THESSALY AND THE GRAIN SUPPLY OF ROME DURING THE SECOND CENTURY B.C.*

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I

In a speech attributed by Xenophon to Jason of Pherae, Thessaly is described as an exporter of grain, in contrast with Athens which was obliged to supplement its own foodstocks with the surplus of others.[1] The ancient sources record the dispatch of Thessalian grain to a few Greek cities; but Thessaly must have been a resource for other Greeks in peacetime, as it was in wartime to Roman armies operating in the region in the middle and late Republic.[2] A newly published inscription from Larisa indicates that on one occasion in the middle of the second century B.C. the Thessalians actually provided grain for the Roman populace itself, in response to a request delivered to the Thessalian *koinon* by a Roman magistrate. Our main objective in this paper is to place this inscription in a suitable historical context and explain its significance for Rome and Thessaly.

But first, as an essential preliminary, it is necessary to modify the picture of Thessaly with which we began. It is certain that Thessaly did not always have a surplus in the cereal crops, even if no ancient writer places this on record in the way that Polybius does in respect of the Black Sea.[3] Moreover, if the agroclimatology of Thessaly in modern times can serve as a guide to ancient Thessaly, then the main subsistence crops failed as often as they succeeded. But also, there is a pronounced tendency for these crops to suffer or prosper together throughout Thessaly, with the result that Thessaly as a whole might experience an enormous grain surplus—or a heavy deficit.

II

The plains of Thessaly are the second largest lowland area in Greece, surpassed only by the remnant lakes and plains of Macedonia and Thrace.[4] Yet the geology and topography of the area are not completely homogeneous. Extending north to south along the eastern side is the administrative district, or *nomos*, of Magnesia. It manifests much greater topographical diversity and is more hilly, with Ossa (1,978 m) at the north and Pelion (1,618 m) to the south, than the other *nomoi* of Thessaly. The base geological structure is composed mainly of unfoliated and foliated metamorphic formations (schists, gneiss and quartzite) with some outcrops of sedimentary deposits to the north. The Khasia and Pindus mountain ranges and the Orthys plateau form the other boundaries of Thessaly.[5] This ring of mountains encloses two Tertiary crustal subsidence basins separated internally by a range of low hills (see Fig. 1). The western, or upper plain as it will be referred to hereafter, is divided into two *nomoi*: Trikkala and Karditsa. The eastern, or lower plain, contains the *nomos* of Larisa. Each of the four *nomoi* has an average size of approximately 2,500 square kilometres.[6]

Climate, hydrology and soils are the three most important environmental factors controlling potential agricultural productivity. The hydrology of the upper plain is quite complex.

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[1] Xen., *Hell.* 6. 1. 11.

[2] See Section III below for discussion and references.

[3] Polyb. 4. 38. 5 : σίτῳ δ' ἀμείβονται, ποτὲ μὲν εὐκαίρως διδόντες ποτὲ δὲ λαμβάνοντες. M. Rostovtzeff, *The Social and Economic History of the Hellenistic World* (1941), 1462, n. 20 cites in support of this passage an inscription, which records the importation of grain to Istros, published in S. Lambrino, 'Fouilles d'Histria', *Dacia* 3–4 (1927–32), 400 ff.

[4] J. M. Matley, 'The Geographical Basis of Greece', in K.-D. Grothusen, ed., *Griechenland. Sudosteuropea Handbuch*, Band III (1980), 208; Admiralty Handbook, *Greece* (1945), 83.

[5] A. Philippson, *Die Griechischen Landschaften.* Teil I. *Der Nordosten der Griechischen Halbinsel. Thessalien und die Spercheios-Senke* (1950), 127–49.

[6] A very good discussion of the topography and agroclimate of Thessaly can be found in P. Halstead, 'From Determinism to Uncertainty: Social Storage and the Rise of the Minoan Palaces', in A. Sheridan and G. Bailey, eds., *Economic Archaeology. Towards an Integration of Ecological and Social Approaches* (1981), 199.

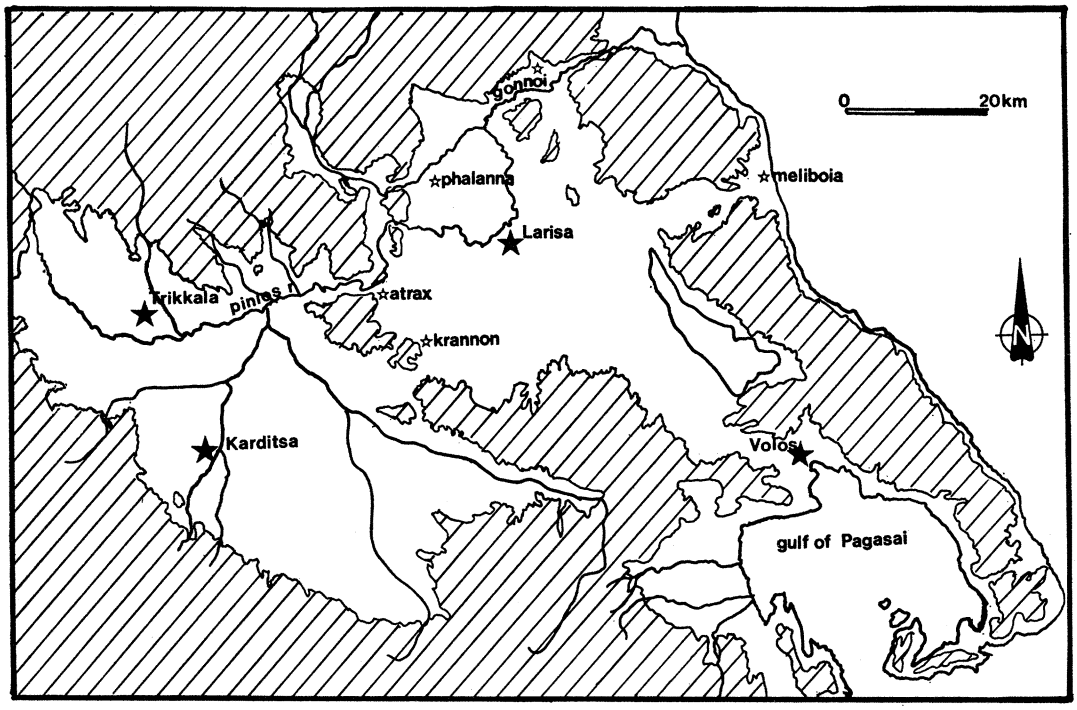

FIG. 1. THE PLAINS OF THESSALY. SOLID STARS = THE CAPITALS OF THE FOUR MODERN *NOMOI* ; OPEN STARS = ANCIENT SITES MENTIONED IN THE TEXT ; SHADED = AREA ABOVE 200 M.

Numerous small, high-energy-flow streams pour out of the surrounding mountains on to the plain. The larger of these flow into the river Peneius which is at the centre of this drainage network. In winter, tremendous quantities of water are brought down from the high rainfall zone of the Pindus, which together with precipitation over the lowlands [7] accumulate in the low-lying areas ; many of these are seasonally flooded or form permanent marshes. In other places, the watertable may be no more than four centimetres below the surface.[8] Since even short periods of anaerobic conditions can lead to serious morphological damage of plants,[9] many lowland areas of the upper plain can be cultivated only with spring sown crops or used as pasturage ; hence the historically attested greater emphasis on cattle rearing in this area.[10] The drainage pattern in the lower plain differs, being a much more restricted riverine drainage system focused on the Peneius and its tributary, the Titarisios. Excess surface moisture, leading to the formation of marshes, is not as much of a problem on the lower plain, although periodic flooding of the Peneius has in the past presented considerable problems.[11]

The distribution of precipitation (Table 1) is heavier and less variable in the upper plain than in the lower, both annually and during the winter growing season. Note especially the higher level of interannual variability of precipitation in the lower plain during the winter growing season, which we would expect to be reflected in higher levels of variability of crop yields. The upper plain has a much more continental temperature regime and a much higher incidence of ground frost, especially in the surrounding hills.[12] This fact, together with the excessive quantities of surface water, means that the growth cycle of the main cereals and

[7] See Table 1 below.

[8] A. C. de Vooys, 'Western Thessaly in Transition', *Tijdschrift van het Koninklijk Nederlandsch Aardrijkskundig Genootschap* 75 (1959), 31, 35.

[9] J. Levitt, *Responses of Plants to Environmental Stress*. Vol. 2. *Water, Radiation, Salt and Other Stresses* (1980), 214–18.

[10] de Vooys (see n. 8), 32, 34 ; M. Sivignon, 'The Demographic and Economic Evolution of Thessaly (1881–1940)', in F. W. Carter, ed., *An Historical Geography of the Balkans* (1977), 388, fig. 7.

[11] Δ. Κ. Τσοποτοῦ, Γῆ καί Γεωργοί τῆς Θεσσαλίας κατά τήν Τουρκοκρατία (1974).

[12] de Vooys (see n. 8), 32 : the number of days with frost fluctuates between 11 and 62. We have adopted the following stance in regard to the problem of climatic change and the use of modern data. Because the analysis is focused on the spatial and temporal pattern of variability and the relationship between it and crop yield fluctuations, long series of modern climatic data, incorporating numerous small secular shifts, can be used to calculate the parameters of climate and climatic variability, which may act as guide to past conditions. For a longer discussion of climate, variability and climatic change, see T. W. Gallant, *An Examination of Two Island Polities in Antiquity : the Lefkas-Pronnoi Survey* (Ph.D. Dissertation, 1982), 2–7.

TABLE 1. DISTRIBUTION OF PRECIPITATION BOTH (*a*) ANNUALLY AND (*b*) DURING THE WINTER GROWING SEASON

N = number of years included ; χ = mean ; σ = standard deviation ; CV = Coefficient of Variation ; figures in mm.

(*a*)	Trikkala	Karditsa	Larisa	Volos (Magnesia)
N	27	11	54	25
χ	763·0	906·7	490·5	545·1
σ	153·4	103·9	130·9	134·2
CV	20·1%	11·4%	26·6%	24·6%
(*b*)	Trikkala	Karditsa	Larisa	Volos (Magnesia)
N	25	9	50	25
χ	637·0	726·4	372·9	447·1
σ	182·2	137·6	130·2	149·3
CV	28·6%	18·9%	34·9%	33·4%

autumn sown legumes is longer than in the lower plain and so the harvest is slightly later—June rather than May for the most part. Both areas suffer very high summer temperatures : Trikkala, av. July t = 27·4 C ; Larisa, av. July t = 28·0 C. Since, however, Potential Evapotranspiration exceeds precipitation earlier and by a larger margin in the lower plain, and since there is a much greater supply of ground moisture in the upper plain, spring sown crops play a much greater role in the agricultural system there. Thus in more recent times maize has been a favoured spring sown crop.[13]

The spatial and temporal pattern of variability of crop yields in the same *nomos* and between *nomoi* reflects these recorded environmental differences. As the partial correlation coefficients in Tables 2–5 demonstrate, in all four regions wheat and barley are significantly

TABLES 2–5. INTERANNUAL VARIABILITY OF THE MAJOR CEREAL AND LEGUMINOUS CROPS. PARTIAL CORRELATION COEFFICIENTS, CONTROLLING FOR TIME[14]

2. *NOMOS* OF TRIKKALA, 1911, 1926–36, 1955–56, 1959–80

	Wheat	Barley	Broad Beans	Chickpeas	Lentils
Wheat	—	0·7071	0·3216	0·4079	0·2002
Barley	0·7071	—	0·4718	0·4395	0·3422
Broad Beans	0·3216	0·4718	—	0·3158	0·3756
Chickpeas	0·4079	0·4395	0·3158	—	0·6450
Lentils	0·2002	0·3422	0·3756	0·6450	—

3. *NOMOS* OF KARDITSA, 1911, 1955–56, 1959–80

	Wheat	Barley	Broad Beans	Chickpeas	Lentils
Wheat	—	0·8764	0·3393	0·6464	0·2350
Barley	0·8764	—	0·5244	0·5279	0·2001
Broad Beans	0·3393	0·5244	—	0·4971	0·0270
Chickpeas	0·6464	0·5279	0·4971	—	0·1050
Lentils	0·2350	0·2001	0·0270	0·1050	—

[13] Sivignon (see n. 10), fig. 6. Evapotranspiration is the amount of moisture lost from the ground surface through evaporation and from vegetation through transpiration. Potential Evapotranspiration represents the water loss from an extensive, closed, homogeneous cover of vegetation that never suffers from a lack of water. It is a measure of the amount of moisture which could be lost. Actual Evapotranspiration is the amount which is lost. Once Potential Evapotranspiration exceeds precipitation, unless there are other sources of moisture, soil moisture deficits begin. For a general discussion of these terms, see J. M. Mather, *Climatology : Fundamentals and Applications* (1974), 58.

[14] All the data are gathered from the Στατιστική Ἐπετηρίς τῆς Ἑλλάδος. The higher the figure, the stronger the correlation. A figure of 1 indicates a perfect correlation.

4. *NOMOS* OF LARISA, 1911, 1926–36, 1955–56, 1959–80

	Wheat	Barley	Broad Beans	Chickpeas	Lentils
Wheat	—	0·8638	0·1359	0·3934	0·5585
Barley	0·8638	—	0·3102	0·2482	0·5159
Broad Beans	0·1359	0·3102	—	0·1586	0·3385
Chickpeas	0·3934	0·2482	0·1586	—	0·2019
Lentils	0·5585	0·5159	0·3385	0·2019	—

5. *NOMOS* OF MAGNESIA, 1911, 1955–56, 1959–80

	Wheat	Barley	Broad Beans	Chickpeas	Lentils
Wheat	—	0·7633	0·1121	0·1303	0·4071
Barley	0·7633	—	0·3514	0·3930	0·5655
Broad Beans	0·1121	0·3514	—	0·6429	0·4742
Chickpeas	0·1303	0·3930	0·6419	—	0·5872
Lentils	0·4071	0·5655	0·4742	0·5872	—

correlated, signifying that they occupy the same environmental niche. In the upper plain, broad beans and chickpeas have a tendency towards covariance with the winter cereals, while the opposite is the case in the lower plain and Magnesia. Broad beans can be sown either in autumn or early spring, February–March, because they require considerable moisture and are one of the least drought resistant legumes.[15] Chickpeas are sown in spring and harvested in July ; they require considerable soil moisture during the early stages of growth.[16] Lentils, on the other hand, are one of the most drought resistant legumes, doing least well under conditions of excessive moisture.[17] Broad beans and chickpeas are much better suited to the conditions of the upper plain, whereas lentils thrive on precisely those conditions prevalent on the lower plain : a conclusion evident from Tables 2–5, and supported further by the fact that broad beans and chickpeas are more widely cultivated and yield better on the upper plain, while the reverse is true with lentils. Yet such is the influence of accumulated soil moisture during the winter that even though the major cereals and legumes are planted at different times of the year, there is a tendency towards correlation between them in each *nomos*. This indicates that during a climatologically good year it is probable that all the crops will do well, and during a bad year all will fail. This pattern of synchronous yield variability is evident between the *nomoi* as well (Tables 6–10). The partial correlation coefficients for wheat and barley are significant at the 0·001 level, indicating a very high level of covariance. With the legumes the situation is less clear. There is a tendency towards covariance between broad beans and chickpeas but less so with lentils : in the light of what was said earlier, this should cause no surprise. Finally, the overall level of interannual variability in each region, as measured with the Coefficient of Variation (CV), appears quite high. The higher the level of CV, the greater the frequency and magnitude of deviations from the mean. The *nomoi* of Trikkala and Larisa register higher levels of variability for almost every crop than Karditsa and Magnesia ; a reflection of the susceptibility of the lowlands to crises through excessive surface water or drought.

On the basis of this brief examination of the agroclimatology of Thessaly, the following conclusions can be drawn. First, although the major cereal and leguminous crops occupy different environmental niches, there is a tendency towards covariance between them in each *nomos*. Second, they also tend to covary between *nomoi*, significantly in the case of winter cereals. The consequence of this synchronous pattern of variability is that during climatologically good years high yields of most crops will probably occur across the entire region ; in bad years, however, deficits will probably be incurred by all. Third, it follows from this

[15] I. Arnon, *Crop Production in Dry Regions*. Vol. 2. *Systematic Treatment of the Principal Crops* (1972), 235–7 ; Theophrastus, *de Hist. Plant.*, 8. 1. 4.

[16] Arnon, 237–9.

[17] Arnon, 239–40.

fact, together with the relatively high level of interannual variability of yield in each *nomos*, that Thessaly would frequently live up to its reputation as a major grain producing area, but that it also would suffer deficits of sizeable magnitude nearly as often (see below Table 11).

TABLES 6–10. SPATIAL PATTERN OF YIELD VARIABILITY, 1911, 1955–56, 1959–80 PARTIAL CORRELATION COEFFICIENTS, CONTROLLING FOR TIME

6. WHEAT

	Trikkala	Karditsa	Larisa	Magnesia
Trikkala	—	0·8570	0·7830	0·6076
Karditsa	0·8570	—	0·7136	0·4619
Larisa	0·7830	0·7136	—	0·9201
Magnesia	0·6076	0·4619	0·9201	—

7. BARLEY

	Trikkala	Karditsa	Larisa	Magnesia
Trikkala	—	0·7562	0·6958	0·5384
Karditsa	0·7562	—	0·7689	0·7472
Larisa	0·6958	0·7689	—	0·8908
Magnesia	0·5384	0·7472	0·8908	—

8. BROAD BEANS

	Trikkala	Karditsa	Larisa	Magnesia
Trikkala	—	0·4378	0·0717	0·4309
Karditsa	0·4378	—	0·3393	0·2809
Larisa	0·0717	0·3393	—	0·5274
Magnesia	0·4309	0·2809	0·5274	—

9. CHICKPEAS

	Trikkala	Karditsa	Larisa	Magnesia
Trikkala	—	0·4412	0·3562	0·1528
Karditsa	0·4412	—	0·3463	0·3137
Larisa	0·3562	0·3463	—	−0·0009
Magnesia	0·1528	0·3137	−0·0009	—

10. LENTILS

	Trikkala	Karditsa	Larisa	Magnesia
Trikkala	—	0·3018	−0·0771	−0·0266
Karditsa	0·3018	—	0·2418	0·3687
Larisa	−0·0771	0·2418	—	0·2426
Magnesia	−0·0266	0·3687	0·2426	—

TABLE 11. COEFFICIENT OF VARIATION OF YIELDS OF THE MAJOR CROPS IN THE FOUR *NOMOI* OF THESSALY, 1911, 1955–56, 1959–80

	Trikkala	Karditsa	Larisa	Magnesia
Wheat . . .	53·0%	36·3%	49·2%	26·6%
Barley . . .	47·0%	35·1%	49·8%	30·2%
Broad Beans . .	58·4%	35·7%	52·2%	39·9%
Chickpeas . . .	34·9%	22·1%	51·2%	35·6%
Lentils . . .	35·3%	22·6%	49·1%	15·5%

III

The ancient evidence for surplus and shortage in Thessaly is quite evenly balanced, as was predictable from the agroclimatological evidence. Moreover, while the body of ancient evidence is not large—a mere handful of texts—it does fit into a recurring historical pattern.[18]

Not all of the recorded food crises were caused by climatic hazards alone ; some were war-induced. Thessaly was a zone of confrontation between rival powers, for geographical and economic reasons. The long period of conflict between Macedonia and Rome which began in the last decades of the third century B.C. was marked by sporadic subsistence crises : they are attested in Magnesia, Larisa and Perrhaebian Gonnoi.[19] It was patently harvest failure originating from drought which summoned grain from Cyrene to Larisa, nearby Atrax and Meliboia, as to forty other recipients in the Greek world from Epirus to Rhodes in the early 320s B.C. Larisa received the equivalent of 75,000 Attic medimnoi of wheat (50,000 Aiginetan medimnoi), Atrax 15,000 and Meliboia 42,740.[20] Just why those three Thessalian *poleis* are on the list and no others is unclear. Next, two identical inscriptions from different villages in the *chora* of Larisa refer to an ex-seitotamias, presumably from Larisa. The existence of this office does not point to an individual grain shortage but implies a tendency to grain shortage, justifying the establishment of a grain-purchase fund of which the man named had been treasurer.[21]

On the other side, Thessaly furnished grain at different times to Thebes, Cos, Athens—and Rome. In 377 B.C. the Thebans, who according to Xenophon had been prevented by the Spartan invasions from harvesting a crop for two years, sent for grain from Pagasai, the Thessalian port then under the control of Jason of Pherae. Jason's positive response is a firm indication that at that time he considered Sparta, which still held Pharsalos, a greater threat than Thebes.[22] This event is not likely to have been unique. We can expect the Thessalians, when the political will existed, to have come frequently to the aid of those they took to be their allies and friends in Greece when they were in need. The harvesting of the Thessalian crop by alien armies—as for example the Roman army at the expense of the *polis* of Phalanna in 171 B.C.—is of course different in kind.[23] We must shortly consider whether the Thessalian *poleis* which sent grain to Rome in *c.* 150 B.C. had any choice in the matter. It is unnecessary to see the hand of an external power behind the dispatch of grain to Cos when it was suffering a grain shortage (*sitodeia*), as recorded by a decree of the *koinon* of the Thessalians and a Coan decree in honour of the Thessalian *poleis* dated to the middle of the third century B.C.[24] Since Coans and Thessalians believed, probably correctly, that they were of common ancestry, it did not need the control of both states by a third power, Macedonia, to generate the transaction which took place. It is even less likely that Athens, when it bought grain from Thessaly in the first half of the second century A.D. under the direction of the sophist Lollianus, was obliged to clear its action with the Roman authorities.[25] This has more the appearance of a commercial transaction negotiated freely between two parties.

[18] Τσοποτοῦ (see n. 11), 165 ; R. I. Lawless, ' The Economy and Landscape of Thessaly during Ottoman Rule ', in F. W. Carter, ed., *An Historical Geography of the Balkans* (1977), 514.

[19] *IG* IX, 2, 1104 (Magnesia) ; *AE* 1910, col. 345, no. 3 (Larisa) ; B. Helly, *Gonnoi 2* (1973), 41.

[20] *SEG* IX, 2+ = Tod, *GHI* II, 196.

[21] *IG* IX, 2, 1029, 1093.

[22] Xen., *Hell.* 5. 4. 56.

[23] Livy 42. 64 ff. ; cf. App., *Mac.* fr. 18. 3. Other refs. from the first century B.C. in H. D. Westlake, *Thessaly in the Fourth Century B.C.* (1935), 6 n. 1.

[24] M. Segrè, ' Grano di Tessaglio a Coo ', *Riv. Fil.* 12 (1934), 169 ff. ; S. Sherwin-White, *Ancient Cos* (1978), 110 n.

[25] Philostr., *vit. soph.* 526–7. Cf. Ephippus, fr. 1 (Kock) for an earlier period. Xen., *Hell.* 6. 1. 11 contains a comparison of Thessaly and Attika.

Thessaly was not a regular source of grain for Rome even when it had a surplus, though it must often, in good years, have provisioned Roman armies stationed in Greece (see note 23). In the eastern Mediterranean, only Egypt was consistently drawn upon by Rome, and that only from the reign of Augustus. Thessaly is recorded as a supplier of the capital city only once, in *c.* 151–150 B.C., through the agency of the aedile Quintus Metellus.

IV

Text

1 ἘΕπειδὴ
Κοίντος Καικέλιος Κοίντου Μετέλλος ἀγορανόμος Ῥωμαίων ἀ-
νὴρ καλὸς καὶ ἀγαθὸς κ[αὶ] φίλος καὶ εὔνους ὑπάρχων τῶι ἔ-
θνει ἡμῶν ἐπελθὼν ἐπ[ὶ τὸ σ]υνέδριον ἀνενεώσατο τὰς γεγενη-
5 μένας εὐεργεσίας ὑπ[ὸ τ]ῶν προγόνων αὐτοῦ καὶ διελέγετο
παρακαλῶν, ἐπείπερ ἦ[ν ἡρ]ημένος ἐπὶ τὴν τῆς ἀγορανομίας
ἀρχήν, τὰ δὲ κατὰ τὴν χ[ώρα]ν αὐτῶν κατὰ τὸν παρόντα καιρὸν ἐν
ἀφορίαι καθειστήκει, ὅπως δοθῇ σῖτος ὑπὸ τοῦ ἔθνους τῇ συνκλήτ[ῳ]
καὶ τῶι δήμωι, ὅσος ἂν ἦν ἐν [πρ]ατῶι, ἐκρίθη τοῖς συνέδροις, μνημονεύον-
10 [τ]ας τῶν γεγενημένων ε[ὐε]ργετημάτων εἰς τὸ ἔθνος ὑπὸ Κοίν-
του καὶ τῶν προγόνων αὐ[τοῦ] καὶ τῆς συνκλήτου καὶ τοῦ δήμου τ[οῦ]
Ῥωμαίων, ἐξαποστεῖλαι ε̣[ἰ]ς Ῥώμην ὥστε τῇ συνκλήτῳ καὶ τῶι δήμῳ[ι],
καθὼς Κοίντος διελέγη, π̣[υ]ρῶν κοφίνων μυριάδας τεσσαράκοντα̣
τρεῖς καὶ τοῦ προγεγραμμέ[ν]ου πλήθους σίτου ποιήσασθαι διάταξιν ἐ-
15 πὶ τὰς πόλεις Πετραῖον τὸν [σ]τρατηγὸν μετὰ τῆς συναρχίας καὶ [τῶν]
συνέδρων. Τὰς δὲ πόλεις ἑ̣κ̣[ά]στην τοῦ διαταγέντος σίτου ποιήσασθ[αι]
τὴν καταγωγὴν ἐπὶ λιμέν[α] τὸν ἐπὶ τοῦ Δημητριείου ἢ ἐμ Φαλάροις ἢ ἐν
Δημητριάδι, τῶν μὲν τριάκ[ο]ντα δύο μυριάδων Πελασγιώτας μὲν καὶ
Φθιώτας ἐν τῷ̣ μηνὶ τῶι Ἀφρί[ῳ], Ἰστιώτας δὲ καὶ Θεσσαλιώτας ἐν τῶι μη-
20 νὶ τῶι Θύ⟨ῳ⟩ πρὸ τῆς εἰκάδος̣, τῶν ⟨δέ⟩ δέκα μιᾶς μυριάδων ἐν τῶι μην[ὶ]
τῶι Φυλλικῶι πρὸ τῆς πέντ̣ε̣ καὶ δεκάτης ἐπὶ τῆς Πετραίου στρατη-
γίας, καὶ τὴν ἐσομένην δ[α]πάνην ἐ̣κ̣ τοῦ ἐμβληθῆναι τὸν σῖτον
εἰς τὰ πλοῖα διδόναι τὰς πόλεις ἑκάστην τοῦ καθ' αὐτὴν πλήθου[ς].
Περὶ δέ γε τῆς εἰς Ῥώμην διακομιδῆς τοῦ σίτου ἠξίωσαν Κοίντον
25 φροντίσαι ἵνα, ἐπεὶ οὐχ ὑπάρχει πλοῖα τοῖς Θεσσαλοῖς, ἵνα ποιήση-
ται τὴν ἔγδοσιν, ὡς ἂν αὐτῶι φαίνηται βέλτιστα, τὰ δὲ ναῦλα δι-
ορθώσασθαι τοὺς ἀποσταλέντας πρεσβευτὰς εἰς Ῥώμην
περὶ τούτων ἐκ τῆς τοῦ σίτου τιμῆς. Ἐὰν δὲ μὴ δυνηθῇ Κοίντος ἐκ-
πέμψαι τὰ πλοῖα, ἀποστείλῃ δὲ τοὺς ναυλωσομένους, φροντί-
30 σαι Πετραῖον τὸν στρατηγὸν μετὰ τῶν συναποταγέντων ἵ-
να διακομισθῇ ὁ σῖτος εἰς Ῥώμην, καὶ τοὺς συνεπιπλευσομένου[ς]
[ἵ]να συναποστείλῃ Πετραῖος, καὶ τὴν εἰς ταῦτα δαπάνην καὶ ἐξα-
ποστολὴν ποιήσασθαι Πετραῖον τὸν στρατηγὸν μετὰ τῆς συναρ-
χίας, γράψαντος Πετραίου διάταξιν ἐπὶ τὰς πόλεις. Ἐὰν δέ τις
35 μὴ ἀπαγάγῃ τὸν σῖτον ἐπὶ τοὺς λιμένας ἐν τοῖς ὡρισμένοις χρό-
νοις, ἀποτινέτω τοῦ κοφίνου ἑκάστου στατῆρας δύο καὶ ὀβολοὺς ἐν-
νέα, καὶ τῆς διατιμήσεως ταύτης ποιεῖσθαι τὴν πρᾶξιν Πετραῖον
τὸν στρατηγὸν καὶ τοὺς ὑπὸ τούτου ἀποταγέντας ἐκ τῶν ὑπαρχόν-
των τῇ τε πόλει καὶ τοῖς κατοικοῦσιν ἐν τῇ πόλει καθ' ὃν ἂν τρόπον
40 βούλωνται, ἀνυποδίκοις καὶ ἀζημίοις οὖσιν καθ' ὃν ἂν τρ⟨ό⟩πον πράξ-
ωσιν.

Translation

'Since Quintus Caecilius Metellus, son of Quintus, aedile of Rome, being a fine and noble man and a friend of and well-disposed to our nation, has approached the council and recalled the previous services of his ancestors, and has made a speech requesting, since he

has been elected to the magistracy of aedile while the present situation in his country is one of dearth, that the *koinon* give as much grain as it has available to the senate and people ;

' The councillors decided, remembering the previous services to the nation of Quintus and of his ancestors and of the senate and people of Rome, that 430,000 *kophinoi* of wheat be dispatched to Rome for the senate and people, in accordance with Quintus' speech, and that the allocations among the cities of the aforesaid quantity of grain be made by Petraios the *strategos* with his co-magistrates and the councillors.

' That each of the cities arrange the transport of its allocated grain down to the harbour, whether that of the Demetreion or at Phalera or at Demetrias ; of which 320,000 (*kophinoi*) by the Pelasgiotai and the Phthiotai in the month of Aphrios, and by the Hestaiotai and Thessaliotai in the month of Thyos before the 20th, and 110,000 (*kophinoi*) in the month of Phyllikos before the 15th, while Petraios is *strategos* ; and that each of the cities pay the costs which arise up to the loading of the grain on to the ships for its own quantity.

' However, as regards the shipment of the grain to Rome, they decided, since the Thessalians have no ships, that Quintus be responsible for contracting it out as seems best to him, and that the freight-charges be settled by the envoys sent to Rome on this business out of the price of the grain.

' That if Quintus is unable to send out ships, but sends out the men to charter ships, Petraios the *strategos* with those appointed be responsible for the shipment of grain to Rome, and for Petraios sending it with the men who will be in charge of it ; and that Petraios the *strategos* and his co-magistrates pay the costs of these things and arrange the dispatch, with Petraios drawing up the allocation among the cities.

' If any city does not deliver the grain to the harbours by the specified times, let it be fined 2 staters and 9 obols per *kophinos* ; and that the collection of this assessment from the possessions of the city and of the inhabitants of the city be made, by whatever method they choose, by Petraios the *strategos* and those appointed by him, who are to be immune from prosecution or fines for the method of their collection.'

V

The inscription was discovered at Larisa in 1976 and published with a short commentary in the *Communications of the Eighth Conference of Greek and Latin Epigraphy at Athens, September 1982*, by Costas J. Gallis, Director of the Archaeological Museum at Larisa.[26]

The date hinges on the identity of the Roman envoy Quintus Caecilius Q. f. Metellus, aedile (*agoranomos*) at Rome. This is likely to be the praetor of 148 for Macedonia and the conqueror of the ' false Philip ' Andriskos, for which victory he earned the honorific cognomen Macedonicus.[27] If his praetorship fell in 148, then he might have been aedile in 151, if curule (observing the *biennium* between offices), and 151 or 150, if plebeian.[28] 151–150 may, therefore, be suggested as the approximate date of the inscription.

Why was Quintus sent to Thessaly in search of grain ? The inscription gives the answer : ' The councillors decided, remembering the previous services to the nation of Quintus and his ancestors and of the senate and people of Rome . . .' (ll. 9 ff.). Macedonicus is usually identified as the son of Q. Caecilius Metellus, consul of 206 and leader of the three-man embassy of 186, which settled territorial and other disputes between Philip and his neighbours, including Thessalians and Perrhaebians.[29] The decision went against Philip, who was ordered to withdraw to the ancient boundaries of Macedonia. This meant that the Thessalians recovered their ancestral boundaries at the expense of Macedonia (and Aetolia), and by the decision of a Metellus. The work had to be done again after the war with Perseus. Envoys are not recorded in 168 after Pydna, but it is known that a Q. Metellus was sent with two others to convey news of the victory to Rome.[30] This looks to have been a mission for young men ; another of the three was Q. Fabius, son of the commander, and our Quintus, if praetor

[26] Dr Gallis will publish an epigraphical commentary in the Acts of the Conference. With that in mind we have said nothing of an epigraphical nature about the inscription and have printed the text of Gallis without alteration. Our translation, however, reflects a preference for ἐν [δυν]άτωι in l. 9 (which we owe to Professor Roesch and the Lyon Colloque) and ἑως for ἐκ in l. 22.

[27] *RE* s.v. ' Caecilius ' no. 94.

[28] A. E. Astin, *The Lex Annalis before Sulla* (1958).

[29] *RE* s.v. ' Caecilius ' no. 81.

[30] Livy 44. 45. 3 ; 45. 1.

anno suo in 148, would have been 19 in 168 B.C., old enough for military action against Macedonia such as to merit the flattering reference to his services in Thessaly. Finally, the presumed uncle of Quintus, M. Caecilius L. f. Metellus, praetor in 206 when his elder brother was consul, was apparently one of the three senatorial commissioners sent to Flamininus in Greece in 197 and subsequently honoured by the *koinon* of the Thessalians.[31] In short, Quintus had special qualifications for the mission to Thessaly of 151–150 B.C.

Quintus was aedile. The role of aediles in the provisioning of Rome with grain is familiar from Livy's narrative.[32] Four passages are of special importance and deserve citation in full.

(*a*) annus . . . annonae vilitate fuit, praeterquam quod pace omnis Italia erat aperta, etiam quod magnam vim frumenti ex Hispania missam M. Valerius Falto et M. Fabius Buteo aediles curules quaternis aeris vicatim populo discripserunt (Livy 30. 26. 5 f. (203 B.C.)).

(*b*) frumentique vim ingentem quod ex Africa P. Scipio miserat quaternis aeris populo cum summa fide et gratia diviserunt (sc. aediles curules—cf. 31. 4. 5) (Livy 31. 4. 6 (201 B.C.)).

(*c*) annona quoque eo anno pervilis fuit; frumenti vim magnam ex Africa advectam aediles curules M. Claudius Marcellus et Sex. Aelius Paetus binis aeris in modios populo diviserunt (Livy 31. 50. 1 (200 B.C.), cf. 31. 19. 2).

(*d*) eo anno aediles curules M. Fulvius Nobilior et C. Flaminius tritici deciens centena milia binis aeris populo discripserunt. id C. Flamini honoris causa ipsius patrisque advexerant Siculi Romam: Flaminius gratiam eius communicaverat cum collega (Livy 33. 42. 8 (196 B.C.)).

To these may be added a fifth passage though its subject matter is perhaps not identical:

(*e*) per eos dies commeatus ex Sicilia Sardiniaque tantam vilitatem annonae fecerunt ut pro vectura frumentum nautis mercator relinqueret (Livy 30. 38. 5 (202 B.C.)).

Briscoe says bluntly: 'These public distributions are not found after 196.'[33] At best this means Livy (and Polybius) did not record any. But when friendly and subject states subsequently offer Rome grain, although normally for the army, it is sometimes specifically for the city as well: thus Carthage and Massinissa in 191.[34] Presumably this grain was distributed by the curule aediles. The practice was irregular, but it was not dead. It must be stressed how little is known about the grain supply between the first decade of the second century and the implementation of the *lex frumentaria* of Gaius Gracchus.

The Livy passages show the aediles selling cheap grain to the people of Rome. It is usually grain that they have played no part in acquiring. In one instance, however, that of 196, it looks as if the aediles had themselves sought grain to sell cheaply, as if to maintain the new 'tradition' of aediles distributing cut-price grain, for their own political advantage—Flaminius, we are told, shared the *gratia* with his colleague. By this interpretation Flaminius was a predecessor of our Q. Metellus in going where he and his forebears were owed *gratia*.

This same case also illustrates the personal control exercised by the aediles over grain sales. They themselves fixed the price: were this not so, Flaminius could not have been sure of carrying off his coup in 196.

At this point, however, the two instances diverge. Livy records unexpected additions to regular supplies and the consequent collapse in the price of grain. Even if it were the case that his *vilitas* in text (*a*) and *pervilis* in text (*c*) are no more than his own comment on the distribution, text (*e*) indubitably records private suppliers having profits cut following the arrival of extra grain. There is no implication in any of the texts that the market price of grain was abnormally high before the arrival of extra supplies, or that Rome would have starved if they had not arrived. But in 151–150 there was dearth (*aphoria*); and it is hard to

[31] *RE* s.v. 'Caecilius' no. 72.

[32] In addition to the references that follow see Livy 10. 11. 9; cf. 10. 13; 23. 41. 7; 38. 35. 5; Cic., *de off.* 2. 17. 58.

[33] J. Briscoe, *A Commentary on Livy Books XXXI–XXXIII* (1973), *ad* 31. 4. 6; G. Rickman, *The Corn Supply of Ancient Rome* (1980), 150.

[34] Livy 36. 4. 5–9.

believe that the aediles did not receive official instructions to go in search of grain, even if those instructions were unnecessary.[35]

The inscription is uninformative on the causes of the grain shortage or its seriousness. The regular suppliers of Rome in this period appear to have been Sicily, Sardinia and Italy. The role of Italy, incidentally, is confirmed (if confirmation were needed) by the remark of Livy relative to 203 in text (*a*). Harvests may have been poor in the grain-exporting areas in 151–150. However, another possibility should be considered, namely, that grain which would normally have been available for Rome was diverted for other purposes.

In the realm of foreign affairs, the Roman state was, it seems, wholly concerned with the west in the late 150s. Scipio Aemilianus declined an invitation to settle problems in Macedonia, and Scipio Nasica went out in connection with the pretender Andriskos only in 149. There were Roman armies in Spain, involving perhaps as many as three legions in the late 150s, but this was no novelty ; and another two legions were involved in Cisalpine Gaul. By 149–148, however, there were 9 or 10 legions in the field.[36] What made the difference was the large-scale mobilization of perhaps four legions for the so-called Third Punic War. Appian says 80,000 infantry and 4,000 cavalry were involved.[37] The recruitment drive ' throughout all Italy ' took place well before the formal declaration of hostilities at the beginning of 149. It is possible to infer from the accounts of Polybius and Appian that the Senate was resolved on war by 152 or 151 and launched the levy immediately on hearing of the clash between the Carthaginian and Numidian forces in the winter of 151–150.[38]

At this point we might consider the food needs of an army of around 80,000 foot and 4,000 horse. On Polybius' figures,[39] the foot soldiers would have required 53,333 *medimnoi* (320,000 *modii*) of wheat and the cavalry 8,000 *medimnoi* (48,000 *modii*) of wheat and 28,000 *medimnoi* (168,000 *modii*) of barley per month : this represents a considerable drain on the accumulated grain resources of Italy and Sicily, especially if, as seems likely, the force was put together in early 150 and held together at one or more bases until its departure for Africa in the spring of 149. If in addition harvests had been below average or gravely deficient, the shortage of food in the capital might have been serious.

VI

Quintus secured for Rome 430,000 *kophinoi* (' baskets ') of wheat, apparently equivalent to 80,625 Attic *medimnoi* or 483,750 *modii* or about 32,250 quintals.[40] We need to know how this figure related on the one hand to total demand at Rome and on the other to total production in Thessaly. Relevant to these questions is the setting of the three distinct deadlines for delivery of the wheat to the harbours of Thessaly. The first batch, the responsibility of the people of the regions of Pelasgiotis and Phthiotis, was due in the month of Aphrios (the eighth month of the Thessalian calendar), and the second, the contribution of the Hestiaiotai and Thessaliotai, in the month of Thyos (the ninth month) before the twentieth. The four regions were obliged to supply 320,000 *kophinoi* (24,000 quintals) between them. The final instalment of 110,000 *kophinoi* (8,250 quintals) had to be delivered in Phyllikos (the twelfth month) before the fifteenth. Since no regions are specified, all four were presumably intended to contribute again, the precise quantities to be determined by Petraios and the council. These deadlines were to be taken seriously : late delivery was to be punished with heavy

[35] Rickman (see n. 33), 36 without the benefit of this inscription thought that aediles were not involved in the procurement of grain. But cf. Flaminius' activity in 196 : Livy 33. 42. 8.

[36] P. A. Brunt, *Italian Manpower* (1971), 427–8.

[37] App., *Lib.* 75.

[38] Polyb. 36. 2. 1–3, with F. W. Walbank, *Commentary*, ad loc. ; App., *Lib.* 68 ff. On the chronology, A. E. Astin, *Scipio Aemilianus* (1967), 49–51, 270–2 ; W. V. Harris, *War and Imperialism* (1979), 235 ff.

[39] Polyb. 6. 38. 3, with R. P. Duncan-Jones, ' The Choinix, the Artaba and the Modius ', *ZPE* 21 (1976), 46–7, n. 16.

[40] F. Hultsch, *Metrologicorum Scriptorum Reliquiae* (1864–66) I, 206, 320 ; *Griechische und Römische Metrologie* (1882), 542–4. The small size of the *kophinos* confirmed by *IG* VII, 2712. 65 : a decree of Akraiphia in honour of Epaminondas, benefactor in the mid-first century A.D. (cf. *IG* VII, 2711). Among other benefactions (ll. 63–6), at a festival he gave each person present one *kophinos* of grain (*sitos*) and 1 *hemina* of wine. Attic *heminae* are equivalent to Roman *heminae* ; Cato gave 1 to 3 *heminae* per *day* to his slaves : presumably therefore 1 *kophinos* of grain was meant only to cover the days of the festival. (If 2·5 *modii* last a man 1 month, then 1 *kophinos* lasts him only *c.* 13 days.)

fines (see below). The dates must represent when Metellus wanted the wheat, as modified according to when the Thessalian council thought that it would be possible to deliver it. It is, unfortunately, impossible to give precise Julian equivalents for these Thessalian months, since the Thessalian calendar was lunar and subject to intercalation.[41] However, if we assume that shipments were projected for the normally recognized sailing season, between mid-March and mid-September, then in the year under consideration Aphrios is to be located within the period March to May, Thyos within April to June and Phyllikos within July to September. If intercalation was reasonably regular and the Thessalian year normally began in mid-August, then the earlier possible equivalences would be preferable.

So what was the relation of these consignments to the total demand at Rome? Brunt has estimated the population of Rome at the time of the Gracchi as 375,000, but this figure is probably too high: it was arrived at by a now discredited line of argument based on water-supply from aqueducts.[42] If, *exempli gratia*, we work with a population figure of 250,000 for Rome in the middle of the second century, and if we suppose that city-dwellers consumed on average 2·5 *modii* (16·65 kg) of grain per month,[43] then the total annual demand would have been approximately 7,500,000 *modii* (500,000 quintals). The wheat from Thessaly represents about 6·5 per cent of this figure. This may not seem much, but its significance should not be underestimated. The Thessalian contribution of 483,750 *modii* compares quite well with some other cases: the distribution of 200 B.C. was of 200,000 *modii* (text (*c*)), that of 196 of 1,000,000 *modii* (text (*d*)), and in 191 Carthage offered the city of Rome several thousand *modii* of wheat and 250,000 *modii* of barley, and Massinissa offered 300,000 *modii* of wheat and 250,000 *modii* of barley.[44] The timetable of the contribution is also an important factor here. 483,750 *modii* would have supplied only 16,275 for a year but 193,500 for one month. As far as we can tell from the Thessalian dates, Metellus wanted the bulk of the wheat, 75 per cent of the total amount purchased, to arrive in Rome in the critical period preceding the Italian grain harvest in June and July. Perhaps two deadlines were set, that in Aphrios and that in Thyos, because Metellus wanted, for example, 180,000 *modii* to distribute in Rome in each of two consecutive months, supplying in each case about 72,000 people, just under 30 per cent of Rome's requirements. The remaining 123,750 *modii* would have supplied close to 20 per cent of demand in a later month. Arriving, as it must have done, a month or two after the Italian harvest, this final batch will have been more in the nature of a bonus, but one welcome in the context of the military preparations against Carthage.

The normal harvest period in the upper plain of Thessaly is late May–June, and in the lower plain May. It seems certain, then, that the first two shipments, amounting to 360,000 *modii* (24,000 quintals) were of grain from the previous year's harvest. If, as seems likely, the third and final shipment was of new grain, then this itself is the explanation of the considerable gap of more than two months separating it from the others. The question arises, how significant a proportion of the year's crop were the 24,000 quintals (or just possibly 24,000 + 8,250 quintals = 123,750 *modii*) likely to have been? There can of course be no precise answer to this question. But data from the early part of this century can give us guidance as to the possible parameters of wheat production in ancient Thessaly. The following similarities between the two periods show that there is some point in the exercise. First, in both periods, there appears to have been a shift in the relative ratio of large estates to peasant holdings. In the years following the annexation of Thessaly into Greece, many of the large estates, or *ciftliks*, common in the period of Ottoman domination, were divided into smaller plots and distributed to peasant families; the average plot was in the range of 5–10 hectares, although some were larger, depending on the region, the size of the family and the number of traction

[41] On the Thessalian calendar, see *RE* s.v. 'Thessalien'; Helly, *Gonnoi* 1 (1973), 137–8; A. E. Samuel, *Greek and Roman Chronology* (1970), 83. For the safe sailing period, see L. Casson, *Ships and Seamanship in the Ancient World* (1971), 270–2.

[42] Brunt (see n. 36), 384.

[43] L. Foxhall and H. A. Forbes, 'Σιτομετρία: The Role of Grain as a Staple Food in Classical Antiquity', *Chiron* 12 (1982), 41–90, especially 51–65. 2·5 *modii* per month would have provided around 72 per cent of the daily caloric requirement of their hypothetical household (see 49 n. 26). Note their conjecture that cereals 'normally' provided 70–75 per cent of human energy needs in antiquity (75).

[44] Livy 36. 4. 5–6. Textual corruption does not permit us to restore with confidence the amount of wheat offered by Carthage: cf. J. Briscoe, *A Commentary on Livy Books XXXIV–XXXVII* (1981), *ad* 36. 4. 5 (p. 225).

animals it possessed.[45] The process of change was slow and serious agrarian problems persisted in Thessaly until the Land Reform Law of 1924–5. During the latter part of the third century B.C., the *polis* of Larisa, under the urging of Philip V, granted citizenship to over 200 families with the express aim of bringing land under cultivation.[46] A slightly later group of fragmentary inscriptions reinforces the conclusion that peasant farms were thus created.[47] Second, the agricultural system was similar in both periods. The range of crops was much the same: maize and kidney beans were not utilized in antiquity but these compete with the spring sown legumes and not the winter cereals. The technology and methods of cultivation were basically comparable: modern developments such as the use of chemical fertilizers and hybrid species had made little impact in early twentieth-century Thessaly.

The general structure of wheat production and consumption in Thessaly in the first decade of this century can be discerned from the data presented in Table 12. The level of yield fluctuated between 1,155 kg/ha during a good-average year and 585 kg/ha during a bad year. With the documented, constant sowing rate of about 150 kg/ha, seed:yield ratio varied from 1:7·7 to 1:3·9; a ratio below 1:5 was considered a failure. The population during this period was growing rapidly: it rose from 270,886 in 1881 to 380,000 by 1912.[48] For the decade under consideration, a working figure of 365,000 may be adopted. This would mean that one-quarter hectare of wheat land was cultivated per person. The total amount of land cultivated per person (including fallow) was 1·4 ha/person, or 27·1 per cent of the cultivable area of Thessaly. If average *per capita* consumption of wheat came to 200 kg/person/year, then 730,000 quintals was the amount required. Column E in Table 12 presents the amount of wheat surplus or deficit after subtracting the subsistence requirement from the yield less seed. Clearly, in good years, Thessaly produced a sizeable surplus, but in bad years devastating

TABLE 12. WHEAT PRODUCTION AND CONSUMPTION IN THESSALY DURING THE FIRST DECADE OF THIS CENTURY

A = Yield (quintals); B = Seed:Yield Ratio; C = Yield less Seed (at a sowing rate of 150 kg/ha); D = Amount of Grain Required for the Population's Subsistence Needs (365,000 pop. at 200 kg/person/year); E = Amount of Surplus or Deficit; F = Percentage of Surplus in E that grain ordered for Rome from previous year's harvest (24,000 quintals) would represent. The data are derived from: Diplomatic and Consular Reports, *Trade and Agriculture of Thessaly*, (Foreign Office), no. 3818 (1906); no. 4272 (1908); no. 4731 (1910); Philippson (see n. 5), 230; Ἀγροτικὴ Στατιστικὴ τῆς Ἑλλάδος (1911).

	A	B	C	D	E	F
1902/3	1,118,111	1:7·7	978,111	730,000	+248,111	9·7%
1903/4	882,149	1:6·1	742,149	730,000	+12,149	—
1904/5	565,571	1:3·9	425,571	730,000	−304,429	—
1905/6	407,607	1:4·7	267,607	730,000	−462,393	—
1908/9	1,098,853	1:7·0	958,853	730,000	+228,853	10·5%
1909/10	623,693	1:4·2	483,693	730,000	−246,361	—
1910/11	954,980	1:6·8	814,980	730,000	+84,950	28·3%

[45] Sivignon (see n. 10), 388–404; Lawless (see n. 18), 515–17; de Vooys (see n. 8), 33–4.

[46] *SIG*³ 543 = M. M. Austin, *The Hellenistic World from Alexander the Great to the Roman Conquest* (1981), no. 60.

[47] C. Habicht, 'Eine hellenistische Urkunde aus Larisa', in V. Milojcic and D. Theocharis, eds., *Demetrias* 1 (1976), 157–74; F. Salviat et C. Vatin, 'Le Cadastre de Larissa', *BCH* 98 (1974), 247–62. Habicht's objections to associating these fragments with the earlier decrees seem to be based primarily on their date—*c.* 15–20 years later. But it is frequently the case that problems occur following land distribution precisely at this point of intergenerational transmission of property; in addition to the case of nineteenth–twentieth-century Thessaly, see as examples: M. Kiray and J. Hinderink, 'Interdependencies between Agroeconomic Development and Social Change: A Comparative Study Conducted in the Cukurova Region of Southern Turkey', *Journal of Development Studies* 4 (1968), 497–528; C. White, *Patrons and Partisans: a Study of Politics in Two South Italian Towns* (1980), 13 ff. From the evidence of the best preserved fragment (containing a list comprising a name, patronymic, and a record of land), the mean holding was 6·2 ha (70·5 plethra), the mode (i.e. the most frequently occurring number) was 4·38 (50 plethra), and the median (i.e. the midpoint between the highest entry, 21·9 ha (250 plethra), and the smallest, 0·87 ha (1 plethra) was 10·5 ha (120 plethra).

[48] Sivignon (see n. 10), 379, 382.

deficits occurred.[49] At the level of production depicted in Table 12, the quantity of the old harvest sent to Rome would have represented from about 10 per cent to 30 per cent of the available surplus.

There are insufficient data available for calculating the population in Thessaly during the second century B.C., and this will remain so without more intensive surface surveys of the countryside and detailed work at each of the known settlements. There are over 30 named settlements and over 40 named and un-named sites dated to this period distributed fairly evenly across Thessaly; there is a slightly higher density in the lower plain and Magnesia.[50] The evidence, as noted earlier (nn. 16 and 43), suggests that population probably declined during this turbulent period in Thessalian history. If labour inputs, the man:cultivated land ratio, and the level of wheat consumption were of the same magnitude as during the early part of this century, then, with a lower level of population, the proportion of wheat production above subsistence requirement, which the shipments to Rome represent, rises accordingly, to perhaps as high as 50 per cent or more. The implications of this are considerable. The fact that so sizeable a proportion of the wheat surplus was still in the hands of primary producers in the immediate pre-harvest period, a time of year usually associated with scarcity, indicates the low level of market penetration into the countryside. Even following a good year, when on the basis of the figures presented in Section 1 high yields in most crops are to be expected, it is clear that a considerable surplus lay latent, unmobilized in the countryside. Two conclusions can be drawn. First, an economic strategy of maximizing production for mobilization through market mechanisms was not followed. The prevalent strategy is likely to have been one based on risk minimization. In this case, the farmer would have had options such as ploughing under some legumes as green manure in a good year and relying more heavily on wheat for subsistence or investing the surplus secondarily in the production of more valuable commodities such as livestock. In a bad year the livestock could then either be exchanged, or consumed directly. Second, if available food resources were to be extracted and mobilized, then it took political compulsion, not economic incentive, to achieve this.

VII

Accounts of other donations of grain to Rome show that it was normally the responsibility of the donor state to get the grain to Rome or its armies. The donor had to organize and pay for shipping. Usually this is only implied by the sources, as in Livy under 198 B.C.: 'eadem aestate equites ducenti et elephanti decem et tritici modium ducenta milia ab rege Massinissa ad exercitum qui in Graecia erat pervenerunt.'[51] Text (*d*) above is more specific: 'advexerant Siculi'. We may also compare Livy under 200 B.C.: 'ipse (sc. Massinissa) in naves imponendos curavit et cum ducentis milibus modium tritici, ducentis hordei in Macedoniam misit'.[52] Our inscription shows that the Thessalians will have to pay the cost of the transport of the grain to Rome. First, each Thessalian town which contributes wheat (presumably either buying it, probably on credit, or obtaining it through subscription[53]) is to organize and pay for the haulage of its contribution down to the relevant harbour, and for its loading. There is a choice of harbours: Demetrias and Demetreion in the Pagasean gulf or Phalara in the Malian Gulf. Note that the initial contribution from the two regions, Pelasgiotis and Phthiotis, nearest to the harbours (*c.* 50 km and *c.* 15 km respectively) is due first, and that from the two more distant regions of Hestiaiotis and Thessaliotis (*c.* 100–125 km) second. Late delivery (and non-delivery ?) of the wheat to the harbour was to be penalized by a fine

[49] Parenthetically, a comparison of the amount of wheat sent only to Larisa, Atrax and Meliboia in the 320s with the amount Thessaly sent to Rome in 151–150 (53,100 compared to 32,250 quintals) provides a clear indication of the possible magnitude of a drought-induced deficit in Thessaly.

[50] F. Stählin, *Die hellenische Thessalien* (1924); R. Stillwell, W. L. MacDonald and M. H. McAllister, eds., *The Princeton Encyclopedia of Classical Sites* (1976); R. Hope Simpson and O. T. P. K. Dickinson, *A Gazetteer of Aegean Civilization in the Bronze Age.* Vol. 1. *The Mainland and the Islands* (1979), 272–98.

[51] Livy 32. 37. 2.

[52] Livy 31. 19. 4. Cf. Briscoe (see n. 33), *ad* 31. 19. 4 (p. 108): 'Massinissa himself pays for the transport, presumably the ships are his own. Sage mistranslates *curavit* as "supervised"'. Also Livy 43. 6. 11–14.

[53] For example, at around the same time as the present episode, there is evidence that the Thessalian *polis* of Krannon had to resort to public subscription to pay off its debts; L. Moretti, *Iscrizioni Storiche Ellenistiche* II (1976), 99; Austin (see n. 46), no. 103.

of two staters and nine obols per *kophinos*. This is equivalent to approximately 16·50 g of silver, and to four Attic *drachmai* or *denarii*.[54] Since the *kophinos* held 7·5 kg of wheat, for a quintal of wheat the fine would have amounted to around 220 g of silver. Compared with an 'average' Greek price for wheat in the second century B.C. of around 48–76 g of silver per quintal,[55] it is obvious that the fine is heavily punitive. Presumably it does not relate to the value of wheat, but is partly a measure of the concern of the Thessalian authorities (and Quintus) to fulfil the contract promptly and in full, and partly reflects the difficulties in arranging the actual shipping: the council do not want ships that will be chartered to be hanging around the harbours waiting for the wheat to arrive.

As regards the second stage, the shipment of the grain to Rome, two possible schemes are envisaged, 'since the Thessalians have no ships' (l. 25). Plan 'A' is that Metellus accepts tenders 'as seems best to him' for the transport of the wheat from shipping contractors at Rome, on the terms that the payment will be made by Thessalian envoys out of the price of the wheat, on the completion of the round trip (Rome–Thessaly–Rome). If Metellus is unable to send out ships, then Plan 'B' is that he will send out people who will put together a fleet of ships; these individuals or companies will, it seems, require some payment before leaving Thessaly, and so Petraios, *strategos* of the Thessalian *koinon*, is empowered to raise funds for such payments from the Thessalian member *poleis*. Presumably these levies would eventually be repaid in some part from the price of the wheat in Rome; although this need not necessarily be so. The complexity and full record of these agreements suggest that something out of the ordinary is happening. This is not, we think, that the Thessalians 'have no ships', if this means that there were no state-owned ships in Thessaly. Merchant shipping was predominantly controlled by private individuals and companies in antiquity. More interesting is the implication that the Thessalian *koinon* would find it difficult to charter ships locally—this possibility is the fall-back plan, and the *koinon* in this case will apparently require the aid of Roman 'advisers', perhaps because they could more effectively exert pressure on potential Aegean shippers. But what is really unusual is the possibility that Metellus will be unable to find contractors in Rome with spare ships. The reason, we suggest,

[54] Personal communication from Professor Franke, referring to his article in *Schweiz. Münzblätter* 35 (1959), 61 ff., at 67. We are extremely grateful for his expert advice.

[55] For wheat prices in the Aegean area in the second century B.C. we follow the table of prices given by Heichelheim, 'Sitos', *RE* suppl. VI (1935), 819–92. We assume that the *medimnoi* were all on the Attic-Sicilian standard, holding *c.* 40 kg of wheat, that the *drachmai* were all on the Attic-Alexandrian standard, containing 4·37 g silver, and that the Megalopolitan stater was on the Korinthian standard, equivalent to an Attic *didrachm*.

PRICE OF *MEDIMNOS* IN ATTIC *DRACHMAI*

Place	Date	Wheat	Barley meal	Barley grain	Price of 1 q wheat in g silver
Delos	190	10 (?)	4	—	109·25
	190/80	11	4	—	120·18
	179	3	—	—	32·78
	179	4·16	—	—	45·42
	179	—	3/4	—	—
	178	10 (?)	3/5	—	109·25
	169	10 (?)	—	5·6	109·25
Samos	early 2nd cent.	5·3	—	—	58·27
Priene	*c.* 129	4	—	—	43·70
Megalopolis	late 2nd cent.	5·5	—	—	60·09

The average of all the prices given is 76·48 g of silver per quintal of wheat; the average discounting the four high prices from Delos is 48·07 g of silver. The fine, equivalent to 220 g of silver per quintal, was probably over nine times the subsidized selling price at Rome.

This conclusion is based on the prices given in Livy in the texts (*a*)–(*e*) above; converted into the weight of silver which was needed to purchase one quintal (1 *modius* holding 6·67 litres, 1 *denarius* = 10 *asses*, 1 *denarius* = *c.* 4·0 g) of wheat, they come to 23·99 g (203 and 201 B.C.), 11·99 g (200 and 196 B.C.), and less than 11·99 g (202 B.C.). We have no other evidence for the price of wheat at Rome until we come to the *frumentationes* of G. Gracchus in 123 or 122. At these wheat was sold at 6·3 *asses* per *modius*. Around 141 B.C. the *as* had been re-tariffed at 16 to the *denarius* (M. H. Crawford, *Roman Republican Coinage* II 611–14), and the *denarius* now had a projected weight of 3·85 g (based on Crawford, II 594, cf. 592). Converted for comparison with the earlier prices, these figures indicate a cost of 22·85 g of silver for 1 quintal of wheat. The 'famine' price at Rome of 25 *asses* (= 2·5 *denarii*) per *modius* in 211–210 (Polyb. 9. 11A), at a time when the *denarius* had a target weight of 4·5 g (Crawford, II 595), produces a cost of 168·67 g of silver for a quintal of wheat.

is that most regular shippers were involved in the imminent African expedition.[56] But though the Thessalians were exceptionally exempted from the responsibility of arranging shipping, they still had to pay for it, and this inscription tells us that the costs were to be met from the price (*timē*) received for the grain at Rome (ll. 26–8). This, like most recorded ' gifts ' of grain to Rome, was not free. Clearly aediles sold the grain which they distributed. If the grain was a genuine state surplus (as in texts (*a*) to (*c*)), that is the remainder of tax or rent, the income was presumably pure profit for the treasury, after deductions for transport costs, if any. However, the price of ' gift ' grain seems sometimes, at least in part, to have gone to the donor. A clear case comes from 191 B.C. when Carthage and Massinissa offered grain *gratis*, which the senate said it would accept only if it could pay for it.[57] The Roman imperial mentality is developing : Rome does not need gifts. Pliny's remarks on the occasion of a dispatch of grain *from* Rome *to* Egypt in A.D. 99 are interesting in this connection : ' Let this be a lesson to Egypt . . . Let her realize that she is not indispensable to the people of Rome though she is their servant.' [58] Our inscription is further evidence for this picture.

VIII

Thessaly had a reputation in antiquity as a major cereal producer. We hear rather less about the variability of its harvests and their tendency to fluctuate between poles of massive surplus and massive deficit. In the middle of the second century B.C., half a generation after a foreign power had been cleared out and the traditional boundaries of Thessaly restored, Thessalians could achieve in a climatically favourable year a bumper crop of wheat. The remnants of the crop were still sufficiently substantial in the early spring of the following year to furnish a month's supply of grain to about 72,000 Romans of Rome in each of two consecutive months and possibly to 49,500 three months later (though this third batch is more likely to have been a small contribution from the new crop). Roman armies had been operating in and around Thessaly for two generations, and had regularly dipped into its food resources. It was natural that they should look to the Thessalians (among other peoples, no doubt) to assist them through a period of shortage—induced, we suggest, by the need to supply a sizeable armament that was being held in readiness precisely in Italy and Sicily for imminent invasion of North Africa. The Thessalians were anxious to oblige, and this is not surprising. The grain was old and un-mobilized and was not being given away. A satisfactory new crop was no doubt ripening and seemed secure. There was good reason for the Thessalians to co-operate with a power which had driven out the Macedonians and restored their state, and which appeared to be committed to the cause of its territorial integrity and of its freedom.

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[56] cf. App., *Lib.* 75. For a cargo of 360,000 *modii*, 36 ships of 10,000 *modii*, or 65 tonnes burden, would be needed, or 8 ships of 50,000 *modii* or 325 tonnes burden (or half the number of ships for half the quantity of grain). The Romans commonly built ships in the range of 200–300 tonnes in the following century ; see P. Pomey and A. Tchernia, ' Le tonnage maximum des navires de commerce romains ', *Archaeonautica* 2 (1978), 233–51.

[57] Livy 36. 4. 5 ff. The Sicilians in text (*d*) may be assumed to have expected some payment from Flaminius. Another episode, from 169 B.C., if not strictly a gift, may still be a closer parallel for the inscription : see Livy 44. 16. 2. Note the delayed fixing of the price at Rome.

[58] Pliny, *Pan.* 31 ; cf. Rickman (see n. 33), 115.