

2. One market or many? London and the grain trade of England¹

JAMES A. GALLOWAY

Introduction

When did spatially-extensive, integrated markets for grain emerge in England? Clearly the question is an important one, as the existence of integrated markets for staple foodstuffs, and the greater assurance of supply which it connotes, are key permissive factors in the development of regional specialisation, both agrarian and industrial.² If grain can move smoothly from region to region in response to rapidly transmitted price signals, then the risks to basic subsistence involved in an increased dependence upon the production of textiles, or on the rearing of livestock for distant markets, are substantially reduced. Moreover, the posing of this question with respect to the medieval period may seem less fanciful today, after two decades of intensive research into the commercialisation of English society and its institutional underpinnings, than it might have done previously. Few would now doubt the pervasive influence of money and monetary equivalences, or the impact of the market upon the organisation of production as well as distribution, from at least as early as the thirteenth century. Medieval England constituted, compared to many parts of Europe at that time, a centralised polity, within which internal barriers to trade and population mobility were relatively weak. Trade was fostered by the highly commercialised nature of English society, within which even the peasantry had regular need for and access to money and market places by the thirteenth century,³ and by those features of the centralised political structure — standardisation of weights and measures, a relatively stable currency, relative security for travellers and traders, the absence of significant internal political or fiscal barriers, and the existence of reliable means for the enforcement of contracts and the settlement of disputes — which must have tended to reduce transaction costs.

Despite these important pre-disposing factors, most writers have expressed a cautious pessimism on the issue of integration in the middle ages. For Ian Blanchard, local markets were ‘highly localised’ as late as the fifteenth and sixteenth

¹ This paper arises from research carried out during the Centre for Metropolitan History research project ‘Metropolitan Market Networks, c.1300–1600’ funded by the Economic and Social Research Council (ref. R000237253; grantholders J.A. Galloway and D. Keene). I am grateful to the project advisers, Richard Britnell and Larry Epstein, and to the conference participants, for comments on method and interpretation. Other specific debts are acknowledged below.

² The significance of integration and some of the more straight-forward tests for its existence are succinctly described in A.J.S. Gibson and T.C. Smout, ‘Regional prices and market regions: the evolution of the early modern Scottish grain market’, *Economic History Review*, 48 (1995), pp. 258–82.

³ R.H. Britnell, *The Commercialisation of English Society* (Cambridge, 1993), pp. 102–15.

centuries.⁴ Richard Britnell, writing of the pre-1330 period, considered that ‘grain markets were poorly integrated across the country. High transport [costs] and weak mercantile organisation meant that prices varied erratically between different regions.’⁵ Mark Bailey, whose previous work had decisively challenged the Postanian concept of ‘the margin’ — stressing instead the ability of quite poorly endowed areas to develop specialised responses to market opportunities — has recently switched his attention to the limitations of commercialisation in pre-Black Death England, suggesting that the bulk of medieval producers, living in land-locked parts of the country, ‘may well have operated in localised markets which were likely to be volatile and...subject to disruption.’⁶

The view that medieval markets were of limited geographical extent rests in large part upon the early twentieth-century work of N.S.B. Gras who argued that later medieval England was divided up into at least 15 distinct market areas for grain, each characterised by a particular price-level, and within which the great bulk of trade took place.⁷ Interestingly, Gras saw these local market areas emerging and strengthening as an older set of more extensive but more shadowy market linkages declined; these latter were supposed to have reflected the marketing strategies of the great lay and ecclesiastical estates, which had the resources to transport produce long distances in search of ‘good’ markets, and hence inhibited the emergence of ‘a territorial market...over which one price tended to prevail.’⁸ As the great estates ceased to exercise direct management of their manors in the fourteenth and fifteenth centuries, trade became ever more localised and consolidated into the price-delimited market areas. Serious flaws in Gras’s methodology — *a priori* definition of regions, the lumping together of prices for periods of up to 250 years in the calculation of averages for those regions, the lack of statistical rigour in the comparison of the regional averages — make his conclusions highly unsafe, however.⁹ Moreover, Gras’s over-literal interpretation of the law of one price creates an unnecessary confusion. Rather than regions of price-equality, we should expect to find, if the market were integrated, that prices varied across the country in a logical manner, with differentials reflecting the costs of transport between locations.

It may therefore seem surprising that, until very recently, little has been done to re-assess or revise Gras’s findings by a more rigorous use of medieval data concerning local price levels. One scholar who might have been expected to do so, the late David Farmer, gave only limited consideration to the issue of geographical variations in price. Farmer did indeed organise his material regionally, but principally as a stepping stone to the production of national or sub-national price series, for grain and many other commodities. Although appropriately cautious in interpreting data collected for regions

⁴ I. Blanchard, ‘Population change, enclosure and the early Tudor economy’, *Economic History Review*, 23 (1970), pp. 430.

⁵ Britnell, *Commercialisation*, p.100

⁶ M. Bailey, ‘Peasant welfare in England, 1290–1348’, *Economic History Review*, 51 (1998), p. 236.

⁷ N.S.B. Gras, *The Evolution of the English Corn Market from the Twelfth to the Eighteenth Century* (Cambridge Mass., 1915), pp. 32–60.

⁸ Gras, *Evolution*, p. 29.

⁹ E. Kneissel, ‘The evolution of the English corn market’, *Journal of Economic History*, 14 (1954), pp. 46–52.

which, like those of Gras, had been defined *a priori*, Farmer did venture the suggestion that such regional data as he possessed pointed to ‘a well-organised and sophisticated system of grain marketing’ operating as early as the beginning of the thirteenth century, and further, that areas throughout the country which were accessible to cheap water transport constituted essentially ‘one marketing area’.¹⁰ He also suggested that there was a tendency for prices in the Thames Valley to decline in a coherent manner with distance from London. Subsequently considering the post-1350 period, however, Farmer identified ‘inconsistencies’ in the regional distribution of prices.¹¹

In contrast to this tentative reappraisal, recent work by Gregory Clark upon medieval and early modern price data is claimed to reveal an ‘efficient and extensive’ grain market operating in England from at least the early thirteenth century onwards, within which grain moved smoothly from areas of plenty to areas of scarcity and where grain was stored ‘with reasonable efficiency’ within and between years.¹² Clark’s analysis, as yet only available in the form of a working paper, will not convince all historians, as its statistical findings rest upon a rather narrow evidential base, and are largely divorced from an assessment of historical context. Nevertheless, his arguments are bold and stimulating, and invite further exploration of the topic. Noteworthy is Clark’s undermining of one of the common objections to the use of price data in the study of integration — the proposal that correlated price movements may derive principally from similarities in weather pattern and yields rather than from the operation of a linked market. Through an analysis of manorial yield and price data he demonstrates what Farmer had surmised, that the impact of strictly *local* variations in crop yield upon local price levels was minimal, but that local prices were strongly correlated with the ‘national’ price level.¹³

Among early modernists, the debate on market integration in England has been taken forward in a number of publications by John Chartres, which include rigorous analysis of grain price data from the 1690s. Measuring the correlation of de-trended short-term price movements between pairs of places across England and Wales led Chartres to conclude that a well-integrated national market for wheat existed by the end of the seventeenth century, with somewhat weaker correlations evident for other grains, pointing to less integrated and more regional markets. The creation of a national market for wheat may, Chartres argues, be associated with the strong primacy of London within England’s urban system in the later seventeenth century, while an apparent decline in integration levels in the later eighteenth century may have resulted from the rise of rival urban centres in the industrial north, disrupting ‘the old equilibrium of market relationships’.¹⁴

London was vastly larger in the 1690s, both relatively and absolutely, than it had been in any previous period, and it seems likely to have been handling a larger share of

¹⁰ D. Farmer, ‘Prices and wages’, in H.E. Hallam (ed.), *The Agrarian History of England and Wales*, II, 1042–1350 (Cambridge, 1988), p. 742.

¹¹ D. Farmer, ‘Prices and wages’ in E. Miller (ed.), *The Agrarian History of England and Wales*, III, 1348–1500 (Cambridge, 1991), p. 449.

¹² G. Clark, ‘A precocious infant? the evolution of the English grain market, 1208–1770’, University of California, Davis working paper (1996), p. 1.

¹³ Clark, ‘A precocious infant?’, p. 21.

¹⁴ J. Chartres, ‘Market integration and agricultural output in 17th and 18th century England’, *Agricultural History Review*, 43 (1995), pp. 130–2.

the national trade in grain than in earlier centuries. However, its primacy within the English urban system was of many centuries standing. Moreover, in theory it is not necessary for distant places or regions to trade directly in order for them to be considered part of a single integrated market — rather, they must receive and respond to the same price signals. Was London's primacy in the medieval period sufficient to prompt the emergence of a spatially-extensive integrated grain market, despite its smallness as a centre of consumption compared to later centuries? The remainder of this paper uses some of the price data assembled during the 'Metropolitan Market Networks c.1300–1600' research project to address this issue in three ways. Firstly, it examines that relatively restricted area which previous research has shown to have routinely supplied London with wheat and other grains in the fourteenth century, and asks to what extent it displayed the characteristics of an integrated market. Secondly, it investigates the relationship between price movements in London and those in more distant parts of England, through a comparison of London and Exeter prices. Finally, the paper asks whether a long-term trend towards increasing grain market integration can be identified between c.1300 and c.1600. Some of the methods used to analyse the far from perfect data are experimental, and the conclusions drawn are provisional. Sometimes the evidence appears contradictory. This work in progress is thus offered in the hope that it will stimulate debate, and prompt more work on local and regional prices as indicators of market structure and efficiency in pre-modern England.

Sources

It is necessary to begin with a brief description of the nature of the source materials available, as these crucially constrain the types of analyses that can reasonably be undertaken. The London region — and southern England as a whole — has an abundance of surviving sources capable of yielding price data, but unfortunately relatively little of it is of the high quality and short frequency which the more sophisticated types of test for market integration demand.¹⁵ The great bulk of the accessible material is contained in series of manorial accounts, covering the period from the early thirteenth until the early (or occasionally the mid) fifteenth centuries, but which survive in the greatest volume from the third quarter of the thirteenth until the late fourteenth centuries, after which time the leasing out of manorial demesnes reduces the volume of accounts to a trickle. For the sixteenth and early seventeenth centuries estate and farm accounts provide some comparable data, but the coverage is very much thinner and long runs of data are virtually unknown. Most of the price data which can be obtained from manorial accounts is in the form of a weighted or unweighted annual mean sale price per accounting year — precisely dated sales are recorded in some series, but hardly ever consistently enough over a span of years to be more than illustrative. Prices are available for barley, oats and other crops as well as for wheat, although the most commercialised crops are naturally the best represented. The analyses which follow are largely confined to wheat, but some of them will in due course be extended to other grains and to a consideration

¹⁵ See for example M. Ejrnaes and K.G. Persson, *Market Integration and Grain Price Stabilization in Europe 1500–1900*, University of Copenhagen Institute of Economics discussion papers no. 97–15 (Copenhagen, 1997).

of price-relatives. The data is thus abundant but of rather low quality, and while some long-continuing series yielding prices exist, many supply only short or broken sequences.

Urban price series generated by the assize of bread or similar institutions are rare for the medieval period, but become slightly more plentiful in the sixteenth century. Exeter possesses by far the best such sequence of wheat prices, running more or less continuously from the early fourteenth to the nineteenth century. The series is of course much reproduced, in the form of the annual averages calculated by Beveridge and his co-workers in the 1920s.¹⁶ Less well known is the fact that the series provides large numbers of precisely dated prices, with greater or lesser frequency at different periods.¹⁷ London possesses one of the few other such series in England, running from the 1270s down to 1370, and resuming in the sixteenth century with a few scattered prices from the intervening period.¹⁸ Each October the city recorded the price of a quarter of wheat prevailing at the principal grainmarkets — the waterside markets of Queenhithe and Billingsgate and the variety of inland locations characterised as ‘Pavement’ — in order to determine the weight of loaves of bread which the city’s bakers could sell for a set price. In some years — especially the years following the famine of 1315–18 — prices were taken at other dates, but the only consistently recorded prices are for ‘October’. In the sixteenth century more prices per year tend to be recorded, although inconsistently, making the construction of robust series difficult. Moreover, between the 1540s and early 1590s the permitted weight of a loaf is specified rather than the market price of wheat, and it seems impossible to back-calculate the wheat price accurately, due to uncertainties and inconsistencies in the specification of the bakers’ allowances.¹⁹ Direct comparison of the medieval London series with similar urban price series from within the core supply region is not possible. Canterbury possesses a series of dated wheat prices, but these cover precisely the period for which good London data is lacking — the late fourteenth and the fifteenth centuries.²⁰

For within-region analysis, therefore, it is necessary to use the pre-1370 London price series, which can be continued to the 1390s by using sale price data from the immediately adjacent manor of Hyde,²¹ in conjunction with manorial price data from the hinterland. These cannot be particularly precise exercises, as the manorial sales are generally dated only to an accounting year, although most probably are weighted towards the late spring or early summer, while the London prices date from only a couple of

¹⁶ W.H. Beveridge, ‘A statistical crime of the seventeenth century’, *Journal of Economic and Business History*, 1 (1928–9), pp. 503–33. I have followed the price adjustment procedures set out there in working with the Exeter series.

¹⁷ The originals are in the Exeter Mayor’s Court Rolls, Devon Record Office. I have relied on transcripts made by Ruth Easterling which are kept in the same archive (ref C5 G1). I am grateful to Maryanne Kowaleski for helping me to locate these transcripts, and to the Devon Record Office for permission to photocopy them.

¹⁸ Corporation of London Records Office: manuscript Letter Books A, B and D, *Liber de Assisa Panis* (Cust 4). Prices down to 1320 are printed in B.M.S. Campbell, J.A. Galloway, D. Keene and M. Murphy, *A Medieval Capital and its Grain Supply: Agrarian Production and Distribution in the London Region c.1300* (Historical Geography Research Series, 30, 1993), pp. 200–2.

¹⁹ London School of Economics, Beveridge Collection, Boxes I5, Q2.

²⁰ LSE, Beveridge Collection, Box D5.

²¹ Westminster Abbey Muniments 27077–27101. Hyde lay in the vicinity of modern Hyde Park. These prices, like most from manorial series, are not precisely dated, but examination of pre-1370 accounts suggests a close match to London autumn prices.

months after the harvest. The manorial data can also be used on its own to shed light on several aspects of the operation of the grain market down to the beginning of the fifteenth century — in particular, the year-to-year variability of prices can be used as a broad indication of market efficiency and integration.

Price gradients

If London constituted a price-setting central market, then we would expect that prices should decline with distance — or more precisely, with cost-distance — from that market. Flows of grain should follow the price contours; in other words, and obviously enough, grain should normally be flowing into the city from areas with lower price levels than the capital and not from areas with higher prices.²² In *A Medieval Capital and its Grain Supply* an attempt was made to use manorial ‘spot’ prices in order to map the price surface of the counties around London, and to see whether prices did indeed vary logically with distance from the capital, and in accordance with what we knew of the supply system from other types of evidence.²³ The data we had was not ideal for the purpose, and contained much noise and consequently the results were suggestive but far from conclusive. A general tendency for prices to decline with estimated cost-distance from the city did emerge, but there were several apparent anomalies. Prices in much of Kent were noticeably higher than those prevailing in London, as were those in some parts of Surrey close to the city. In the case of Kent it seemed that the area supplying London might be restricted to a limited but highly productive zone in the hinterland of Faversham, with the influence of continental markets pulling prices upwards in much of the rest of the county. Elsewhere, prices tended to decline with distance, particularly as one moved into the land-locked areas to the north-west of the city, the northern parts of Oxfordshire and Buckinghamshire, and western Northamptonshire.

More closely-focused studies, using simultaneous or near simultaneous price observations should show clearer, less noise-affected gradients — unfortunately, the samples will in almost all cases be small given the comparative rarity of precise dating of sales or purchases in manorial accounts. Other sources occasionally permit such a comparison, however. Purchases of wheat and oats by London cornmongers in the spring of 1295 provide more or less simultaneous prices from a number of locations in the Thames valley and estuary (Fig. 2.1), from Abingdon in the west to Maidstone and Shoebury in the east.²⁴ Prices were indeed highest in London, and declined with distance to the east and the west (Figs. 2.2a and 2.2b). In both cases, the gradient is steepest to the west — upriver — reflecting the higher costs of transport, particularly upstream of Henley, the effective head of navigation,²⁵ and perhaps also the influence of continental markets to the east of the capital, pulling prices upwards at Dartford, Rochester and

²² There are exceptions. Prices in very large urban markets may sometimes be lower than or equal to those in surrounding regions, because of their ability to draw in distant supplies, to guarantee a sale, and to turn over transactions rapidly.

²³ Campbell, Galloway, Keene and Murphy, *Medieval Capital*, pp. 63–9.

²⁴ Public Record Office, E101/5/13, m5; E101/35/24.

²⁵ R.B. Peberdy, ‘Navigation on the river Thames between London and Oxford in the later Middle Ages: a reconsideration’, *Oxoniensia*, 61 (1996), pp. 311–40; Campbell, Galloway, Keene and Murphy, *Medieval Capital*, pp. 194–5.

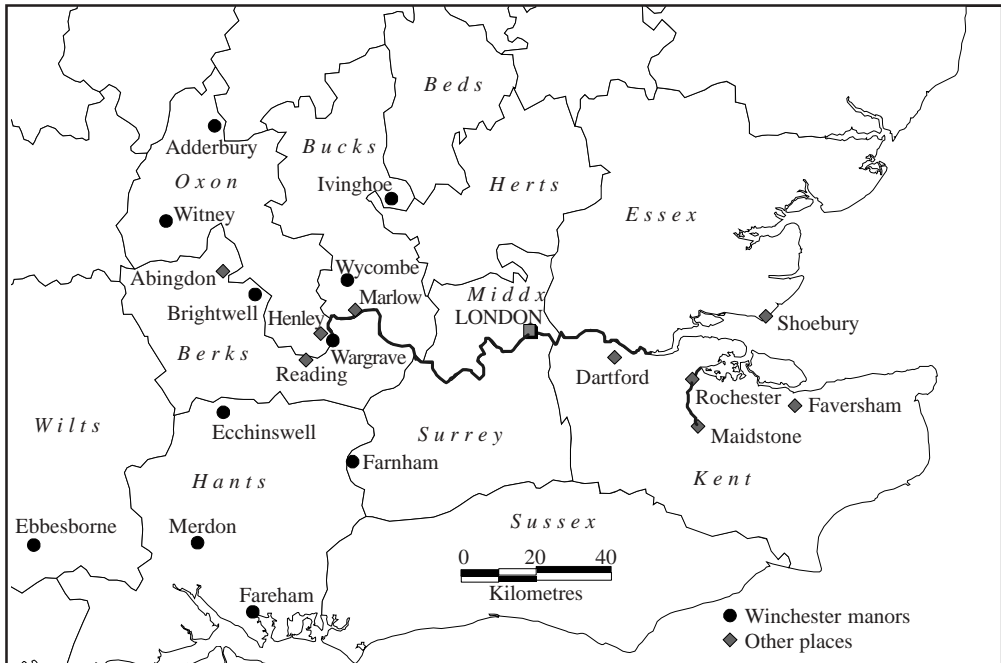


Fig. 2.1. Location map

This map uses a digitised base-map of historic (pre-1974) county boundaries originally created by Professor Marjorie McIntosh of the University of Colorado. We are grateful to Professor McIntosh for permission to use and modify her map; the boundaries shown are approximate only, and should not be taken as definitive.

Shoebury on the Thames estuary and Maidstone on the navigable river Medway. The fact that a clear gradient is evident for oats as well as for wheat — with prices declining steadily westwards from London through Marlow, Henley and Reading — suggests that a degree of integration existed for grains other than wheat, a finding which we would have hoped to establish given the evidence for the impact of relative value and transportability upon the zonation of crop production within the metropolitan hinterland.²⁶

In order to explore the stability or otherwise of price-gradients over time, and to incorporate a larger number of places, it is necessary to find ways of utilising the generally lower-grade but voluminous manorial price material. Comparison of long-continuing manorial series, relatively coarse-grained as they are, with each other, and with the London wheat price series, affords some insight into the degree to which price gradients were consistent and sustained. Analysis of the variability of prices between years also permits some assessment of the degree to which ready access to the metropolitan market may have influenced local price levels, and to offer a preliminary assessment of Bailey's suggestion that land-locked localities may have experienced greater price volatility than those close to water transport routes. I shall initially consider three manorial price series²⁷

²⁶ Campbell, Galloway, Keene and Murphy, *Medieval Capital*, p. 111ff.

²⁷ Prices for these and the other Winchester manors discussed below are taken from the papers of the late David Farmer, deposited in the University of Saskatchewan Archives (ref MG145.III.c.5). I am grateful to the University of Saskatchewan for permission to use the papers, to Gregory Clark for providing me with photocopies, and to Linda Fritz for helpful advice.

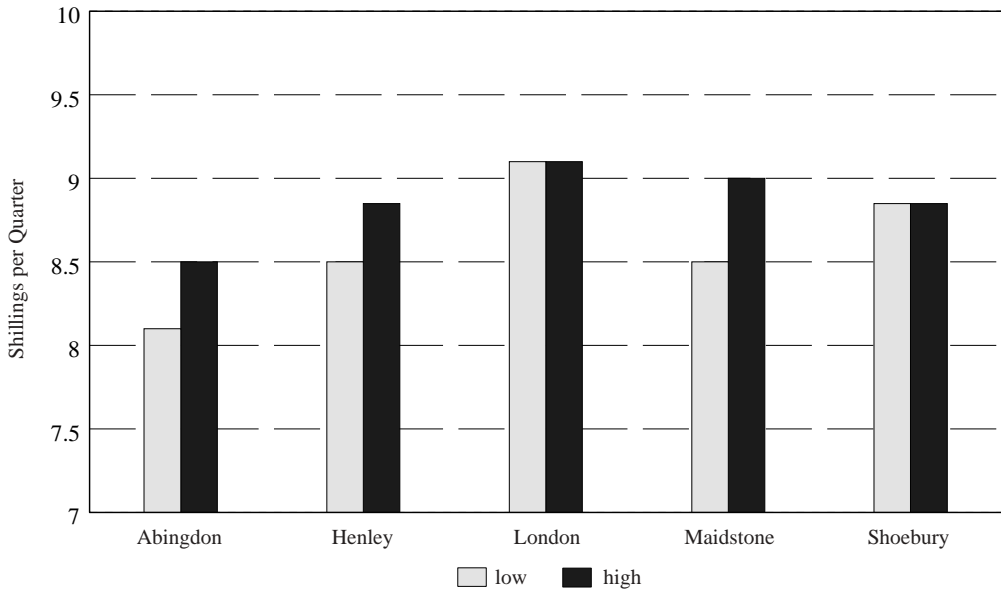


Fig. 2.2a. Thames Valley wheat prices, 14 March–4 April 1295

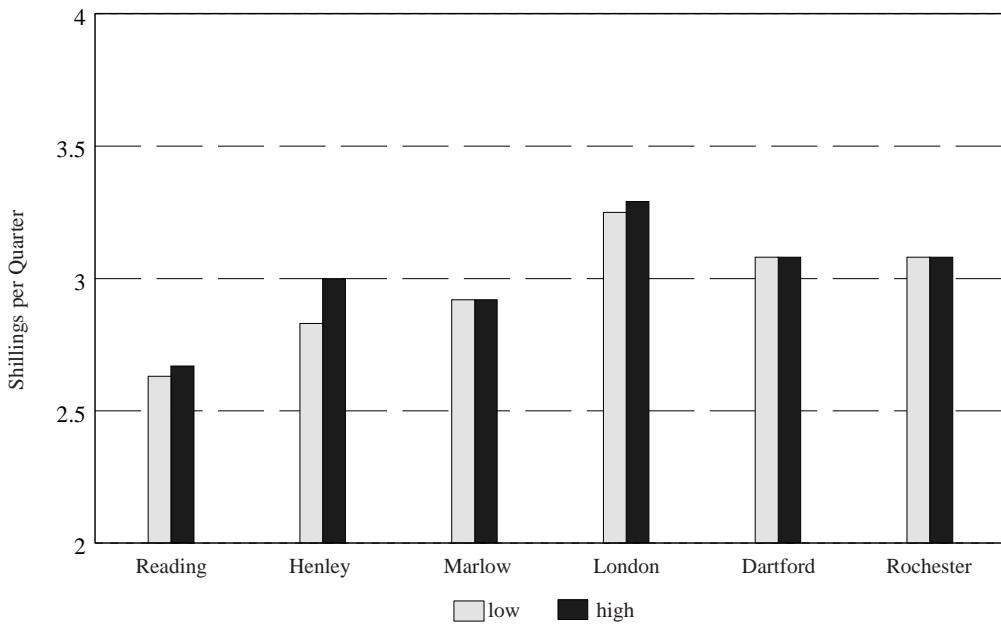


Fig. 2.2b. Thames Valley oats prices, 18 March–14 April 1295

for the Bishopric of Winchester manors of Wargrave in eastern Berkshire, close to the fully navigable stretch of the river Thames and a couple of miles from the key entrepot of Henley which channeled large amounts of grain towards London; Brightwell, further up-river and close to Wallingford on a part of the river which was more difficult and expensive to navigate, and Witney in north-west Oxfordshire, yet more distant from fully-navigable water. If these three places fell within a region where prices were determined

by the London market, then we would expect to find the highest prices at Wargrave and the lowest at Witney, and to find that all three had prices lower than those prevailing in the capital. Graphing wheat prices for the fourteenth century indicates that these assumptions are broadly realised, but throws up some intriguing fluctuations and deviations (Fig. 2.3).

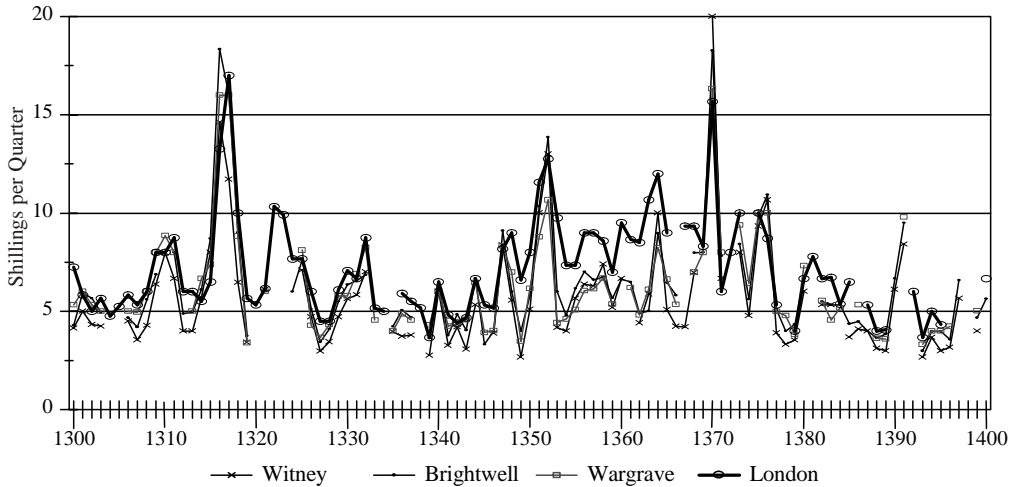


Fig. 2.3. London and Thames Valley wheat prices, 1300–1400

The curve of Witney is almost always at the bottom of the graph, as we would predict for a regional economy within which access to London and navigable water were crucial. The relation between prices at Wargrave and Brightwell is much less fixed — at some periods Wargrave prices were higher, at other times Brightwell, and for much of the time their prices emerge as very similar or identical. The London prices were generally higher than the average sale prices obtained by the Thames valley manors, but the size of the gap is striking at some periods, particularly in the 1350s and 1360s when the average divergence frequently approached or exceeded 3s. per quarter, far higher than likely transport costs. In 1300 these are estimated to have amounted to no more than 3.3d. per quarter from Wargrave to London, 5.2d. per quarter from Brightwell and 9d. per quarter from Witney, and while these undoubtedly rose after the Black Death it appears unlikely that they could have accounted for more than a part of the price difference.²⁸

Is this gap between the London and manorial prices ‘real’ — which would suggest a drastic decline in the efficiency of market networks in the Thames valley, one of London’s key supply routes — or is it artificial, reflecting a change in the nature of the prices recorded at either London or the manors after 1349? A change of grain measures could of course produce a spurious divergence of the series. Beveridge considered that some bishopric of Winchester manors did indeed change the measures they used during the 1350s, replacing a large local bushel measure with standard measures.²⁹ However, he only found evidence for a change at this time on the bishopric’s Hampshire manors, and considered that the Oxfordshire, Berkshire, Buckinghamshire and Surrey manors

²⁸ Campbell, Galloway, Keene and Murphy, *Medieval Capital*, pp. 194–6.

²⁹ W.H. Beveridge, ‘Wheat measures in the Winchester rolls’, *Economic History*, 5 (1930), pp. 19–44.

demonstrated a continuing use of a standard 8-gallon bushel. Moreover, the change in measures on the Hampshire manors is dated by Beveridge to the accounting year 1354–5, by which time the London-Thames valley gap is already evident. Further confidence in the validity of the bishopric manorial prices is gained from a comparison with prices obtained by the Merton manor of Cuxham, which normally sold much of its grain at Henley. Examination of wheat prices obtained by Cuxham between 1346 and 1358 indicates that throughout this period they generally fell within the range of prices obtained by the Winchester manors.³⁰ Thus, in February 1357 the famuli of Cuxham carried wheat to Henley where it was sold for 6s. per quarter. At Wargrave, the nearest Winchester manor to Henley, the mean sale price in the accounting year 1356–7 was 6s. The London price, by contrast, had been 9s. per quarter in November 1356.

The inland or ‘Pavement’ assize prices from London, used in the various analyses in this paper, appear to have been based on an 8-bushel quarter throughout the period to 1370, and there is nothing to suggest that the capacity of the bushel used changed at any point.³¹ These prices, as explained above, date from October or November until 1370, when data from the adjacent Westminster Abbey manor of Hyde is substituted. We do not know when the Winchester manors sold their grain. If we assume that they normally sold in the spring, both before and after 1349, then a change in the seasonal movement of prices might produce an increase in the gap between London and Thames valley prices which is more apparent than real; this would be the consequence if, for example, average autumn prices were for a period higher than average prices in the following spring.³² The Cuxham data are too scanty for the 1350s to provide any clear indications. Evidence is available from another part of England, however, which suggests that there was indeed a temporary decline in the predictability of seasonal movements after the Black Death. Sufficient precisely-dated wheat prices exist for Exeter from the 1320s through to the 1360s to permit calculation of the average seasonal change in prices each harvest year between October and the following summer.³³ There appears to be a sharp decline in the extent of regular seasonal movement of wheat prices between the 1320s and the 1350s, with the increment averaging over 30 per cent in the 1320s, 21 per cent in the 1330s, 16 per cent in the 1340s and no more than 7 per cent in the 1350s. The seasonal effect becomes marked again in the 1360s at Exeter, with the average increment reaching 25 per cent, but it may be that at London — perhaps because of the greater size of the urban market — readjustment to the new economic and demographic situation took longer.

Why might the seasonal pattern of prices have shifted at this period? The first grain on the market each harvest year is likely to have come from the peasant sector of the economy, as peasants could not afford to store their surplus grain to await higher

³⁰ P.D.A. Harvey (ed.), *Manorial Records of Cuxham, Oxfordshire* (Oxfordshire Record Society, 50, and Royal Commission on Historical Manuscripts joint publication, 23: London, 1976), pp. 412–588.

³¹ The waterside markets of Billingsgate and Queenhithe commonly used a 9-bushel quarter.

³² This argument assumes either that the Bishop of Winchester’s demesnes were insufficiently flexible in their marketing strategies to adjust to changes in seasonal pattern, and continued to put their grain on the market in the spring or early summer, whatever the prevailing prices, or that movements had become so unpredictable that adjustment was impossible. For changes in the seasonal pattern of sales at Cuxham in the pre-1315 period, see Campbell, Galloway, Keene and Murphy, *Medieval Capital*, pp. 96–7.

³³ The ‘summer’ price is defined as the maximum obtained between June and early August. For the Exeter price series, see note 17 above.

prices in the spring and summer. The loss of life and disruption caused by the first outbreak of plague in 1348–9 must have reduced the productive capacity of the peasant economy greatly, and may have disproportionately reduced the quantities of grain available for sale rather than for subsistence. Such an effect might have been felt most acutely in London, and perhaps in other towns which looked forward to a rapid post-harvest inflow of provisions.

An alternative scenario posits disruption of one of the city's core supply routes, the middle Thames, in the 1350s and 1360s, and a corresponding dis-integration of the market, with London obliged to seek out more distant and presumably more expensive sources of supply. These decades indeed appear to see unusually frequent recourse to those coastal areas beyond the city's normal wheat supply radius, with shipments from East Anglia, Lincolnshire, the Humber and beyond. Licences to bring grain from these areas, and letters of protection for those involved, were obtained by Londoners and others virtually every year in the 1350s, and the quantities involved were often large.³⁴ In November 1352, for example, protection was granted to a group of men, servants of John Pyel 'master of the king's changes' and a future Mayor, to buy 3,000 quarters of corn in Lincolnshire, Yorkshire 'and elsewhere in the north' and bring it to London 'for the sustenance of the king's lieges there'.³⁵ Imports may also have been higher than average in these years but are difficult to document, as importing grain required no licence, unlike exporting. However, the occurrence of licences to re-export grain in the 1350s show that importation was occurring and suggest that the relation between prices in England and the other countries was unstable. Thus, in January 1353 the king granted Simon de Genton a licence to re-export to Holland or Zeeland 200q of rye which he had brought from 'Almain' to sell at King's Lynn, but which could not be sold there except at a substantial loss.³⁶

Disruption may also be implied by the relative movements of the manorial series themselves after 1350. Wargrave — close to Henley, and previously having been characterised by the highest price level (or an almost identical level to that at Brightwell) — is for a period the lowest-priced of the three, even below land-locked Witney, as if the price gradient in the middle and upper Thames was being disrupted or even reversed for a period. The possibility that the core Henley-London supply axis itself was experiencing disturbance and a decrease in the predictability of price movements might help to explain why Cuxham, the very paradigm of a demesne serving the Henley and hence the London market over an extended period, was leased out at the comparatively early date of 1359.³⁷ On this reading, the high grain prices characteristic of the 1350s and 1360s may be less a sign of economic resilience or buoyancy in the face of demographic

³⁴ *Calendar of Patent Rolls* (London, various dates); R.R. Sharpe (ed.), *Calendar of Letters from the Mayor and Corporation of the City of London circa A.D. 1350–1370* (London, 1885); Campbell, Galloway, Keene and Murphy, *Medieval Capital*, pp. 69–70. The grant of a licence does not mean that grain was in all cases actually obtained and shipped, but there is a strong impression created that Londoners were scouring eastern and northern England for supplies in these years.

³⁵ *Calendar of Patent Rolls 1350–54*, p. 353.

³⁶ *Calendar of Patent Rolls 1350–54*, p. 381.

³⁷ Recorded profits in 1354–5, the only post-plague year for which they are stated, were sharply down on those of earlier decades: P.D.A. Harvey, *A Medieval Oxfordshire Village: Cuxham, 1240–1400* (Oxford, 1965), pp. 94–5.

collapse, as they are often interpreted, than of disturbance or even crisis in the marketing system — a disruption of established patterns and relationships, exacerbated it must be said, by some poor harvests — and perhaps some reversion from extensive and relatively well-integrated markets to more localised and poorly-integrated ones.

Both of these scenarios may be to some degree correct — the gap between London and manorial prices may indeed be exaggerated by a change in the pattern of seasonal price movements — but that shift might itself reflect a significant degree of disruption within the regional grain market. Prices which were comparatively high post-harvest in relation to the following summer may, in the absence of a long-term downwards trend of prices,³⁸ point to a failure of the marketing system rather than to a failure of supply, with an inability rapidly to move the newly available grain from producing to consuming localities. Price data alone cannot solve the problem, and further work is needed on the operation of London's supply system in these critical mid-century decades.

Price variability

Manorial price data can, however, be employed in other ways to tackle the issues of market structure and integration. Long-continuing series, which largely derive from the manors of great estates, permit analysis of the year-to-year variability of wheat and other grain prices. Integrated markets should show less of such variability than un- or partially-integrated ones.³⁹ If the market is well integrated, then flows of grain should largely cancel out the effect of local harvest failures or shortfalls, reducing the variability of prices across both space and time. In an imperfectly-integrated market we might expect to see significantly higher levels of year-to-year variability in locations distant from major centres of consumption, or from major trade arteries, with producing regions subject to greater fluctuations than consuming regions. In Bailey's terms we might see greater volatility of prices at land-locked locations, implying a greater vulnerability to scarcity and famine for the market-dependent poor in those areas.⁴⁰

Did cheap access to water transport and to the London market produce a reduction in the year-to-year variability of wheat prices? The evidence is equivocal. It seems clear that in the counties to the north and west of London, which are known to have supplied the capital with grain, year-on-year variability of prices increased with distance from navigable water and hence with cost-distance from the city (Table 2.1).⁴¹ Prices in land-locked north Oxfordshire — represented in the table by Adderbury and Witney — do indeed appear more volatile than those at locations close to fully- or partially-navigable stretches of the Thames, presumably because dependence on more expensive land-transport made it difficult both to compete in London and other distant markets, and to bring in supplies in periods of shortage, resulting in relatively low overall prices, but more extreme fluctuations in years of dearth. Indeed, it may be that the highly volatile nature of prices at places like Adderbury reflected their position at the inland

³⁸ If the trend were downward this would tend to depress unadjusted within-year movements. In fact, between the 1330s and the early 1370s the trend is upwards.

³⁹ Ejrnaes and Persson, *Market Integration*.

⁴⁰ Bailey, 'Peasant welfare', p. 236.

⁴¹ All the manors drawn upon in the table belonged to the bishopric of Winchester; this maximises the number of years for which data can be used. For their locations, see Fig. 2.1. above.

TABLE 2.1.
Coefficients of variation of wheat prices 1301–1400¹

| | N years ² | Add. (O) | Witn. (O) | Iving. (Bk) | Wyc. (Bk) | Brihg. (Brk) | Warg. (Brk) | Farn. (Sr) | Ecch. (Ha) | Ebbes. (Wlt) | Mer. (Ha) | Fare. (Ha) | Lond. |
|-----------|-------------------------|-------------|--------------|----------------|--------------|-----------------|----------------|---------------|---------------|-----------------|--------------|---------------|-------|
| 1301–1400 | 68 | 62.9 | 52.2 | 45.1 | 51.6 | 46.9 | 42.6 | 42.8 | 42.5 | 42.0 | 38.0 | 40.3 | – |
| 1301–15 | 11 | 30.8 | 27.9 | 25.3 | 28.3 | 24.5 | 20.8 | 24.0 | 18.1 | 21.3 | 24.4 | 21.3 | 18.0 |
| 1301–25 | 16 | 51.8 | 38.2 | 49.8 | 47.0 | 44.8 | 42.9 | 37.0 | 36.7 | 37.0 | 43.4 | 36.2 | 40.8 |
| 1326–50 | 14 | 33.1 | 32.0 | 29.6 | 23.2 | 27.7 | 24.5 | 21.5 | 24.5 | 26.7 | 23.6 | 22.3 | – |
| 1351–75 | 17 | 63.1 | 54.0 | 36.4 | 50.4 | 45.8 | 41.1 | 48.3 | 42.0 | 39.4 | 26.9 | 39.9 | 23.6 |
| 1376–1400 | 17 | 41.5 | 34.1 | 38.2 | 35.6 | 31.7 | 31.2 | 28.6 | 28.4 | 28.8 | 27.0 | 25.9 | – |

Source: see notes 18 and 27 above.

¹ Years are based on accounting years, and are dated by the closing Michaelmas, ie. '1301'=29/9/1300–29/9/1301. For location of manors, see Fig. 2.1 above.

² Only years for which reasonably robust data are available for all locations have been used in calculating the coefficients of variation. A small number of interpolations have been made, using prices from adjacent Winchester manors, viz. Waltham St Lawrence prices for Wargrave, Bentley for Farnham, Burghclere for Echinswell, Fonthill for Ebbesborne, Twyford for Merdon and Havant and Hambledon for Fareham. In addition prices from the non-Winchester manors of Culworth and Turweston have been incorporated in the Adderbury series for the years 1385–6 and 1386–7 (Northants RO Aa66, Westminster Abbey Muniments 7827). Coefficients of variation for London can be calculated on the same basis for the periods 1301–15, 1301–25 and 1351–75 only.

edge of the area influenced by London's demand for grain — normally outside the supply system and characterised by low prices, in years of dearth local scarcity may have been exacerbated by the withdrawal of supplies towards the capital.

Price variability at intermediate locations like Ivinghoe, Wycombe and Brightwell appears generally lower than in north Oxfordshire, but higher than that at Wargrave. Although Wycombe's variability is rather higher than might be expected for a location not far distant from Henley and Marlow, and with documented links to the London market, in general this group of manors seems to exhibit a positive relationship between distance from the capital/distance from navigable water and level of price variability. Looking at the area to the south and west of the river suggests, however, that other factors must have been at work. Low coefficients of variation, comparable to that at Wargrave, are found at several inland locations, distant from navigable water, in Hampshire, Wiltshire and Surrey, as well as at Fareham, which lies near the coast. Inland Hampshire and Wiltshire were almost certainly not part of part of London's grain supply hinterland in the fourteenth century, and their relatively low price volatility must have other causes. The presence of quite substantial urban markets at Winchester and Salisbury can be no more than part of the explanation, and perhaps this area as a whole, characterised as it was by generally conservative agrarian regimes and low productivity levels,⁴² should be seen as a consuming rather than a producing region.

Sub-division of the time periods for which variation is measured produces some interesting refinements, and allows direct comparison between London and the manorial series at some periods. In the early years of the fourteenth century, prior to the great famine, London prices appear more stable than at any of the manorial locations except Echinswell in northern Hampshire. However, this is not true if the first quarter of the

⁴² H.E. Hallam, 'Southern England', in Hallam (ed.), *Agrarian History of England and Wales*, II, pp. 352, 362.

century is taken as a whole, including famine years, when London price variability emerges as higher than that of the Hampshire and Wiltshire manors, and also, surprisingly, of Witney, where prices appear not to have reached such extreme levels in 1316–17. The greatest contrast between locations is found in the third quarter of the century, with very high coefficients of variation evident for the land-locked northern manors, approaching or even exceeding the first quarter's figures; at Adderbury the coefficient reaches an extraordinary 63.1 per cent. This suggests again that the post-Black Death decades were ones of significant market disorganisation, and that it was the landward edge of London's supply zone which experienced most volatility. In contrast to almost all the manorial series, however, the city itself saw comparatively low levels of price volatility in the 1351–75 period. This is not easy to explain given the high prices which, as we have seen, appear to have prevailed in the city and the possible disorganisation of what had previously been a key channel of supply. It may reflect the financial power of the London market, and its ability to secure supplies even under adverse conditions. In any case, it does suggest that the period saw no supply crisis for London consumers — rather it was the producing areas which experienced marked instability.

The last quarter of the century, which saw lower prices everywhere, was also characterised by lower volatility in most of the manorial series and by a reduction in the differences between locations. Directly comparable data for the same range of years does not exist for London, unfortunately, but there are some indications that price volatility there may have increased again after *c.* 1370. It is worth noting, in this context, that specialised London-based cornmongers largely disappear from the records by the end of the fourteenth century, and that the bulk trade in grain appears to have passed into the hands of merchants whose core interests lay elsewhere.⁴³ The picture that emerges is thus of a partially or imperfectly integrated market in the counties around London, subject to significant change during the course of the fourteenth century. Further exploration of these features will require examination of more price series from a wider geographical area, to test, if possible, whether or not variability increases yet further as one pushes into the midlands. The challenge will be to assemble price series with a sufficient number of years in common to enable valid statistical analysis to be carried out.

The coastal market — London and Exeter

To what extent did the coastal trade networks in which London participated share these characteristics and fluctuations? We can partially address this question by examining the relation between London and Exeter prices. It might be argued that this is unlikely to be helpful — after all, viewed from the perspective of metropolitan grain supplies, Exeter and its region were at best peripheral (a sea-distance of *c.* 340 miles/560km) and no references to the bringing of grain from Devon to London have yet been found for the fourteenth century, and they are rare in the sixteenth. Moreover, much of Devon was devoted to non-arable land uses, while within the grain sector oats was generally predominant and rye was in many places more significant than wheat as a bread-

⁴³ Campbell, Galloway, Keene and Murphy, *Medieval Capital*, p. 82; J.A. Galloway, 'London's grain supply: changes in production, distribution, and consumption during the fourteenth century', *Franco-British Studies*, 20 (1995), pp. 32–3.

grain.⁴⁴ Might not Exeter and its region therefore have displayed price trends and movements quite unrelated to those prevailing in London and the south-east of England? Comparing the excellent Exeter price series with the more patchy and discontinuous London series in fact provides a good opportunity to test Farmer's contention that areas accessible to the coast formed, in essence, one market from an early period. If these two towns, between which direct trade in grain was rare or non-existent, could be shown to have had significantly correlated short-term price movements, then the case for believing in the existence of a spatially-extensive integrated market would clearly be strengthened.

TABLE 2.2.
*Correlation of de-trended annual
wheat price movements, London and Exeter*

| <i>Period</i> | <i>N (years)</i> | <i>r</i> |
|---------------|------------------|----------|
| 1321–30 | 10 | 0.82** |
| 1331–39 | 9 | 0.60* |
| 1343–50 | 8 | 0.78* |
| 1351–60 | 10 | 0.80** |
| 1361–70 | 10 | 0.22 |

** significant at 0.05 and 0.01 levels;

* significant at 0.05 but not 0.01 level.

It must be said straight away that even here the opportunities for rigorous statistical analysis are limited. Only for the period between 1317 and 1370 can the correlation of de-trended wheat prices validly be attempted, as the later (sixteenth and early seventeenth century) London assize prices are sporadic and relate to different parts of the year, whereas the early series at least consistently recorded prices from the autumn, usually October. De-trending annual mean prices at Exeter and autumn prices from London, by taking the first differences of log,⁴⁵ suggests alternating phases of closer and lesser correlation between 1320 and 1370 (Table 2.2). The period from 1320 down to the late 1350s seems to have seen quite closely correlated price movements, although some decline is evident in the 1330s. The main surprise, perhaps, is that the first post-plague decade, the 1350s, appears to have seen a continuation of moderately strong correlation of price movements at London and Exeter. After 1360, however, that correlation appears to have broken down completely.

The periods under consideration are short, and even this data is quite coarse-grained, based as it is upon a single price for each town per year. Nevertheless, confidence that quite high levels of integration between this widely separated pair of grain markets prevailed in the first half of the century is strengthened by visual inspection of graphed shorter-frequency movements, for those few years for which additional London prices survive (Fig. 2.4). The general direction of movement of prices between October 1320 and August 1323 can be seen to be quite strikingly similar, with the London price generally 1s. to 1s. 6d. higher than that prevailing at Exeter; this compares with an estimated transport

⁴⁴ J. Hatcher, 'Farming techniques: south-western England', in Hallam (ed.), *Agrarian History of England and Wales*, II, pp. 390–2. H.S.A.Fox argues that these specialisms reflect choice rather than environmental constraints upon arable practice — Miller (ed.), *Agrarian History of England and Wales*, III, p. 303.

⁴⁵ Use of a logarithmic scale preserves proportionality in the annual first differences (year-on-year changes); cf. Ejmaes and Persson, *Market Integration*, p. 24.

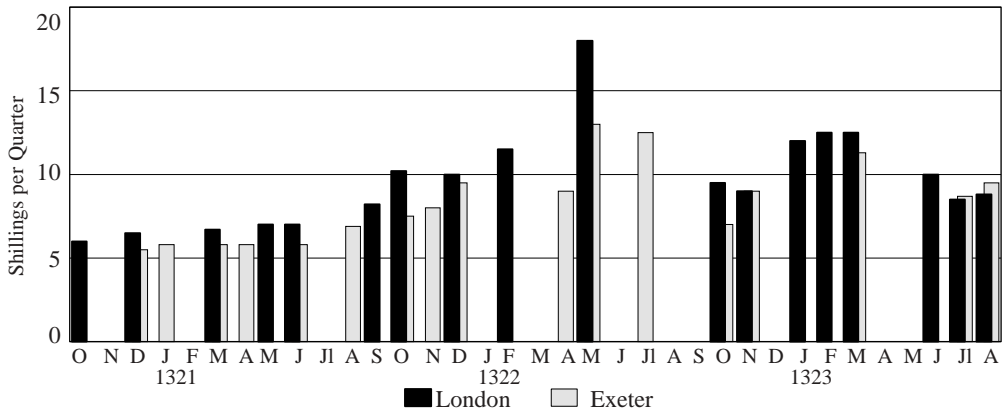


Fig. 2.4. Monthly wheat prices: London and Exeter, 1320–23

cost of 10d.–10.5d. per quarter of wheat, excluding payment of tolls and other miscellaneous costs,⁴⁶ suggesting at least the possibility that the cost of carriage may have acted to define the bands within which the two price series fluctuated. A much wider gap is however evident in the high-priced spring of 1322, the last after-shock of the Great Famine, while Exeter prices emerge as a few pence above those of London in the summer of 1323. At several points a change in the London price appears to herald a change at Exeter, although this is not invariable.

The implication of this data — that London and Exeter participated in a quite well-integrated coastal grain market down to the 1350s — also helps at least partially to explain an enigma identified by Kowaleski in her study of the Exeter grain trade.⁴⁷ Kowaleski found that in the early fourteenth century coastal and overseas grain imports at Exeter, recorded in the town's local customs accounts, peaked *not* at the height of the terrible famine which was most severe in the years 1315–18, but in the year 1319–20, when prices had fallen back to much lower levels. Kowaleski, using the published Beveridge annual averages, noted that Exeter prices were somewhat above 'national' levels in that year, but only slightly more so than in several other years, and so found it hard to explain the huge flood of grain — in excess of 12,000 quarters — that came in then from other ports. Examination of the monthly prices shows that a bizarre jump in wheat prices took place at Exeter during September 1319, from 4.42 to 6.92 shillings per quarter in the space of two weeks, perhaps the result of severe weather or some pest devastating a crop which was either being harvested extremely late⁴⁸ or was already in barns. Prices remained at this high level in December, when comparison with the London price shows that, quite exceptionally, the Exeter price was then some 50 per cent higher than in the capital. The grain boats had begun to arrive in November — initially ones whose home ports lay in Devon and Dorset, subsequently including boats from East Anglia, Picardy and Normandy — and wheat and other grains continued to pour in over the next six months, during which

⁴⁶ Estimated on the basis of costs of coastal transport c.1300, set out in Campbell, Galloway, Keene and Murphy, *Medieval Capital*, p. 196.

⁴⁷ M. Kowaleski, 'The grain trade in fourteenth-century Exeter', in E.B. DeWindt (ed.), *The Salt of Common Life: Individuality and Choice in the Medieval Town, Countryside, and Church: Essays Presented to J. Ambrose Raftis* (Kalamazoo, Mich., 1995), pp. 1–52.

⁴⁸ The wheat harvest in Devon usually took place in late July or early August — ex. inf. Harold Fox.

period the Exeter price stabilised and then fell back a little.⁴⁹ By April the differential between Exeter and London prices had been reduced from 2 shillings per quarter to a few pence, and by May it had been reversed as London resumed the lead. This initially puzzling episode thus appears to have resulted from a temporary and very unusual dislocation of supply in the Exeter region, which shattered the normally high level of integration between the markets of London and Exeter. Merchants responded quickly to the opportunity, and brought in grain in sufficient quantity to restore equilibrium well before the next harvest.

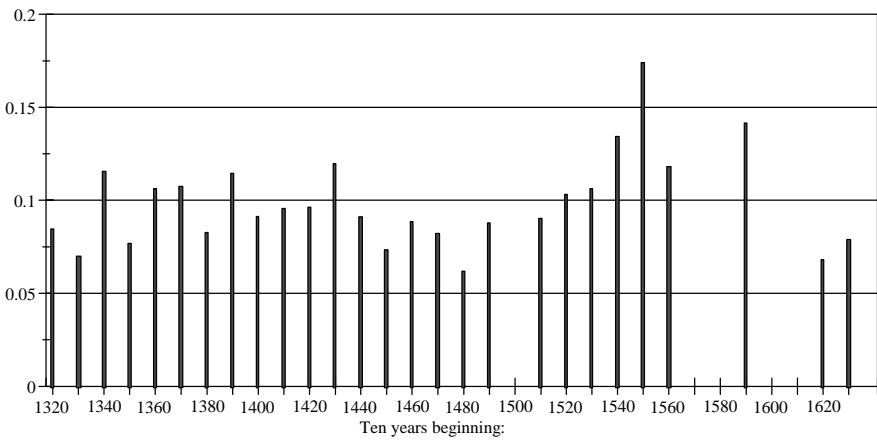
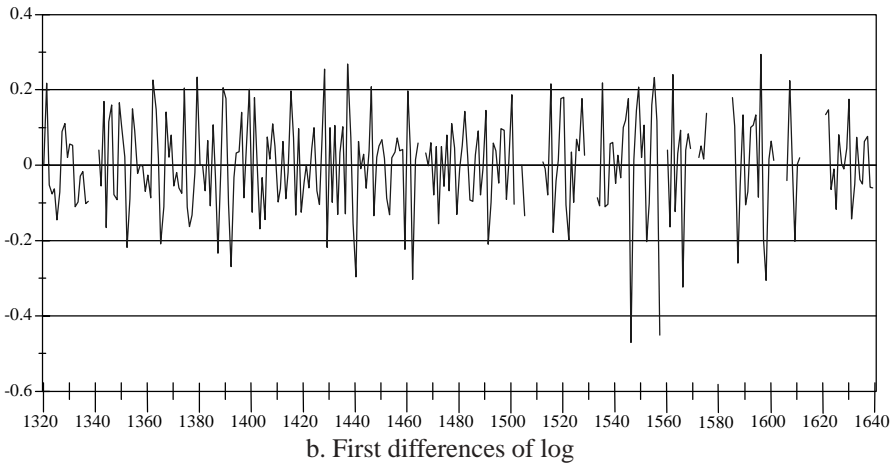
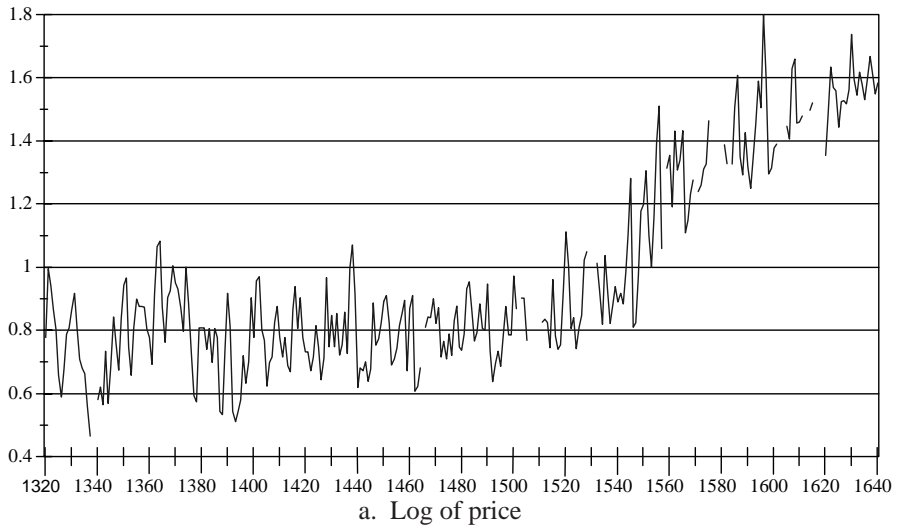
Available data does not allow us to explore in such detail the short-term movement of prices for the next year in which a major grain import occurs at Exeter — 1332–3 — but comparison of October prices confirms that this was the only other year before the Black Death when Exeter prices were significantly above those at London in the autumn. After 1350 the gap between London and Exeter autumn wheat prices tended to widen, from 1s.–1s. 6d. to between 2s. and 3s. per quarter, occasionally reaching or exceeding 4s. per quarter. Although transport costs increased they cannot fully account for the size of this gap, but, as we have seen, year-to-year movements continued to be quite closely correlated in the 1350s, suggesting that an integrated coastal market remained substantially intact in these years. Much greater variety in the size of the gap between London and Exeter prices is evident in the 1360s, as the correlation of annual movements collapsed, and this seems likely to reflect a dis-integration of the coastal grain market. In 1364–5 there was an enormous reverse gap — the October Exeter price was 4s. above the London price — but unfortunately the absence of a local customs account for this year makes it impossible to tell whether a flood of grain imports took place as in 1319–20. The general level of Exeter grain imports was much lower after than before the Black Death, and the relative importance of Brittany vis-à-vis Picardy, Normandy and eastern England may have increased.⁵⁰ Brittany is closer than these other sources of supply, and taken with the other evidence, this may point to a tendency for a coastal grain market linking England and the near-continent to devolve into relatively autonomous eastern and western halves after 1349, or more particularly after 1359, reflecting both short-term disruption, declining aggregate demand, and perhaps an increase in insecurity resulting from war and piracy. That process seems also to have been associated with a decline in the efficiency of the market and the reliability of supplies at Exeter — while price volatility remained low there during the 1350s, as at London, levels in the 1360s increased significantly, and were to remain comparatively high for several decades, as we shall now see.

Long-term changes

Did annual price fluctuations tend to become less extreme in the very long-term, as we should expect if the grain market were becoming more integrated? The Exeter series provides the most continuous material for such an investigation. First differences of the log of wheat prices have been calculated for the period from 1320 — just after the great famine — down to 1639 (Fig. 2.5). The 1320s, 30s and 50s (but not the 1340s)

⁴⁹ M. Kowaleski, (ed.), *Local Customs Accounts of the Port of Exeter 1266–1321* (Devon and Cornwall Record Society, new ser., 36: Exeter, 1993), p. 178ff.

⁵⁰ Kowaleski, 'Grain trade', pp. 14, 20–4.



Note: excludes decades with fewer than 7 annual values

c. First difference of log —decadal means

Fig. 2.5. Exeter wheat prices, 1320–1639

saw relatively low fluctuations. The 1360s then seem to have ushered in a period of generally greater volatility at Exeter. This culminated in the 1430s, after which a notable decline in volatility is evident until the last decade of the fifteenth century. This points to a well-functioning grain market in the mid and later-fifteenth century and, other things being equal, to increased integration. Both the rural and urban economies of Devon performed well in the fifteenth century, reflected in the growth of the county's share of national taxable wealth and in a remarkable surge in building activity.⁵¹ Real improvements in market organisation may have been associated with this prosperity. Without comparable evidence from other regions, where stagnation or recession seem to have been more characteristic of the mid or later fifteenth century, we cannot be sure whether those improvements took place at a *regional* or a *national* level. We saw that a decline in the covariation of Exeter and London prices in the 1360s coincided with an increase in volatility levels, but at present we can only speculate as to whether the fifteenth century decline in volatility was associated with the re-emergence of an integrated coastal grain market linking south-eastern and south-western England. The apparently growing detachment of Exeter from a London-focused economy between the early fifteenth and later sixteenth centuries revealed by analysis of debt cautions against generalising from the Exeter data alone.⁵²

From the 1520s onwards a notable increase in price volatility is evident in the Exeter series, with the 1550s seeing particularly violent year-to-year fluctuations. The extreme instability of the mid sixteenth century no doubt in part derives from the currency debasements of the 1540s and the disruption caused by severe outbreaks of epidemic disease in the 1550s, but may also reflect the impact upon the market of the resumption of sustained population growth and, perhaps, a destabilisation of coastal markets caused by the rapid growth of London.⁵³ By the 1620s and 1630s levels of volatility had declined once more, paralleling those of the 1320s and 1330s, and the mid fifteenth century. The data are thus more suggestive of alternating periods of greater and lesser price volatility than of any clear trend, and it may be that annual prices constitute too coarse-grained a measure to fully reflect changes in integration levels. If in the very long-term wheat markets in southern England became more integrated and less subject to year-to-year fluctuations in price, the Exeter data suggests that that process was subject to numerous interruptions and reversals, most dramatically during the renewed demographic growth and inflation of the sixteenth century. Volatility levels at early seventeenth-century Exeter in fact seem merely to have reverted to those current after the 1315–18 famine. Moreover, for London there are indications that pre-1315 prices were significantly less volatile than those of the post-1320 period, and year-to-year variations of wheat price in the capital may thus have been lower in the late-thirteenth century than in the decades after 1600.

⁵¹ M. Kowaleski, *Local Markets and Regional Trade in Medieval Exeter* (Cambridge, 1995), p.16.

⁵² See above, and below pp. 67–9, 79.

⁵³ The literature on the sixteenth century 'price revolution' is extensive. A useful bibliography is contained in D.H. Fischer, *The Great Wave: Price Revolutions and the Rhythm of History* (Oxford, 1996), pp. 459–68. Y.S. Brenner attributed a 'growing amplification of the difference between grain prices in good and bad harvest years' in the first half of the sixteenth century to an imbalance in the market resulting from a rapid increase in urbanisation levels: 'The inflation of prices in early sixteenth century England', *Economic History Review*, 14 (1961), p. 236.

Conclusions

Clearly, there is as yet no certainty about the long-term course of change in price volatility and integration levels within the English grain market. No convincing evidence has yet emerged for an increase in integration levels between *c.*1300 and *c.*1600. The experience of Exeter may reflect its distinctive regional development. Patterns of indebtedness show that the experience of other regions could be very different, and so there is a need to study long-term changes in price variability at other locations, as far as available data allows. This paper has, however, concentrated on developments in the fourteenth century, when various indicators suggest that a relatively well-integrated system experienced disruption in the 1350s and 60s before (perhaps) reaching a new equilibrium. There is also some evidence to suggest that land-locked areas suffered greater volatility of prices than areas closer to navigable water. This appears to hold more for areas inside London's grain supply hinterland than for those outside. A location on the fringe of a major urban centre's supply zone thus seems to have caused more price instability than complete isolation from such a market.

Comparison of Exeter and London prices and their relation to fluctuations in the Exeter grain trade suggest that before the Black Death both places were part of a relatively well-integrated coastal wheat market. That market may have centred upon Flanders, Picardy, Normandy and other parts of the near-continent as well as embracing south-eastern and south-western England, and more may be learned of its operation through systematic comparison of English and continental price series. Decline in aggregate demand for cereals after the Black Death may have precipitated a decline in the level of integration of coastal grain markets although, paradoxically, supplies brought by water may have become more significant at London in this period. Extension of the study to include data from Durham and Chester between the fourteenth and early sixteenth centuries, and a comparison of Exeter and Canterbury price movements in the fifteenth century, should shed further light on the geographical extent of an integrated coastal market, and on how it evolved after the upheavals of the immediate post-Black Death period.

Further areas for exploration include the relationship between the development of an integrated market for wheat and other grains and the activities of merchants whose core interests lay elsewhere, in the distribution of fish, salt, or higher-valued, low-bulk goods such as cloth, spices and dyestuffs. London fishmongers, mercers, grocers, and others all dabbled to a greater or lesser degree in grain-dealing when opportunities for profit arose, and become particularly prominent in this regard in the second half of the fourteenth century. The spatial reach of London's distributive systems was large and growing between the early fifteenth and later sixteenth centuries, although that was not incompatible with some regions, such as the south-west, apparently reducing their direct dependence on those systems.⁵⁴ Flows of information on market conditions and prices through these mercantile networks may have had an important influence on the operation of the grain market and on the level of integration. Parallel to its functions in international and distributive trade, London's role in shaping and organising the grain market in the later medieval period may have far outstripped its significance as a centre of consumption.

⁵⁴ See below pp. 59–81. See also J.A. Galloway, 'Reconstructing London's distributive trade *c.*1400: the role of computer-assisted mapping and analysis', *History and Computing*, 12 (2000, forthcoming).

