which factors allowed the Northern Low Countries to escape from severe famine at such an early stage? Was the central role of Amsterdam in the international grain trade indeed the decisive factor? It is certainly true that the Northern Low Countries, from an early stage onward, depended on grain imports. Since at least the early fifteenth century, the most populous western part of the northern Low countries, Holland, was unable to feed its population due to subsidence of the region's extensive peat soils. Agriculture had shifted to dairy farming, the

products of which were marketed in the nearby towns and also in Flanders, the German Rhineland and England. Also, in addition to farm work the inhabitants of the countryside usually engaged in various non-agrarian activities, such as peat digging, shipping, and the construction of dikes and canals. At the same time, urbanization increased rapidly: as early as 1500, 45% of the inhabitants of Holland lived in towns (Van Bavel and Van Zanden 2004).

This transformation was accompanied by an increasing import of bread grains. Until the last quarter of the fifteenth century, these grains mainly came from the Seine region in France and to a lesser extent from the eastern parts of the Low Countries and the adjacent German lands. The role of Baltic grains grew during the two food crises of the late fifteenth century under the influence of disturbed political relations with France. It gained further importance in the second quarter of the sixteenth century, when profit margins on the French grain trade diminished. The shift of the grain trade to the north stimulated the development of Amsterdam as an important grain trade centre, at first mainly for the Northern Low Countries, but from the 1530s or 1540s onwards increasingly also for other parts of Europe (Van Tielhof 1995). The crisis of the 1590s probably consolidated and extended trade connections with the Mediterranean (Noordegraaf 1985a: 78). From the late sixteenth century until at least the middle of the seventeenth century, the Amsterdam staple market supplied much of Europe with Baltic grains. The east and south of the Dutch Republic were never as much dependent on grain imports as the west, but the easy availability of import grains did keep them from developing a sizable market-oriented grain production of their own (De Vries and Van der Woude 1997: 207).

When between 1650 and 1730 new regions of production emerged and consumption patterns changed, Baltic grain exports declined and Amsterdam lost its dominant position in the European grain trade. Only in times of dearth, as in 1740, did Amsterdam temporarily resume its earlier role as Europe's grain staple. The city at first continued to supply markets within the Dutch Republic with grain, but this too changed when in the course of the eighteenth century internal grain production grew and the traditional dependence of the country on grain imports decreased (De Vries and Van der Woude 1997: 414-419).

The rise of the Baltic grain trade in the course of the sixteenth century is in keeping with the decrease of grain price spikes after the middle of that century. It is also in keeping with the finding that the second half of the sixteenth century certainly knew great hardship and dearth, but probably no large-scale famines after 1556/57. Likewise, the decline of the Baltic grain trade in the late seventeenth- and early eighteenth centuries heralds the return of hunger-related mortality.

The fact that in the eighteenth century all years of high prices were marked by raised mortality in Amsterdam, Rotterdam and Utrecht, supports the impression that instead of an abrupt transition this was a gradual process.

However, both in the seventeenth and in the eighteenth century grain prices in the Northern Low Countries on the whole do not seem to have been lower or more stable than in other parts of Europe. This does not necessarily imply that Amsterdam's international grain trade had no effect on price levels and price fluctuations. They may also be taken as a sign that this trade benefited towns all over western and southern Europe, or at least towns with easy access to sea routes, as much as the Northern Low Countries themselves. However, it does follow that the absence of famines from the Northern Low Countries at a time when other areas of Europe still struggled with them cannot be explained from the grain trade alone: other factors must also have contributed. One of these factors has already been discussed: the development of purchasing power. This was affected by grain prices, but also by prices of other products and, more importantly, by nominal wage levels. Earlier we saw that low wages in the sixteenth century increased the impact of even moderate price peaks. Recurring price spikes in the seventeenth- and early eighteenth century were not as damaging, simply because wage levels were much higher than they had been, and also much higher than they were in most other parts of Europe. Wage levels also go a long way in explaining the recurrence of hunger-related mortality in the eighteenth century, even if the situation was by no means as bleak as two hundred years earlier.

A second explanatory factor can be found in the presence of a well-developed system of formal poor relief. Charity in the Dutch Republic was decentralised, organized by local communities and local churches (Heerma van Voss and Van Leeuwen 2012). For the purpose of relief during food crises, the most important institutions were the poor tables or 'tables of the Holy Spirit', which provided 'outdoor relief': assistance through the distribution of bread, other basic necessities such as cloth, and frequently also small amounts of cash. Poor tables could be found everywhere: not just in the towns but also in many villages. Recent research has shown that between the middle of the sixteenth- and the middle of the eighteenth century the percentage of GDP spent on relief in the Republic as a whole may have tripled; around 1760 it sufficed to cover the needs of almost a tenth of the population. In the late eighteenth century a decline set in; by 1820 spending on relief had fallen to late-medieval levels (Van Bavel and Rijpma, forthcoming). The disappearance of famines from the Northern Low Countries from the middle of the sixteenth century coincided with the rise in social spending, and the return of hunger-related mortality with

its decline. This does not provide conclusive proof that the two are connected; that requires more detailed research, especially on the way in which the poor tables reacted to rising food prices. However, it does suggest that other factors than simply the Amsterdam grain trade contributed to the disappearance of severe famines from the Northern Low Countries.

In a way, the Northern Low Countries' last brush with hunger-induced mortalities is an outlier to what has been discussed previously, because in contrast to the other harvest failures of previous centuries, the crisis of 1845-50 was connected to the failure of a different crop – the potato. By 1845 the Netherlands was heavily reliant on potato cultivation, one . Recent literature has shown that the severity of the impact of the potato failure not only diverged between regions, but also between social groups (Paping and Tassenaar 2007). Of course, it is inevitable that societies more dependent on the production of the potato such as the coastal regions of Groningen felt the sting of its failure more than those with diversified agricultural portfolios. More significant were the extreme disparities between rich and poor - in particular the large 'gentleman farmers' of the coastal polders and the mass of (quasi) proletarianised wage labourers (Curtis 2014). The potato was, first and foremost, a subsistence foodstuff for auto-consumption, grown by labourers cultivating microplots intensively (Roessingh 1976) - it was not a particularly marketable product. The reality of the potato disease was then crushing for these labourers, who were forced to purchase other food products at prices that were invariable outstripping wages (given their nominal decline) (Paping 2004). As mentioned already, changes and malfunctions in the distribution of poor relief, exacerbated the situation - leading to a failure of 'collective insurance' (Paping 1995: 289-90). Although as stated earlier, grain price increases in the mid-nineteenth century were not extreme, the severity of the crisis was instead down to the fact that a much larger proportion of the rural population of the Northern Low Countries was now exposed to the vicissitudes of the market.

The Southern Low Countries, fifteenth to nineteenth centuries

Famine history in the Southern Low Countries from the late fifteenth to the late eighteenth-centuries shows a clear link between food crises and warfare. Periods of high food and mortality coincide in many cases with periods of intense warfare. During the early modern period many European political conflicts were settled military in the territory of the Southern Low Countries.

This had important consequences that might account for the relatively higher occurrence of famine compared to the Northern Netherlands. Although the Southern Low Countries have been characterized by advanced agriculture with relatively high yield ratios since the Middle Ages, domestic production frequently was not sufficient to feed the rising population. From the late Middle Ages, grain was imported from the neighbouring regions (for example northern France) and the Baltic states. It has been estimated that domestic production of grain in the Southern Low Countries covered only three quarters of the needs in the 1560s (Van der Wee 1966: 284). It was only in the middle of the eighteenth century that the Southern Low Countries became (temporarily) independent from foreign grain imports (Vandenbroeke 1975). High levels of urbanization and heavy reliance on imports made this region extra vulnerable to famine during periods of warfare. Military movements disrupted both interregional and international trade. Wars made it also more costly and risky to redistribute food stuffs. From the early sixteenth century onwards urban and rural magistrates started collecting information on the availability of grain during years of high prices in order to organize redistribution and international sales. When the threat of a food shortage was real, central, regional and local governments organized censuses to take stock of the available food stuffs. These censuses informed the government in a detailed manner how much food was available, which regions had surpluses and how much grain had to be imported (Scholliers 1960: 57-58; Wyffels 1958: 113-120). However, the regional differences in grain prices during the early modern period suggest that the redistribution of food during periods of harvest failure or shortfall coinciding with warfare encountered many difficulties. Next to the disruption of trade, the wars placed additional burdens on the population and the communities in terms of food availability. Villages and cities were forced to supply food, fodder, horses and carts to passing armies in addition to paying wartime taxes. Armies literally lived off the land and consumed much of the food stock (Gutmann 1980: ch. 2-3). Probably, fewer famines might have occurred if the reduction in food availability did not coincide with war, although it is very difficult to speculate about that. From this perspective, the resilience of the economic structures of the Southern Low Countries communities and their ability to cope with food shortages remain somewhat obscured. This region had without doubt the institutions to cope with famine, but they could never fully function during periods of warfare. War disrupted their operation, thereby turning food shortages into real famines.

Table 3. Years of high rye prices in four towns in the Southern Low Countries: price increase as percentage of the 'normal' price years[3]

	Rye				**Wheat**
	Ghent	**Bruges**	**Antwerp**	**Brussels**	**Bruges**
1408		**100%**	50%		71%
1437-38		**168%**	**113%**	86%	**152%**
1456		**105%**	**104%**	96%	78%
1481-82		**138%**	**172%**	**147%**	**118%**
1491-92		93%	**131%**	**117%**	**101%**
1502			**110%**		81%
1521	**115%**		**170%**		58%
1531-32	**107%**		93%		39%
1556-67	**203%**		**160%**		**148%**
1584-86	**278%**		**394%**		
1595	**141%**		**102%**		66%
1608	**131%**				32%
1661	**106%**				
1675	**123%**				31%
1709	**219%**				**218%**
1740	**115%**				**120%**
1795	**111%**				**111%**
1802	**106%**				
1817	**110%**				

As emphasized before, the link between high food prices, famine and excess mortality is very difficult to establish, or is often non-existent. In the fifteenth century the early 1480's stand out as a famine-struck period. Between 1480 and 1483 harvests failed as a result of climatic conditions, exacerbated by civil war in Flanders between 1483 and 1492. On the market of Bruges grain prices more than doubled between 1480 and 1482. In many Flemish regions there was a peak in the number of deaths, measured by the number of post-mortem taxes. In the region of Bruges the number of recorded post-mortem inventories more than doubled in 1483 compared to the preceding years (Dombrecht 2014: 82). A similar parallel between prices and the registration of mortemain-receipts shows up in data for other Flemish regions. The rise in grain prices in 1482-83 coincides with a rise in the number of recorded deaths. The relationship between prices in 1490-92 and mortality is less clear. It seems that mortality in these regions preceded the rise in grain prices.

[3] See Table 1. Sources: http://www.sfu.ca/~djacks/index.html; Jacks 2004. Bruges 14th and 15th centuries: www.iisg.nl/hpw (Belgium). Brussels 15th century: M.-J. Tits-Dieuaide, La formation des prix céréaliers en Brabant et en Flandre au XVe siècle (Brussels: Édition de l'Université de Bruxelles, 1975), pp. 273-275.

Table 4. Wheat prices on the market of Bruges and registered number of deceased owing mortemain righst in the chatellenies of Oudburg and Courtray, 1480-1494[4]

Year	Wheat price (gr. Flemish per hoet)	Mortemain-receipts in chatellenie of Oudburg	Mortemain-receipts in the chatellenie of Courtray
1480	72	19	14
1481	84	69	2
1482	140	21	33
1483	156	80	27
1484	59	42	18
1485	50	59	26
1486	72	26	
1487	91		6
1488	90	24	31
1489	88	366	16
1490	104		5
1491	160		4
1492	103	76	12
1493	79		11
1494	48		8

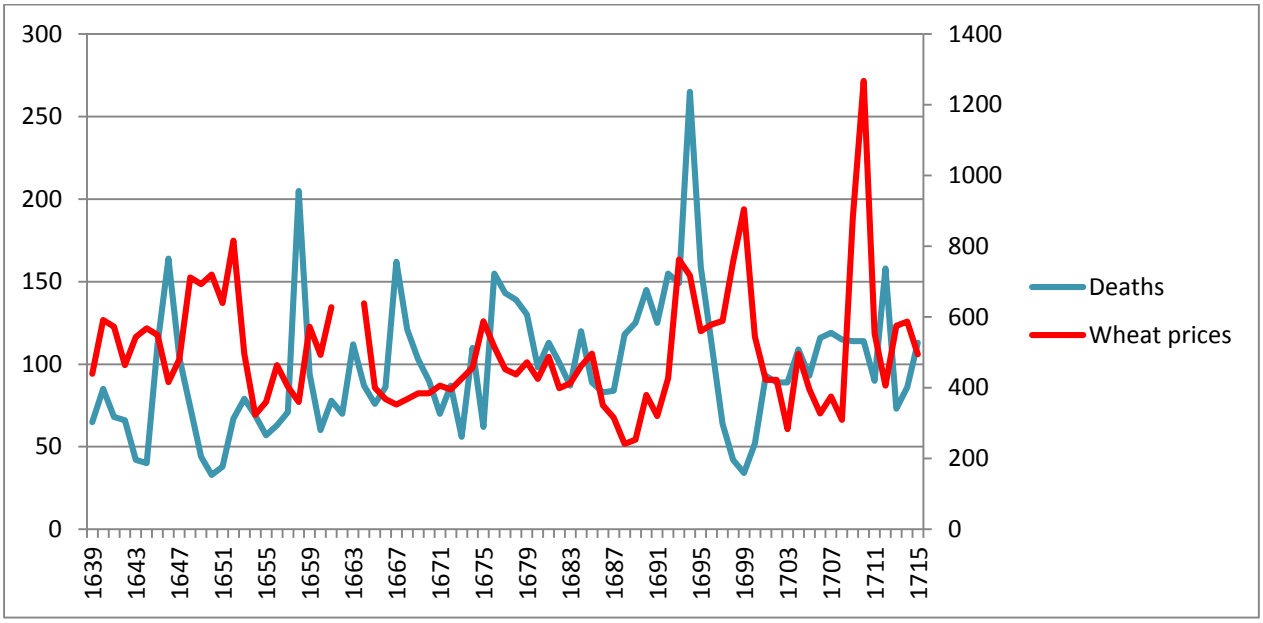
Research for the sixteenth century has identified 1521-22, 1556-57 and 1585-86 as years of exceptional periods of dearth in Antwerp (Scholliers 1960: 12). A comparison with indirect data on mortality from the registration of post-mortem inventories shows no upsurge of deaths in 1520-21, contrary to the crisis years 1556-57. In 1557 and 1558 the aldermen of the village of Pamele recorded 2,5 and four times more post-mortem inventories than in the years before, suggesting a positive relationship between prices and mortality during the grain crisis of 1556-57 (Thoen 1988: vol. 2, 1142-1145). The effects of the dearth years of 1585-86 on mortality are more difficult to gauge as this period was characterized by massive emigration as a result of the Eighty Years War.

Between 1660 and 1750, food shortages were a recurrent feature in the Southern Netherlands. Most harvest failures were triggered by climatic factors, in combination with the

[4] Sources: wheat prices: A. Verhulst, 'Prijzen van granen, boter en kaas te Brugge volgens de slag van het Sint-Donatiaanskapittel (1348-1801)', in C. Verlinden and E. Scholliers (eds), Dokumenten voor de geschiedenis van prijzen en lonen in Vlaanderen en Brabant (Brugge, 1965), vol. 2, p. 35; mortemain rights: Y. Boudia, Mortaliteit en pest in het kwartier van Gent. Testregio : de kasselrij Kortrijk, de Oudburg en de stad Gent (c. 1350-1500) (Ghent University: Unpublished MA Dissertation, 2000), p. 174 (Oudburg) and p. 207 (Courtray).

almost endemic warfare that characterized the late 17th and early 18th centuries. These decades were especially harsh, but only in 1709 grain prices more than doubled.

Graph 1. Mortality and wheat prices in the region of Bruges, 1639-1715[5]



The frequency of famines increased in the seventeenth century, especially after 1650. The seventeenth century has been characterized by historians as a century of catastrophic mortality. The research of Claude Bruneel on mortality in the duchy of Brabant indicates periods of food shortages and rising mortality rates in 1625-1626, 1648-1651, 1661-1662, 1674-1676 and 1692-1694. Years of high prices also included 1630-1631, 1639-1640, 1696-1698 and 1708-1709, but without significant impact on mortality. Bruneel advanced the hypothesis that the latter selection of years of dearth did not result in catastrophic mortality because the weakest elements of the population had already perished in earlier years of scarcity and famine (Bruneel 1977: 577-198) . The chronology of Bruneel fits with other research on the relationship between high food prices and mortality. For example in the western part of Flanders excess mortality as a result of food prices occurred in 1651-52, 1661-1662, 1692-1693 and 1708-1709 (Dalle 1963: 165-176). Other

[5] Left axe: mortality: annual number of burials; right axe: grain market price of 1 hoet (= 170 l.) wheat in groten Vlaams in Bruges. Mortality: Annual numbers of burials in four parishes north and south of Bruges. Source: E. Brusselle, Demografische ontwikkeling, doopnaamgeving, kerkelijk leven, volksonderwijs en alfabetisatie in enkel parochies van het Brugse Vrije (University of Louvain: Unpublished MA Dissertation, 1997), vol. 2, pp. 1-2, 6-7, 11-12 [parishes Jabbeke, Stalhille and Varsenare], F. Mus, De historisch-demografische ontwikkeling van Aarsele tijdens de nieuwe tijd, 1627-1795 (University of Louvain: Unpublished MA Dissertation, 1984), pp. 166-168 [parish Aarsele]. Wheat prices as recorded on the market of Bruges: A. Verhulst, 'Prijzen van granen, boter en kaas te Brugge', pp. 3-70.

regions experienced crisis mortality too during these periods, although the relationship with food prices has not been researched systematically (Ruwet 1954: 451-476).

With the exception of 1693-94, 1698 and 1709 few of these harvest crises have been studied in detail. These harvest failures can be related to catastrophic climate conditions, in particular heavy rainfall (1690's) and cold winter (1709). The famine of 1693-94 occurred in the middle of the War of the League of Augsburg (1689-97). The regions bordering France suffered the most from these military campaigns. The famine of 1698 was triggered by the end of the military activities in the Southern Low Countries. Emigration caused labour shortages and much of land remained uncultivated. The combination with heavy rainfalls resulted in a harvest crisis and subsequent excess mortality (De Visscher 1978: 3-22). The dearth in 1709 was instigated by a cold winter in a period when the Southern Low Countries were engaged in the War of the Spanish Succession (1702-13). In the years preceding 1709 the cities and villages had been the victim of massive requisitions. These requisitions did not only reduce the food stock, but also deprived the rural population of their farm stocks and working capital (Van Osta 1969). The complex relation between food prices and mortality in the seventeenth and early eighteenth century is illustrated in the Graph 1. There seems hardly any direct relation between grain prizes and mortality, although we must keep in mind that these data only cover a very small region. High prices in 1652 had no effect on mortality. High wheat prices in 1693 were followed by a sharp rise in deaths in 1694, but a same spike in food prices in 1709-10 only resulted in a mortality peak in 1711, when prices had normalized again.

After 1750, large scale food shortages became increasingly rare. Traditionally this has been seen as the result of both substantial rises in agricultural production and more efficient government action and monitoring of food supplies. We are able to compare village-based data for the province of West-Flanders, a region with high mortality risks. Only 1740 (+30%), 1741 (+75%), 1794 (+85%) and 1847 (+42%) stand out in this respect.[6] 1740-41 is sometimes viewed as the last great food and mortality crisis of Old Regime Europe (Vanhaute and Lambrecht 2011). Low harvests in 1739 and the exceptionally long winter of 1739-40 (*le long hiver*) severely reduced per capita food supply (Vandenbroeke 1975: 76-236). When stocks were exhausted late April - early

[6] Surplus mortality, based on data of the Province of West-Flanders. Rise of crude mortality rates, compared to the average of three years previous to crisis. 18th century: data of 23 villages; 19th century: data of total province. Source: P. Sentrie, Een demografische schets van West-Vlaanderen 1500-1850 (Ghent University: Unpublished MA Dissertation, 2007) and LOKSTAT, Historical Database for Local Statistics, Ghent University (http://www.lokstat.ugent.be).

May and the prospects of an early and abundant harvest dwindled, prices started to rise. Probably incited by panic as well as a severe distortion of supply and demand, 1740 prices peaked at 25 to 30% above the already high levels of 1739. From 1736 to 1740 the purchasing power of labourers declined by about 60 per cent. The demographic effects of the crisis of 1740 are less straightforward. Reconstructing mortality figures, 1740 does not stand out. Mortality was particularly high in 1741 when food prices started to drop. According to contemporary observations, increased mortality during this period was the result of typhus, typhoid fever, and relapsing fevers.

The late 18th century marked a short return to the Old Regime pattern when in 1794-95 a combination of war and harvest failure resulted in high mortality rates. During the first half of the 19th century, the Southern Netherlands experienced food shortages in 1816-17 and in 1845-47. This was the last food crisis with a clear impact on mortality rates. The direct cause of the mid-19th century subsistence crisis was the failure of potato harvests in the years 1845-50 (Vanhaute 2007). The potato blight destroyed 87 per cent of 1845 harvests and in Flanders, the epicentre of the potato disease, losses amounted to 95 per cent of the crop. Over the following years, harvests were also poor because fewer potato seedlings were planted and yields remained low. Between 1846 and 1850, barely a third of the 'normal' potato harvest was gathered in Flanders. The food situation became very precarious in late 1846 and the first half of 1847 due to poor bread-grain harvests. Bad weather conditions in 1846 caused the rye harvest (by far the most important bread grain) to decrease by more than half, though the losses for wheat and maslin were smaller (10 per cent). Calculated in grain equivalents, the combined loss of bread-grain and potato harvests in 1846 was 66 per cent. As a result, there were only 125 litres of grain equivalents (bread grains and potatoes) available per head, compared to 375 litres in previous years. Because all harvests were affected (half the bean and pea harvests were lost too), the threat of famine loomed in 1846-47. Prices peaked in the spring of 1847, after the partial failure of grain harvests. Potatoes were sold at 3.5 times the 1844 level. Rye cost 2.4 times as much as in 1844 and wheat cost twice as much. Rice was three times as expensive while peas and beans were 1.8 times as expensive as in 1844. A crisis in the rural flax industry coincided with the subsistence crisis of 1845-47. Compared to the reference years of 1841-45, Belgium recorded in 1847 a surplus mortality of 23,000 (+30 per cent), adding up in the three year period 1846-48 to 44,000 (+15 per cent). The number of births decreased by 47,000 during the same years (-12 per cent), and there were 17 per cent fewer marriages. High mortality in 1846-47 was limited to the geographical area of Inner-Flanders, with

excess mortality of 40% and averages up to 47-53 per thousand in 1847. Most deaths were a consequence of nutrition-related diseases such as dysentery and typhus.

1740 and 1845-1847 were the last severe food crises in the Southern Low Countries, but did not turn into sharp famines (very little is known about the food crisis of 1794-1795 due to the complete disruption of public authorities and subsequent records). The main explanation is that the peasant economy and village society kept their resilience to absorb the main shocks of these crises. However, the way this happened shifted greatly between 1750 and 1850, due to structural changes in the rural economy between 1750 and 1850. Until the early 19th century severe cracks in the food system were mostly met by internal and often informal village relations. Village externalities became much more prominent in the 19th century. In the 1840's -contrary to the infamous Irish example- a severe Flemish famine could be avoided because of the survival of the small but mixed and productive peasant farms, and by the swift and sometimes anticipatory actions of the local and supra-local institutions. The elites resorted to institutional initiatives of aid, employment and repression more than ever before, backed by an active state apparatus, both in a legal and a financial sense.

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