

The grain trade of Athens in the fourth century BC

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It used to be widely accepted that Athens at the height of its power in the fifth and fourth centuries BC had regularly to import very substantial quantities of grain to provide for the population of Attica. In this respect Athens differed from all other Greek *poleis*, and this abnormal dependency upon foreign production was held to explain aspects of Athenian actions abroad – indeed to build up a notion of an Athenian foreign policy. Scholars might differ about the starting date of this process, whether the imbalance between home production and consumption was already in existence in the time of Solon, because of his ban on the export of produce other than olive oil, and whether the Peisistratid interest in the Hellespont area already demonstrated concern for the Pontic grain route, but there were no serious doubts about the importance of the trade. This traditional view, indeed, still has supporters.¹

A decade ago, however, in a deliberately provocative article, Peter Garnsey challenged this theory and injected into the debate some justified scepticism and a new set of calculations (Garnsey 1985). Partly because of the force of Garnsey's demolition of the

¹ De Ste Croix 1972, 46–9; Davies 1978, 59; Casson 1994, 521. I am most grateful to Michel Austin, Darel Engen, Antony Keen and Graham Oliver for comments on this chapter. See Tsatskheladze (this volume) for further discussion.

more grandiose aspects of the previous consensus, and partly because of the greater sophistication of his statistics, his thesis has proved influential. The work of Gallant and Sallares follows his lead, though it should be noted that some of Sallares's conclusions on agricultural practice may weaken Garnsey's hypothesis (Garnsey 1988; Gallant 1991; Sallares 1991). The discussion has become increasingly technical, with detailed and precise calculations which could convey a false impression of the extent of our knowledge.² My wish is to redress the balance and to return the emphasis to the importance of the trade in grain,³ partly by pointing to doubts about Garnsey's calculations and partly by stressing a factor that is largely ignored in the pursuit of more exact estimates for Athenian grain requirements – namely, the psychology of the market, something which still remains difficult to predict or regulate in modern economies. My discussion will focus on the fourth century, because that is where the bulk of the evidence for the grain trade lies, but my conclusions would also be relevant to the fifth century.⁴

Calculations of Athenian dependency upon foreign grain entail a complex series of assumptions about the carrying capacity, or potential productivity, of Attica, the size of the population to be supported, and the consumption levels of grain within that population: naturally we do not have anything like adequate evidence for any of these variables in the supply/demand equation, and so all reconstructions are necessarily houses of cards, but my feeling is that Garnsey's choice of guesses is not the most plausible – they all tend to support his conclusion that imported grain was less significant than previous scholars had believed.

First, Attic production of grain. To assess this, it is necessary to take views on the cultivable area of Attica, on the fallow regime,

² Foxhall and Forbes 1982; cf. also Sallares 1991, 1–2, who bemoans the lack of expertise among ancient historians. Bagnall and Frier 1994 preface their study with a useful caveat: 'we consider it essential that the seeming precision of our statistics not of itself induce false confidence in the result'.

³ The sensible discussion of Austin 1994, 558–64, should be noted.

⁴ I am most grateful to Antony Keen for supplying me with a copy of his paper (Keen 1993). I have considerable sympathy for his basic argument that Garnsey has underestimated the importance for Athens of imported grain, especially from the Pontus, in the fifth century.

and the actual productivity of the land that was devoted to grain. The Eleusis First Fruits inscription plays a part in this particular tangle. Garnsey's assessment that 'to inquire into the yield of the land in Ancient Greece is to pursue a phantom' is absolutely correct even when the investigation is restricted to Attica.⁵ The total area of Attica in the fourth century was approximately 240,000 hectares. I would be happy with Garnsey's guess, extrapolated from the 1961 census, that somewhere between 35–40 per cent of ancient Attica was cultivable (Garnsey 1988, 92), with the proviso that some of this land was not suited to grain; Sallares concluded that 30 per cent of the surface area of Attica was available for grain, which in places was intercropped with olives, though the actual area sown would have varied from year to year in response to a number of factors (e.g. availability of labour, climate, general security) (Sallares 1991, 303, 309).

How much of this land was actually devoted to grain in any given year depends on the fallow regime, and the competing attractions of other crops. With regard to fallow, the debate concerns the predominance of a two- or a three-year cropping cycle; its inconclusive nature might suggest, unsurprisingly, that there was no single regime practised in Attica in antiquity. Garnsey argued that, because the dominance of the two-year system cannot be proven, it is incorrect to assume that only 50 per cent of cultivable land was available for grain – for him the implication is that up to two-thirds of cultivable land might be available under a three-year system. First, the regularity of fallow has to be defended, since Gallant has challenged the belief that bare fallow was customary because certain agricultural leases stipulate that fallow must be set aside (Gallant 1991, 56). Gallant's negative argument is weak, since a legal contract may well specify what is good normal practice: tenants might have eschewed fallow not because the practice was uncommon but because they were interested in short-term gain rather than the longer-term health of the owner's property. The case for fallow has been powerfully put by Sallares, who observed that the low-rainfall climate of Attica dictates that 'a not insignificant proportion of arable land is still left fallow', in spite

⁵ Garnsey 1992. I am most grateful to Peter Garnsey for providing me with a copy of this article, which I would not otherwise have seen, and for other advice on this chapter in spite of its disagreement with his views.

of the improvements in crop rotation practices and irrigation technology (Sallares 1991, 303 (quotation); 385–6). Lack of rain-fall meant that Attica was not well suited to growing leguminous grain crops (e.g. broad beans) as field crops, although a three-year cycle of winter wheat, winter legumes and fallow may have been practised in wetter parts of the ancient Mediterranean and tried in Attica (Sallares 1991, 300, 331, 382; cf. also Garnsey 1992, 151). Any attempt to increase production by more regular cropping would exhaust the soil; there was insufficient fertiliser or manure to counteract this decline, and with regard to grain such attempts to enrich the soil in this way might have had a negative impact, since the available types of grain were not capable of responding positively to these stimuli (Sallares 1991, 381, 385). Biennial fallow permitted long-term cropping of poor land in arid conditions by conserving moisture and allowing the recovery of nutrient levels; Sallares's arguments would suggest that in Attica grain was grown on arable land either one year in two or one year in three, probably with a preponderance towards the former.

Another relevant factor for Attic grain production is the impact of the presence of a very large conurbation, a question raised by Garnsey but not answered (Garnsey 1985, 70). This is discussed by Sallares in relation to modern land use in Attica, where the impact of the capital's wine consumption is apparent (Sallares 1991, 296–300); he concluded that ancient farmers with their overriding concern for self-sufficiency would not have responded in the same way. This, however, seems too negative, and the conurbation of Rome, admittedly far larger than the Athens–Piraeus complex, had an impact on farming practices in South Etruria and the Tiber valley. The small farmer in Attica, who for economic reasons had to sell his crop (whether grain or something else) soon after the harvest, and then repurchase food during the course of the year, might well have considered devoting part of his land to crops that produced the highest return. He could do so with some confidence, since the state attempted to ensure the supply of grain at reasonable prices. If neighbouring Megarians could see the agricultural opportunities presented by the Athenian market, an inference from the trading scene in Aristophanes' *Acharnians* 719–835, Athenians are not likely to have ignored the possibilities. Although the evidence is not extensive, there are allusions in the orators and inscriptions to gardens, *kepoi*, which will have been located on

good land accessible to irrigation and so been in competition with grain for cultivable land.⁶ Furthermore, some suitable land was either left uncultivated, or was poorly cultivated: Ischomachus, and his father before him, had made money from the purchase and improvement of such land (Xenophon, *Oeconomicus* 20. 22–6). Another relevant consideration is the existence of a certain number of rich landowners, men who would tend to own significant holdings of some of the better quality land which they might choose not to devote entirely to food production – or at least not to the production of food for human consumption, since the horse-owning elite will have had to allocate land for the maintenance of its animals.⁷ Sheep and goats may have survived entirely through grazing non-arable land, but oxen are likely to have required feeding, so that some leguminous crops might have to be grown as fodder, or some of the barley production allocated to them. There is no point in attempting to quantify these animal needs, but neither should they be completely ignored.

Some of these factors might seem minimal, but overall they are cumulative. The assumption that no more than half the arable land was available for grain production in any particular year is plausible, and in practice rather less would have been sown because of the impact of leguminous crops, market gardening and animal husbandry. Thus, if 30 per cent of Attica is defined as arable, *no more than* 15 per cent of its surface area would be available for grain in any one year, and the actual figure was probably in the range 10–15 per cent. For Garnsey 15 per cent was the lowest of the three estimates used in his production calculations (Garnsey 1985, 72); he also provided calculations on the basis of 20 per cent and 25 per cent under grain, on the assumption that land was available for grain two years out of three, that vines and olives could occupy hill slopes and poorer arable, and that there was some spring or summer planting of cereals and legumes as well as the standard winter sowing (Garnsey 1985, 73 n. 30). These justifications for higher availability of land are dubious: olives and vines could grow on poorer land, and undoubtedly did, but as

⁶ For example, Demosthenes 47. 53. For discussion, see Osborne 1992, esp. 378–87.

⁷ ‘The useless animal par excellence in ancient Greece’: Sallares 1991, 311. Osborne 1992 also notes the cultivation of flowers (385–6), and the existence of uncultivated temple lands (380–1).

Sallares has pointed out the olive is not naturally suited to the dry Mediterranean climate and performs much better on good land with a regular water supply (Sallares 1991, 304–9); certain crops might be planted in the spring, especially in years when the main crop appeared to be failing, but as Gallant has argued this strategy was only available if the landowner had surplus resources of seed and labour (Gallant 1991, ch. 5).

Finally, for this section, the actual productivity of this land. Here the starting point is the work of Jardé on cereals (Jardé 1925), who conjectured normal returns for wheat and barley in Greece in the range 8–12 and 16–20 hectolitres per hectare respectively. Certainly for wheat one would expect Attica to be at or below the lower end of the range since the quantity and distribution of rain was not particularly favourable, but Attica had a good reputation for barley according to Theophrastus: ‘At Athens the barley produces more meal than anywhere else, since it is an excellent land for that crop’ (Theophrastus, *History of Plants* 8. 8. 2). Jardé also made the point that overall yields in Attica were on the low side because the demand for food led to the cultivation of mediocre to marginal land (Jardé 1925, 53). Garnsey interpreted, or perhaps misinterpreted, this as an indication that Jardé was contemplating an upwards revision of his estimate for cultivated land in Attica (20 per cent cultivable, with half devoted to grain each year), which was much lower than Garnsey’s preference (Garnsey 1985, 67–8). In fact it was an explanation for the low overall rate of return, and accords with the conclusions of Sallares that productivity would have been low, albeit from a comparatively high acreage (Sallares 1991, 79–80). The fact, too, that much grain was grown interspersed with other crops, for example olives or vines, would have reduced yields per hectare: intercropping was an insurance strategy adopted to ensure that land gave some return under almost all circumstances, but the price of reliability was an overall reduction in individual yields (Gallant 1991, 38–41).

A brief look at the Eleusis First Fruits inscription cannot be avoided, though its interpretation entails a fresh range of guesses.⁸

⁸ *IG* II² 1672; Sallares 1991, 394, rightly stresses the limited value of this isolated item of evidence, but see Garnsey 1992, 147–8, for a sensible defence of attempts to exploit this inscription, however problematic it undoubtedly is.

The inscription is dated to 329/8, and by making reasonable assumptions about the relationship of offerings to overall production it is possible to deduce how much wheat and barley was produced in Attica and various dependent territories in this year. What is striking is the imbalance between barley and wheat production within Attica, with about ten times as much of the former – and the importance of the production of the islands of Lemnos, Imbros and Scyros which produced 2.75 times the small Attic crop of wheat and 80 per cent of the larger barley crop – one can understand the determination of the Athenians to regain these islands after the Peloponnesian War, and to retain possession in 392 when the Spartan–Persian peace proposals threatened to remove them again (Seager 1966, 172). Demosthenes could assume that provisions for a fleet would be available on Lemnos (4. 32). How much of the production of the islands, and other areas, could be demanded by the Athenians is unknown: Garnsey cites evidence for a tax on the islands' grain of 8.33 per cent in 375/4 (Garnsey 1988, 101–2), and, though this may have been an extraordinary additional impost, I suspect that the Athenians regularly tried to squeeze as much of the wheat, in particular, as they possibly could.

Notoriously, however, we do not know whether the harvest in 329/8 was good, bad or indifferent, but the harvest in Attica must have been poor unless the area devoted to grain was very small (5–6 per cent of the total area), or the yield very low (less than half the lower figures offered by Jardé), or a combination of the two. Although Garnsey states that 'It is abundantly clear that the harvest of 329/8 BC was inadequate to feed the population' (Garnsey 1988, 99), at Athens 329/8 is not known as a year of food crisis, in contrast to 330/29 and 328/7, so that things were perhaps not critical. Explanations for this might be that 329/8 was the 'on year' for the olive harvest, since Sallares has plausibly suggested that this biennial event would have an impact on shortages of other types of food (Sallares 1991, 308). Alternatively after the crisis of 330/29 the Athenians might have made substantial efforts to secure foreign supplies, and so managed to avoid a crisis in 329/8, but supplies were insufficient to sustain the population through a third poor harvest in succession. Another solution would be that the year was poor, but not disastrous in Attica, and that the overall production of Attica combined with that of the islands was not wildly out of line with the norm.

The second major variable in calculations of Athenian grain requirements is resident population, and for this the guesswork involves the same types of extrapolation from contested items of evidence as for Attic productivity. Garnsey's first working hypothesis was that there were in the range of 200–300,000 residents in Attica between 450 and 320; this he then refined to posit a peak of 250,000 in the fifth century shortly before the Peloponnesian War, with rather lower figures for the fourth century of a peak of 200,000 and 120–150,000 in 323/2 (Garnsey 1985, 70; 1988, 90). My view is that Garnsey's estimates for the fourth century are significantly too low, and that the focus of his discussion of Athenian grain requirements on the lower of these figures tends to obscure the level of need at more prosperous times. For the fourth-century Athenian population, the figures recorded for citizens at the end of the Lamian War in 322/1, and for citizens, metics and slaves in the census of Demetrius of Phaleron about a decade later, are of key importance. These have been discussed at considerable length, in particular by Hansen, who has attempted to incorporate assumptions about the functioning of democracy as a cross check; my views are broadly similar to his, though I would not attempt to calibrate the precise fluctuations of the population during the fourth century.

Adult male citizens provide the starting point. Demetrius' census recorded 21,000 Athenians, though it is disputed whether this represents all citizens, or only those liable to military service, or only those who met the new property qualification of 1,000 drachmas. At the end of the Lamian War (322/1) the citizen population is also put at 21,000 by Plutarch (*Phocion* 28. 7), but at 31,000 by Diodorus (18. 18. 5): both record 9,000 full citizens with property of over 2,000 drachmas, but diverge on the number disenfranchised by the Macedonian settlement – either 12,000 or 22,000. Although superficially Demetrius' figure might appear to corroborate Plutarch's 21,000, the opposite is probably the case since after the Lamian War there were very substantial movements of population around the Aegean world, with many impoverished Athenians being relocated in colonies in Thrace while the emerging Successor regimes in the east would have attracted others. Thus Diodorus' evidence that there were 31,000 male citizens in 322/1 is the more plausible; this is Hansen's conclusion, which Garnsey has conceded to have some

force.⁹ The level of Athenian casualties in the battles of the Lamian War is unknown, but at Chaeronea 1,000 citizens were killed and this loss would still have had some impact on citizen numbers fifteen years later.¹⁰ Thus it seems reasonable to assess the numbers of adult male citizens at over 30,000 in the third quarter of the century, perhaps even as high as 35,000. This guess is higher than what is currently accepted, but it is worth noting the evidence for Athenian interest in cleruchies and other forms of overseas property owning in the fourth century (Hansen 1985, 70–2; Sallares 1991, 433 n. 72); similar evidence from the fifth century is taken as a sign that there had been a rapid expansion of population, and, if rapid annual population growth is accepted for the fifth century (Sallares 1991, 95–6), there is no reason why the survivors of the Peloponnesian War should not have contributed to quite a rapid population rebound.¹¹

Calculations of the numbers of citizens required to run the *boule* and the surviving ephebic lists both lend some support to such a higher figure. For the *boule* Hansen concluded that its legal operation, namely to satisfy the requirement that no one could serve as president (*epistates*) more than once in their life, would entail a new cohort of 375–400 male citizens over the age of 30 each year;¹² it would appear that members of the *boule* tended to be relatively wealthy, of hoplite status, and might be nearer 40 than 30 in age. For ephebes, the combination of ephebic inscriptions with an estimate in Demosthenes (4. 21) produces an estimate of 500 for the average size of the annual age group of future hoplite soldiers.¹³

⁹ Hansen 1985, 28–36 for discussion of the problems of the figures, with a defence against further challenges in Hansen 1994; Garnsey 1988, 136.

¹⁰ Sallares 1991, 53, though noting the impact of casualties, nevertheless concludes that male citizens numbered fewer than 30,000 in the fourth century.

¹¹ Sallares 1991, 95, who postulates a very high rate of growth in the fifth century to a citizen peak of 50–60,000, opts for a much more static situation in the fourth century; he does, however, also assert (p. 70) that stability of populations in the Mediterranean is not normal or to be expected.

¹² Hansen 1985, 51–64 and 1994, 306–8, argues that these figures are too low and that a cohort closer to 600 is necessary.

¹³ Reinmuth 1971; Sallares 1991, 120–1; fuller discussion in Hansen 1985, 47–50, although he is reluctant to accept that ephebes represented future hoplites; also Hansen 1994, 302–4.

The evidence for the *diaitetai* or public arbitrators, men of hoplite status in their sixtieth year, is also pertinent: an inscription from 325/4 records 103 names from all tribes, while the fragmentary list from 330/29 suggests a total of 100–150.¹⁴ By coincidence these respective age cohorts for men of hoplite status, of 500 aged 18, 400 aged about 35–40, and a few over 100 aged 59 produce a very respectable age profile for the population, one that accords with demographic tables derived from better-attested more modern populations.¹⁵ These figures would suggest that the resident hoplite element in the fourth-century Athenian population numbered 15,000, or perhaps a bit more. The relative balance of thetes to hoplites in the fourth century is unknown, but there are likely to have been at least as many so that this series of calculations results again in a total adult male population of 30,000 or over. Extrapolating from adult males to total citizen numbers entails guesses for numbers of wives and children; the standard multiplier to apply is 4, which means that one can reach a citizen total of 120–140,000.¹⁶

Similar calculations have to be made with metic numbers, although the evidence is even less helpful.¹⁷ In the census of Demetrius 10,000 metics were recorded; this presumably represents those metics who paid the metoikion tax, so that independent women were included as well as men, although the numbers of such women are likely to have been small (Whitehead 1977, 97;

¹⁴ *IG* II² 1926, 2409, with Lewis 1955, 27–36. It might be relevant to the lower numbers on *IG* II² 1926 that the *diaitetai* of 325/4 would probably have served at Chaeronea, whereas those of 330/29 would not have been liable.

¹⁵ For example the graph used by Osborne 1985, 196. Sallares is at pains to emphasise that the demography of ancient Greece was qualitatively different from all other demographic patterns, including that of ancient Rome (1991, 11, 42, 107–8), and stresses the problems of applying modern life tables to the ancient Greek world (pp. 112–16). Although I accept the validity of Sallares's argument, it is still of some comfort that the general shape of the Athenian hoplite population does not appear wildly out of line with expectations.

¹⁶ Richard Alston suggested to me that Bagnall and Frier's work on Roman Egypt (1994) might imply that a slightly lower multiplier was applicable (though they accept that their Egyptian census figures probably understate actual family size: 1994, 67 n. 59). On the other hand, Sallares has stressed the distinctiveness of the Greek world (see n. 15). Thus, without great confidence, I apply the traditional multiplier of 4.

¹⁷ 'Meagre and controversial' (Whitehead 1977, 97).

Hansen 1985, 31). This census was taken at a time when the attractions of living in Athens as a foreigner had been very substantially reduced, both by the political instability that followed Athenian defeat in the Lamian War and by the opportunities offered by the emerging Successor regimes – Athens was no longer the economic hub of the Aegean world. Metics were sensitive to such matters: for example, after the Social War in the 350s metic numbers appear to have been at a low level, since Xenophon thought it necessary to offer suggestions about making Athens a more attractive place for them (*Poroi* 2. 1–5). How many metics there were before the Lamian War, or indeed before Chaeronea is a guess, and there will have been considerable fluctuations. For the fifth century the evidence of Thucydides (2. 13. 6–7; 31. 1–2) for numbers of metic hoplites has been used to justify a metic total roughly two-thirds that of the male citizens, but these estimates have, not surprisingly, been challenged.¹⁸ For the fourth century, it is generally accepted that numbers must have been lower than the pre-Peloponnesian War total even though Athens was still a major centre of wealth and trade. We also cannot tell how many of the metics were sufficiently regular or permanent residents of Attica to have established a household and family there, but the numbers were probably significant.¹⁹ My estimate for total metic numbers before Alexander's conquest of the east is 30,000; this is a pure guess on the assumptions that between one-third and one-half of metics had moved away from Athens in the aftermath of the Lamian War and that the combined numbers of metic wives and children roughly equalled male numbers. I suspect that this total is on the low side for actual numbers of metics, but it may represent numbers present in Athens and requiring to be fed regularly. But this is no more than a compilation of guesses.

¹⁸ Duncan-Jones 1980; scepticism in Whitehead 1977, 98.

¹⁹ Sallares 1991, 60, bluntly stated that metic numbers did not require a high multiplier as they already included independent women. He also observed that metics were 'unlikely to have been a big drain on the agricultural production of Attica' (loc. cit.) since they had to purchase their food on the market; in a narrow sense this comment is valid if metics largely consumed imported food, but their presence in Attica was still relevant to the carrying capacity of Attica and the extent to which a shortfall in this had to be met by regular imports (an issue to which Sallares chose not to devote attention: 1991, 2).

Slaves are an even more contentious subject because of debates about the extent of slave-ownership in Athens, whether they were widely used in agriculture, how many were required when the mines were in full production, what percentage of Athenian households owned domestic slaves, and how many commercial enterprises there were on the lines of the sword workshop of Demosthenes' father or the shield workshop in Lysias' family. The number preserved for Demetrius' census, 400,000, is too fantastic to be countenanced, and it has been doubted whether slaves were even counted in the census (Hansen 1985, 30–1). So too the proposal of Hyperides (fr. 29), that slaves to the number of more than 150,000, both from the silver mines and from the rest of the country, should be liberated in the aftermath of Chaeronea, is discounted as exaggerated. The current tendency is to estimate slave numbers as being very low, with Garnsey and Sallares both adopting a total in the range 15–30,000, though in the case of Garnsey this relates to 323/2 when the overall Athenian population was at a low level;²⁰ if such numbers were roughly right, they would have made Hyperides' proposal completely ridiculous, especially since he was only dealing with male slaves. I share the view that slavery was a much more important aspect of many aspects of Athenian life than these low figures would suggest (de Ste Croix 1981, 140–7).

As with metics, slave numbers will have fluctuated very considerably, in line with the wealth and confidence of their Athenian and metic masters, and there is no evidence to indicate how high peak numbers might have been. Xenophon's discussion of a body of state slaves to be hired out in the silver mines (*Poroi* 4. 13–39) envisages the employment of very large numbers: he proposed modest beginnings, with 1,200 being purchased annually at the start to build up a force of 6,000 within five or six years, and 10,000 being the next stage (*Poroi* 4. 23), but his most ambitious suggestion was three slaves for each Athenian (4. 17), which would imply as many as 100,000 male slaves in public ownership. This seems too fanciful, and Xenophon's argument about the scope for

²⁰ These totals are not explicitly stated by either scholar, but can be inferred from the figures at Garnsey 1988, 90 (applying to 323/2), and Sallares 1991, 60 (the combined total for metics and slaves).

expansion in the mines and his recognition that overcrowding might become a problem (4. 3–7, 11–12, 39) suggest that he was aware that the grander elements of his scheme stretched credibility. On the other hand, bearing in mind the wide range of slave employment, female as well as male, on which his discussion does not touch, I am encouraged to propose a substantially higher figure than that of Garnsey and Sallares – though it should be noted that I am discussing the peak, for which Garnsey does not offer a total: my guess for the slave total would be around 100,000, though I accept that there is no cogent defence for any particular figure.

Combining these various guesses would provide a total resident population of Attica in the mid-fourth century in the range 250,000 to 300,000, (cf. de Ste Croix 1972, 46 n. 88 for the same guess) and at times probably towards the upper end; about half the population were citizens, the remainder metics or slaves. This is right at the upper end of Garnsey's original working hypothesis for the Athenian population, but significantly larger than his subsequent downgrading to a fourth-century range of 120–200,000 (Garnsey 1985, 70; 1988, 90). On my guess the countryside of Attica was perhaps as densely settled as in 1961, when the Eparchy of Attica had a population density of 60 people/sq km (excluding Greater Athens) (Sallares 1991, 84).

The third major variable to be considered is the level of grain consumption. Garnsey proposed an average consumption of 175 kilograms of grain per person per year, which he described as a generous rate (Garnsey 1985, 72–3; 1988, 102–4). In this estimate Garnsey did not distinguish between wheat and barley, but it is clear that much of the grain will have been barley from the relatively large amount of it produced in Attica. Such blurring is not too important if discussions involve wheat and barley meal (*alphita*) by weight, since their calorific values are roughly the same according to modern calculations – though the difference in ancient perceptions of their relative food values was undoubtedly greater, partly because grain was measured by volume and a given measure of wheat is heavier than the same measure of barley or barley meal.²¹ But distinctions become crucial when dealing with unprocessed barley, since the milling process whereby the barley hulls were removed would have entailed a weight loss of 30 per cent, or a bit more. While Garnsey's discussion of the food

production of Attica naturally deals with quantities of unprocessed barley straight from the fields, his treatment of consumption involves barley meal (*alphita*): he treats the two products as equivalent, whereas on modern calculations the nutritional value of a kilo of barley is only about two-thirds that of barley meal.

In the ancient world, although the evidence is far from conclusive, there would appear to have been a sort of standard notion that 1 *choenix* of wheat per man per day was a proper ration, and that double the quantity of barley meal (*alphita*) might be substituted – barley was regarded as less nourishing, and was of lower status.²² Slaves, women, children and the elderly would naturally have been allocated less in any notional distribution, although grain probably constituted a higher proportion of the diet of slaves than of citizens; if grain was providing the bulk of the protein requirement for these people, consumption levels would have had to be higher than the straight calorific value of the grain would suggest (Sallares 1991, 301). In terms of weight, these allowances for an adult male represent 0.839 kilo of wheat and 1.4 kilos of barley meal per day,²³ i.e. about 310 kilos of wheat and 510 kilos of barley meal per year (roughly 750 kilos of unprocessed barley). There is no doubt that these quantities provided more food than the normal active man required in calorific terms, assuming that he derived a reasonable portion of his energy require-

²¹ Cf. Rickman 1980, 5. In terms of volume, there is a calorific difference of 18 per cent Foxhall and Forbes 1982, 46 n. 15). Foxhall and Forbes also sensibly observe (1982, 46–7) that ancient milling processes are likely to have caused a significant reduction in the calorific values of the resulting barley meal, so that the modern calorific equivalence between wheat and barley meal must be treated with caution. Petersen 1995, 26, notes that the greater laxative effect of the fibre in barley somewhat reduces its nutritional effect, and, *ibid.* 32–6, reports the conclusions of a nineteenth-century investigation into the consumption of top-quality bread by the lower classes which decided that it would not be economical or nutritionally effective to encourage them to switch to coarser bread because of its perceived lesser value.

²² Foxhall and Forbes 1982, 55, 73; evidence tabulated at 86–9.

²³ Weights taken from Foxhall and Forbes 1982, 86–7. The figures are more precise than most ancient measuring devices are likely to have been, and the annual figures extrapolated from these calculations are only intended to indicate an order of magnitude.

ments from other sources such as wine or olives; but even the Spartans confined on Sphacteria were supplied with a ration of 2 *choenikes* of barley meal, while their slaves on half rations received 1 *choenix* per day, as well as some wine and meat (Thucydides 4. 16. 1).²⁴

At the other end of the scale we have a figure for the starvation ration provided to the Athenian prisoners in the Syracusan quarries, namely 0.5 *choenix* of *sitos* per day (Thucydides 7. 87. 2); although the type of grain is not specified, it was almost certainly barley meal, since wheat would not have been wasted on captives, and the captives could not have coped with unprocessed barley.²⁵ This prisoner ration has implications for Garnsey's calculations since at an annual rate it converts into about 128 kilos of barley meal, roughly 180 kilos of unprocessed barley.²⁶ Thus Garnsey's proposition that 175 kilograms of grain from the field, i.e. either wheat or unprocessed barley, was a reasonable average for Athenian consumption looks less than generous. Even the Spartan slaves on Sphacteria were receiving a ration equivalent to an annual figure of 256 kilos of barley meal, or 360 kilos of unprocessed barley. Another approach which suggests the same conclusion is by using the calculations in Foxhall and Forbes for the average wheat consumption of a 'typical household', where,

²⁴ Petersen 1995, ch. 5, provides interesting comparative information on consumption rates in eighteenth- and nineteenth-century Britain, but direct comparison is virtually impossible because of the significant differences in diet (e.g. consumption of potatoes); his figures suggest consumption of wheat in the range 110–200 kilos per person per year for urban dwellers, with a decided bias towards the upper end of the range; a ration equivalent to 100 kilos of wheat per year was definitely at starvation level, whereas rural inhabitants had a substantially higher rate of consumption, in some cases over 260 kilos per person per year. As a rough estimate of consumption contemporary observers established the product of one Imperial or Winchester quarter of wheat per year, approx. 200 kilos; Petersen regards this as too high a figure for bread alone, but as a reasonable level if other bread products, such as rolls or fancy breads, are included (1995, 145–6).

²⁵ Foxhall and Forbes 1982, 61–2; Plutarch, *Nicias* 29. 1, and Diodorus 13. 20 did specify barley, the latter barley meal.

²⁶ This is reasonably in line with the nineteenth-century starvation ration of 100 kilos of wheat (see n. 27).

depending upon what assumptions were made, average consumption figures of 212 and 237 kilos of wheat per person per year were produced (Foxhall and Forbes 1982, 71–2). Foxhall and Forbes note reasons for believing that these figures are too high – namely, that the postulated consumption rate for children is too large and that the balance of individuals is weighted in favour of adults.²⁷ How far the figures should be scaled down is yet another guess, but, when barley is brought into the equation, there would also have to be a substantial countervailing increase in weight of grain per person to take account of the difference in nutritional value (real as well as perceived) between unprocessed wheat and barley.

It would be possible to present these calculations in tabular form with allowances for the different variable factors, but that would lend a spurious authority to what is no more than a collection of guesses, a very fragile house of cards. To my mind it would be more profitable to imagine the way in which the ordinary Athenian in the assembly might respond to speakers who stood up to debate the food supply: even the orators would not have access to such detailed knowledge,²⁸ while their audience would be influenced by much more basic considerations such as the prices in the market or their awareness about their own stocks and those of their neighbours and relatives. A ‘feel good’, or ‘feel hungry’ factor will have been a powerful influence, but one that cannot be quantified. Foxhall and Forbes make the pertinent observations that, in a society that lacked a ready reserve of grain in case estimates fell short of needs, ‘the *most* needed to get by is much more important than the *least* needed to get by’, and that estimates of need are likely to be much higher than actual consumption (Foxhall and Forbes 1982, 57 (authors’ emphasis)). Garnsey estimated that under normal conditions Attic production could support 120–150,000 residents, with a further 20–25,000 fed from

²⁷ It is probably the case that the population estimates above also underestimate the number of children per household, since there had to be far more than two children per household to maintain even a stable population.

²⁸ For example, accurate figures for the total resident population may not have been readily available: Hansen 1985, 13.

the dependent territories such as Lemnos, Imbros and Scyros; this represented 75 per cent of his peak citizen total for the fourth century and almost 100 per cent of his total for 323/2 (Garnsey 1985, 73; 1988, 90 with 104). For Garnsey Athens did need to import grain, but except in a poor harvest the quantities were not enormous. My contention so far is that Garnsey has tended to overstate the productive capacity of Attica, and to underestimate by a significant margin both the resident population and its food requirements. I do not wish to offer precise figures,²⁹ but it seems that the traditional view holds: in a normal year the production of Attica and its dependent territories would probably not have fed more than half the resident population³⁰ so that the Athenians did have a substantial and continuing need for imported grain, even after a good harvest.

The Athenians were aware, as Demosthenes reminded them in the speech against Leptines, that they relied on imported grain more than anyone else (20. 31), a fact that made them vulnerable: in the debate on the Syracusan expedition Nicias, at least according to Thucydides (6. 20. 4), pointed out to the assembly that the Syracusans possessed a great advantage over the Athenians in growing their own corn rather than having to import it. At the end of the fifth century an aspiring public figure, Glaucon, could be expected to have knowledge about the main subjects of debate, which included checking on the corn supply (Xenophon, *Memorabilia* 3. 6. 13); later in the century commerce is included among the topics particular to deliberative oratory, in a list which closely parallels the subjects on which Socrates asked Glaucon (Aristotle, *Rhetoric*

²⁹ To relate my discussion to Garnsey's tables of Attic production and consumption, I would posit the need for estimates based on 10 per cent, 12.5 per cent and 15 per cent of Attica under grain (contrast Garnsey's 15 per cent, 20 per cent and 25 per cent), with consumption levels of 210–250 kilograms per person/year (contrast Garnsey's 175 kilos, which has to be adjusted to take into account the difference between unprocessed barley and barley meal).

³⁰ This position is not far from that first adopted by Garnsey (Attica narrowly defined could support half its population: 1985, 74), but he subsequently reduced his estimate of resident population so that Attica in 323/2 might have been self-supporting in normal conditions (1988, 104 with 90).

1. 4. 11), and by 330 at least the grain supply was on the assembly agenda once a month (Aristotle, *Ath. Pol.* 43. 4).

Grain was clearly a matter of regular public concern, but it is still unlikely that the Athenians themselves could ever establish their grain requirement with great precision: their best indicator was probably the price level on the markets, which might fluctuate in response to rumours and changes in sentiment. What counted overall were impressions, since a belief that grain was in short supply would rapidly escalate into reality as those who could afford to increased their personal stores, while those with substantial reserves held them back from the market in the hope of yet higher prices.³¹ Such behaviour is natural in all societies, as was experienced in Britain during the great toilet paper crisis of 1974, followed by the false rumours of salt and spaghetti shortages. The inefficiencies, or inequalities, of the distribution of grain within Attica should also not be forgotten, since too neat an equation of supply and demand would have condemned numerous inhabitants to shortage while their better-off neighbours enjoyed sufficiency or surplus.

A certain degree of oversupply was essential for the tranquillity of the market, so that Athens will have operated on a skewed version of the Micawber equation:³² the ideal was that what came onto the market, from home production and imports, had to be well above demand. The Athenians were price sensitive: in the *Knights* (642–82) the *boule* is satirised for responding promptly to the news of cheap sardines, while the Sausage-seller consolidated his good reputation by buying up all the onion and coriander on the market to present to the councillors as an accompaniment for their fish. Such consumers would just as readily panic in response to high prices, and the spiralling decline into hoarding and crisis would be rapid: in his speech against the corn-dealers, Lysias referred to just such a situation (22. 8).

³¹ Rathbone 1983, 49, suggested that some crises at Athens may have been manufactured to further the ends of benefactors and orators.

³² Charles Dickens, *David Copperfield*, ch. 12: 'Annual income twenty pounds, annual expenditure nineteen nineteen six, result happiness. Annual income twenty pounds, annual expenditure twenty pounds ought and six, result misery.'

In the fifth century the Athenian naval domination of the Aegean ensured a relatively smooth supply of grain, even though the annual requirement must have been somewhat greater than in the fourth, since it is generally agreed that the population of Attica was larger. In the fourth century the command economy had gone (de Ste Croix 1972, 49; Sallares 1991, 299), and instead Athens had to rely on a combination of protection, legislation and encouragement. Considerable attention was paid to the defence of the Attic countryside, since it was essential to maximise home production, whatever the proportion of the population this could actually feed (Ober 1985). Athenian legislation to stimulate and control the grain trade can be divided into two parts, internal and external, according to its impact. Internally the operation of the grain market was supervised by a board of officials, the *sitophylakes* or grain wardens: in the *Athenaion Politeia* it is recorded that previously there were five each for the Piraeus and Athens, but that now numbers were fifteen and twenty respectively (51. 3). They were responsible for ensuring that unground grain was sold on the market at a fair price, that the millers sold barley meal in accordance with the price paid for the unground barley, and that the bread-sellers sold bread of prescribed weight in accordance with the price paid for the wheat (Rhodes 1981, 577–9; also Garland 1987, 89). There was also a law to restrict to 50 measures (*phormoi*)³³ the amount of grain that the *sitopolai*, grain dealers, could accumulate by purchase, and another to restrict the dealers' profit to one obol, presumably per measure (Lysias 22. 5, 8); the penalty for infringing these laws was death, and Lysias states that the *sitophylakes* had often suffered for failing to curb the *sitopolai* (22. 16).³⁴ The supervisors of exchange (*epimeletai emporiou*) had the responsibility to ensure that two-thirds of all grain brought into the grain exchange was conveyed

³³ Of unknown size, but usually equated with the standard grain measure, the *medimnos*.

³⁴ For interpretation, see the discussion of Seager 1966; the restriction on purchasing may have been a daily limit (Garnsey 1988, 141), but the intention was the same, to avoid stockpiling.

up to the city of Athens (*Ath. Pol.* 51. 4).³⁵ Thus internally there was a detailed regime, with considerable supervision, to control the movement of grain from unloading at the Piraeus, or delivery to market in the case of home production, to the consumer, but all this depended upon the wholesale price of grain, and hence the quantity of grain coming onto the market, over which the Athenians could have no legal control. This situation has been described as absurd (Seager 1966, 184), but that is to belittle the force of the external actions which the Athenians took to ensure the presence on the market of sufficient grain to produce the best possible wholesale price level.

Externally, Athenian tactics were to use limited legislation to reinforce the very considerable economic pull of Athens, the single most substantial market and source of funds in the Aegean world (Garnsey 1988, 139), to encourage private traders to go out and obtain the necessary goods. No resident of Athens was to convey grain to anywhere other than the Athenian market, and no Athenian citizen or metic or individual under their control was to lend money on any ship that was not going to bring grain, or other specified (but unknown) articles, to Athens (*Dem.* 34. 37, 35. 50–1; 58. 8–9, 12; *Lycurgus, Leoc.* 27);³⁶ the penalty for infringement

³⁵ Garnsey 1988, 140–1, translating *emporion* as ‘port’, suggested that this law only required that two-thirds of the grain entering the harbour had to be unloaded and conveyed to Athens (also Garland 1987, 89); the remaining one-third might be unloaded and sold in the Piraeus market, or purchased for re-export before being unloaded. Although I am sympathetic to the notion of re-export of surplus grain (see below), this interpretation of the *Athenaion Politeia* seems wrong: the law applied to grain brought into the *sitikon emporion*, which on Garnsey’s interpretation should mean the ‘grain harbour’ – but there is no other evidence for such a specialised area within the harbour complex. I prefer the view that the Athenians required that grain ships which entered the Piraeus had to be unloaded and their cargo processed through the grain exchange: Gauthier 1981. The grain exchange was perhaps one specific stoa within the larger complex that constituted the Emporion (on which see Garland 1987, 83–95). The law only applied to ‘grain brought in by ship’, since it would have damaged the interests of Athenian producers if it had applied to any home grown grain brought to the Piraeus market.

³⁶ The wider scope of the lending law is obviously intended to reflect current banking practice, where slaves or ex-slaves might control lending: see Millett 1991, 206–7.

was death. The effectiveness of these laws is unknown. We naturally hear most about their infringement, but that simply reflects the nature of our legal evidence; on the other hand, traders were primarily concerned for profits and, as the speech against Dionysodorus shows (Dem. 56. 8–10), were capable of quite rapid commercial adjustments in response to price fluctuations at Athens – a syndicate of dishonest traders is alleged to have redirected ships in response to changes in the grain price.

Athenian laws, obviously, could only apply to residents, but it is clear that the conveyance of grain to Athens was a multinational operation and other means had to be used for those outside Athenian jurisdiction. Athens possessed considerable attractions as a destination, as Xenophon noted (*Poroi* 3. 1–2): a safe harbour, and a wide variety of goods available for export, with the option of the export of silver if a return cargo was not desired.³⁷ Xenophon, however, also recommended various improvements to benefit traders, including rapid settlement of disputes, honorific treatment, better accommodation and other facilities in the Piraeus (*Poroi* 3. 3–5, 12–13). It is likely that some changes to the legal system were introduced about the mid-fourth century which resulted in quicker justice being available to traders, especially in the winter months (Aristotle, *Ath. Pol.* 52. 2, with Rhodes 1981, 582–3, 664–5). The public works carried out during the Lycurgan ‘regime’ in the 330s and 320s may have been intended to help Athens preserve its attractiveness at a time when its pre-eminence was being challenged by developments further east, and it is also from this period that inscriptions are preserved in honour of traders, and others, who had provided gifts of grain (Garnsey 1988, 139; *IG* II² 360, 398, 408). Special honours were accorded to reliable suppliers, in particular to the rulers of the Bosphorus kingdom who were granted Athenian citizenship and the privilege of recruiting *hyperesia*, specialist rowers. In return traders whose destination was Athens received from the Bosporan dynasty preferential treatment in loading and exemption from

³⁷ The agreement quoted in Demosthenes 34. 10–13 provides an example of such flexibility: the borrowers received a loan of 3,000 drachmas on condition that they sailed to Mende or Scione, where they were to take on 3,000 jars of wine; they were then to sail to the Pontus where they would take on a return cargo.

the normal duty of one-thirtieth on the export of grain from the kingdom.³⁸

This combination of regulations and incentives reflects the importance which the Athenians attached to the management of their grain trade; not surprisingly it was a subject that was brought to their attention once a month in the assembly; if the trade was disrupted, the navy was deployed or the Athenians faced starvation (e.g. Demosthenes 50. 4–6). Although the size of the annual requirement cannot be determined, and it will have varied considerably from year to year, it was always large. Some notion of scale can be gained from evidence about supplies from the Black Sea. Demosthenes, in his attack on Leptines, stated that the grain imported to Athens from the Black Sea was equal to the total from all other places, and that about 400,000 *medimnoi* came from the Bosphorus, a figure that could be verified in the records of the grain wardens (20. 31–3). Gomme prudently observed that Demosthenes ‘was a politician and was probably not speaking the truth’, and, concluding that Demosthenes was belittling the significance of non-Pontic imports, proposed an annual total of 1,200,000 *medimnoi* (Gomme 1933, 32–3). Garnsey has exploited the orator’s uncertain credibility in the opposite direction, to urge that no conclusions about the scale of non-Pontic imports can be drawn and the figure of 400,000 might represent an exceptional quantity imported in a bad year (Garnsey 1988, 97). Although caution is in order, Garnsey seems too sceptical: Demosthenes presents Leucon of Bosphorus as a perpetual benefactor of Athens, and strongly implies that the level of exports was a regular one that would be maintained in the future, and perhaps indeed increased through the opening of another grain depot at Theudosia (20. 32–3). I share the suspicion that Demosthenes was overemphasising the importance of Leucon, but would note that one possible deception in his argument is the suggestion that exports from the Bosphorus kingdom are synonymous with exports from the Black Sea, as if there were no other grain-exporting areas there: it is possible that imported grain from the Pontus did roughly match that from other sources, and that substantially more than Leucon’s

³⁸ Demosthenes 20. 29–31; Tod 1948, no. 167 = Harding 1985, no. 82. Mytilene was also granted some reduction in the grain duty: Tod no. 163.

annual export, whether 400,000 *medimnoi* or not, came from the Pontus as a whole.

A rough cross-check on the size of the Pontic contribution may be provided by the figures for the grain fleet which Philip of Macedon detained in 340, an action which precipitated an Athenian declaration of war. The fleet is variously recorded as 180 by Theopompus (*FGH* 115 F 292) and 230 by Philochorus (*FGH* 328 F 162); a possible explanation of the different figures is that, out of the total number of ships detained at Hieron at the entrance to the Bosphorus, only 180 counted as 'enemy ships', in the sense that they were carrying grain towards Athens.³⁹ The size of the ships is then a guess, but the example of the grain trade for Rome might suggest that ships tended to be larger rather than smaller for such a round trip (Rickman 1980, 17, 123–4). The Hellenistic harbour regulations from Thasos provide a definition of small, medium and large: ships of 100–150 tons appear to have been common (2,500–3,750 *medimnoi*), while those of 300–350 were large (7,500–8,750 *medimnoi*); the minimum size of ship allowed into the first part of the harbour was 80 tons (2,000 *medimnoi*), and 130 tons for the second part (3,250 *medimnoi*) (Casson 1971, 171 n. 23). In his discussion of ship sizes, Casson also exploited the figures for gifts of grain for which benefactors received public thanks, of which most fall in the range 2,300–4,000 *medimnoi* (eight instances), though with one of only 500 *medimnoi* and one of 8,000. Casson postulated that traders were presenting a complete shipload of grain, and concluded that the commonest size of ship was 120 tons (3,000 *medimnoi*) (Casson 1971, 183–4). This assumption is possible, but not necessary, since a sensible trader might sell part of his cargo and then, if business had been particularly profitable, use the remainder to purchase public goodwill:⁴⁰ thus the ships could have been substantially larger. Be that as it may, if the grain fleet detained by Philip numbered about 200 at an average of 120 tons, it would have been carrying 600,000

³⁹ See the discussion of Bresson 1994, esp. 47–50. It should be noted that these figures do not necessarily record the total number of grain ships sailing from the Black Sea into the Aegean in 340, but merely those which had collected at Hieron at the time that Philip attacked.

⁴⁰ This practice would parallel that of other donors of grain, who clearly combined the roles of profiteer and benefactor: Garnsey 1988, 82–3; Gallant 1991, 183–5.

medimnoi; if the ships averaged 160 tons, the cargo would have been 800,000. This provides some sort of perspective to Demosthenes' comments on Leucon. The Hellespont was always the crucial bottleneck on the Athenian supply line, as shown in 405/4 and again in 387. Demosthenes claimed that mastery of the Hellespont would have put Philip in control of the food supply of the Greeks (18. 241); once the Macedonians controlled the Hellespont, diversification was essential for Athens and there are signs of interest in the west with a colonial expedition being dispatched to the Adriatic, as well as evidence for contacts with Egypt and Alexander's unscrupulous local controller Cleomenes.⁴¹

So, my contention is that Athens regularly attempted to import very substantial quantities of grain, even though precise figures cannot be established. In most years it was probably the case that not all of this grain was needed for internal consumption, since it would have been in Athenian interests to encourage a certain amount of oversupply: the presence of a significant surplus in the markets of Attica ensured that prices remained relatively low for the Athenian consumer, but also enabled the Athenians to benefit from the re-export of grain. Although there is no evidence that Athens anticipated Rome as a consumer city where provision of basic commodities might be spectacularly in excess of needs,⁴² it must have been good for Athenian esteem to know that their city was better supplied with food than their neighbours. There is, indeed, limited evidence for re-export: Demosthenes records that one of Leucon's grain gifts in a year of shortage was sufficiently large for the Athenians to make a profit of 15 talents, presumably from resale by Callisthenes, the food controller (20. 33).⁴³ In some years it is possible that the Piraeus was the largest single grain exporting port in the Aegean,⁴⁴ an activity that would have

⁴¹ Tod 1948, no. 200 = Harding 1985, no. 121; Demosthenes 56. 5–8.

⁴² Sallares 1991, 393, notes some prestige waterworks at Athens, but they do not compare with the scale of Roman aqueducts.

⁴³ The fact that Leucon supplied grain in excess of Athenian needs suggests that Callisthenes sold some grain abroad – though money might also have been generated by sales to Athenians at less than the inflated current prices (cf. Dem. 34. 39 for this).

⁴⁴ A parallel would be Britain's status, in some years, as the largest exporter of olive oil in the European Union, a point I owe to Helen Parkins.

brought considerable profit to Athens from the 2 per cent harbour tax on grain and the whole business of unloading, handling and reloading surplus grain. Athenian residents were prohibited from participating in, or lending money for, such re-export activity, but the Piraeus as a commercial hub naturally attracted traders of all nationalities, and it likely that local movements of grain, perhaps in small or modest-sized ships, were much less dependent on borrowed money than the larger-scale long-haul traffic.⁴⁵ The benefits to Athens from the presence of large numbers of traders are stressed by Xenophon (*Poroi* 3. 5, 12–13).

These foreign traders would primarily have purchased grain at the corn exchange in the Piraeus, but even the regulation that two-thirds of imports be transported to Athens need not have removed that grain from the re-export market. Without this requirement there could have been a considerable difference in price between the Piraeus and Athens itself, to the detriment of a larger portion of Athenian inhabitants, so the movement of grain in bulk to the city kept matters relatively stable and ensured that grain did not leave Attica too quickly. But if the supply in the city was adequate there was nothing to stop the grain being purchased for re-export: the costs would have been greater, but it was foreigners who would have to pay these, whereas the Athenians would have benefited from the cheaper supply and from the employment generated by the movement to and fro. Such activity might sound implausibly cumbersome, but there is a parallel in Edinburgh in the early seventeenth century when Leith acted as an entrepôt for much of south-east Scotland and Fife: manufactured imports had to be unloaded at Leith, hauled uphill to market in Edinburgh, unloaded, reloaded and returned to Leith for shipment to their eventual destination (Makey 1987). This might sound absurd, but Edinburgh was the market, its position was defined in law, and its economic dominance ensured that this arrangement did not operate too heavily against mercantile interests; the position of Athens was comparable.

The Athenian ideal was to be able to command the import of a sizeable surplus of grain every year, to keep prices low internally,

⁴⁵ The traders responsible for the benefactions of grain must have been sufficiently wealthy to finance their own long-distance ventures; the foreigner Hermaeus honoured at *IG II²* 360 was probably another example.

and to generate revenues from the resale of the surplus. How often the Athenians managed to achieve this is another matter, in that so many different variables were relevant, but their assessment of their requirements was considerable and they were very vulnerable to threats of interference, especially to the northern trade which remained their single most important source of supply until Alexander crossed the Hellespont. If there is any merit in this contention, it would reduce the significance of precise answers to the imponderables of carrying capacity, population and consumption: the Athenians did not possess, or need, accurate information, but like most markets they relied on impressions, rumours and hunches.

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