

# The Impact of Rome on Egyptian Industry and Trade

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THE ABUNDANT PAPYROLOGICAL DOCUMENTATION for both the Roman and the preceding period in Egypt offers a unique insight into the impact of the Roman conquest on provincial economies. This potential has been exploited mainly in the domain of agriculture to challenge the traditional view that land ownership was privatized.<sup>1</sup> In this article, I examine continuity and change in the non-agricultural sectors, which have long been dominated by the specter of the so-called Ptolemaic ‘state monopolies’. I will argue that, while they abandoned certain forms of state intervention, the Romans did not fundamentally alter the structure of the Egyptian economy; the market activities attested in the Roman-era evidence built firmly on earlier developments.

The extent of institutional continuity and change in industry and trade is debated. Some scholars believe that Rome took over existing Ptolemaic ‘state monopolies’,<sup>2</sup> but the consensus argues for substantial privatization, albeit to various degrees.<sup>3</sup> A fre-

<sup>1</sup> A. Monson, *From the Ptolemies to the Romans: Political and Economic Change in Egypt* (Cambridge 2012).

<sup>2</sup> E.g. L. Capponi, *Augustan Egypt: The Creation of a Roman Province* (New York 2005) 143; U. Fellmeth, *Pecunia non olet: Die Wirtschaft der antiken Welt* (Darmstadt 2008) 157.

<sup>3</sup> E.g. F. Heichelheim, “Monopole,” *RE* 16 (1933) 147–199, at 193–194; A. C. Johnson, *Roman Egypt to the Reign of Diocletian (An Economic Survey of Ancient*

quently recurring idea is the replacement of ‘monopolies’ with craft taxes, licenses, or concessions. The latter two are often as vaguely defined as the supposed Ptolemaic ‘monopolies’. Some scholars interpret the Ptolemaic arrangements already in terms of ‘licenses’,<sup>4</sup> while ‘concessions’ on the Roman side are sometimes believed to have been subject to competitive bids (implying exclusivity), just like the Ptolemaic contracts that they would have replaced.<sup>5</sup>

All of these assessments take as their point of departure a Ptolemaic policy of ‘state monopolies’: industries operated or strictly controlled by the state with the assistance of private contractors.<sup>6</sup> However, such an interpretation is valid only for specific industries, principally the oil industry. The strict regulations for oil, documented in *P.Rev.* (TM 8859), have been erroneously extrapolated to Ptolemaic industry and trade as a whole. Many so-called ‘monopolies’ were in reality extensive fiscal contracts, which could involve direct forms of state intervention, but mainly concerned the revenues from sectors characterized by considerable market activity. The extent of such private activities poses a serious challenge to narratives of a Roman ‘privatization’ of industry and trade.

Accordingly, the main thesis put forward in this article is that

*Rome II*: Baltimore 1936) 335; S. L. Wallace, *Taxation in Egypt from Augustus to Diocletian* (Princeton 1938) 182; D. W. Rathbone, “Roman Egypt,” in W. Scheidel et al. (eds.), *The Cambridge Economic History of the Greco-Roman World* (Cambridge 2007) 698–719, at 717; M. Gibbs, “Manufacture, Trade, and the Economy,” in C. Riggs (ed.), *The Oxford Handbook of Roman Egypt* (Oxford 2012) 38–55, at 39–40; A. Monson, “Taxation and Fiscal Reforms,” in K. Vandorpe (ed.), *A Companion to Greco-Roman and Late Antique Egypt* (Hoboken 2019) 147–162, at 158.

<sup>4</sup> E.g. W. Huss, *Die Verwaltung des ptolemäischen Reichs* (Munich 2011) 220.

<sup>5</sup> E.g. M. Langellotti, *Village Life in Roman Egypt: Tebtunis in the First Century AD* (Oxford 2020) 129–130.

<sup>6</sup> On the Ptolemaic ‘state monopolies’, including an overview of earlier literature see N. Dogaer, *Industry, Trade and the State in Ptolemaic Egypt* (Cambridge forthcoming).

neither the Ptolemies nor the Romans sought to change the economy of Egypt in any fundamental way, rather both regimes were interested in capturing revenues and securing strategic commodities. Moreover, they often did so in broadly similar ways, even if the Romans adapted their taxation regime to changing conditions. While the Ptolemies in some cases intervened more directly, especially with regard to raw materials, markets are attested already for the preceding Late Period,<sup>7</sup> and both the Ptolemies and the Romans often relied on those markets for their revenues. The major exception, the fiscal experiment known as the Ptolemaic ‘oil monopoly’, had been abandoned before the arrival of the Romans.

This re-assessment of institutional change is performed through three case studies, corresponding to the most prominent supposed ‘monopolies’: oil, textiles, and beer.<sup>8</sup> For each of the three case studies, I will briefly outline the general argument, followed by a concise presentation of the Ptolemaic situation and a detailed comparison with the role played by the Roman state. I will do so mostly on the basis of papyrological sources, which hold great potential but also have important limitations. Particularly significant for the issue at hand is the rural bias of the Ptolemaic papyri. For the Roman period, the urban environment is better documented thanks to the *Oxyrhynchus papyri*. This difference in preservation patterns explains in part the impression of a Roman privatization. Another problem is posed by the lack of sources for the transitional period proper, though often-neglected Demotic texts somewhat alleviate this difficulty.

1. *The late Ptolemaic abolition of the ‘oil monopoly’ and its replacements*

The first case study is the one that gave rise to the idea of ‘state

<sup>7</sup> Dogaer, *Industry, Trade and the State* sections 1.7, 2.2, and 3.2.

<sup>8</sup> See in addition A. Benaissa, “Perfume, Frankincense, and Papyrus: Collecting the State Revenues,” *ZPE* 200 (2016) 379–388, for papyrus and *aromata*, and C. Adams, “Natural Resources in Roman Egypt: Extraction, Transport and Administration,” *BASP* 50 (2013) 265–281, at 267, for natural resources.

monopolies' and their subsequent 'privatization': vegetable oils. Unlike in the Greek and Roman worlds, oil crops in Egypt were primarily field crops (sesame, castor, and safflower under the Ptolemies and radish under the Romans), although olives did gain in significance in the course of the Roman period.<sup>9</sup> In both periods, these crops could be grown on private and institutionally-cultivated (state or temple) land. Under the Ptolemies, they had to be sold to the state, which also owned the oil workshops. In the Roman period, workshops were mostly privately owned, usually by a party different from the owner of the land, and often leased out. The Ptolemaic state supplied oil to state-sanctioned retailers who possessed a local monopoly, while in Roman Egypt oil was sold by private entrepreneurs, either those operating presses, specialized oil sellers, or general dealers.

However, a crucial nuance that has hitherto been overlooked is the abolition of this 'state monopoly' in the late Ptolemaic period, problematizing the notion of a Roman 'privatization'. Unfortunately, the means of capturing revenue from the oil industry that replaced this system in the first century B.C. are entirely unknown, which complicates the analysis of continuity and change. Regardless, the main Roman tax was imposed on presses, and the owners would have had to pass on some of these costs to their producers. The latter may have been subject to a professional tax too, as were oil sellers. Finally, exclusive concessions are attested for Roman Egypt, but I will argue that they were linked to peculiar circumstances and likely not a direct remnant of the local Ptolemaic monopolies.

<sup>9</sup> P. van Minnen, "Dietary Hellenization or Ecological Transformation? Beer, Wine and Oil in Later Roman Egypt," in I. Andorlini et al. (eds.), *Pap. Congr. XXII II* (Florence 1998) 1265–1280, at 1276–1277. The nature of the 'vegetable' oil (Greek *lachanospermon*, Demotic *smsm*) commonly attested in the Roman period is debated. See lastly S. Lippert and M. Schentuleit, "Papyrus Berlin P. 7056: Division of a *kleros* between Members of a Priestly Family from Roman Soknopaiou Nesos," in B. Bryan et al. (eds.), *One Who Loves Knowledge. Studies in Honor of Richard Jasnow* (Atlanta 2022) 235–261, at 241–242, who argue for an identification with radish.

The Ptolemaic ‘oil monopoly’ is laid out in great detail in mid-third-century B.C. *P.Rev.* (TM 8859).<sup>10</sup> The entire harvest of oil crops had to be sold to officials at fixed prices. Oil production was allowed only in state-owned workshops. There were some minor exceptions for temples, which traditionally played an important role in the Egyptian economy and retained their relevance to the ruler in the Ptolemaic period. The retail sale of oil, at fixed prices, was subject to exclusive local concessions. Import was severely restricted and subject to high tariffs. The revenues from these operations and related taxes were farmed out to a private contractor under the name of the *elaikē*, and this person also played a considerable role in the daily management of the ‘monopoly’. Despite the threat of severe sanctions, a considerable black market in oil is documented.

As has often been pointed out, the situation in the early Roman period was drastically different.<sup>11</sup> Many texts attest to the free cultivation and exchange of oil crops, especially olives. While private ownership of fields and olive yards does not necessarily mean that the harvest could be marketed, a series of leases clearly demonstrates that olives could be disposed of freely, with the earliest example going back to 9 B.C.<sup>12</sup> Moreover, a lease of sesame land probably from the reign of Augustus includes a rent paid in oil.<sup>13</sup> The only evidence for restrictions on oil crops consists of land leases prohibiting the cultivation of safflower, an interesting parallel to Ptolemaic-era leases excluding oil crops. However, under the Romans such clauses were usually aimed at plants used as dyestuffs, which were sub-

<sup>10</sup> Dogaer, *Industry, Trade and the State* ch. 1. For a concise discussion of the argument see N. Dogaer, “The Black Market in Oil in Ptolemaic Egypt,” *BASP* 58 (2021) 315–341, at 316–321.

<sup>11</sup> See the literature cited in n.3 above.

<sup>12</sup> For the Fayumic evidence see W. G. Claytor and M. G. Elmaghrabi, “New Editions of Two Rent Receipts from the Archive of Mikkalos,” *BASP* 55 (2018) 219–227, at 223.

<sup>13</sup> *O. Zürich* 44 (TM 50848).

ject to a special fiscal regime.<sup>14</sup>

In addition, the system of state oil workshops clearly had disappeared, and the oil itself could be traded freely. Private ownership and alienability of oil presses and factories is witnessed through their declaration, staffing, sale, inheritance, cession, division, mortgaging, and especially leasing.<sup>15</sup> One oil workshop is identified explicitly as ‘private’.<sup>16</sup> In addition, imperial estates, which in the first century A.D. were still the private property of the emperor or his confidants, also housed oil presses that were leased out.<sup>17</sup> Temples too rented out such workshops.<sup>18</sup> Retail sale of oil was rarely recorded in writing, but there are exceptions<sup>19</sup> that show that prices were not fixed by the state and varied considerably.<sup>20</sup> A real process of privatization had thus taken place.

However, it is misleading to contrast the third century B.C.

<sup>14</sup> D. Hagedorn, “Zum Anbauverbot von ἰσάτις, ὀχομένιον und κνήκος,” *ZPE* 17 (1975) 85–90. Additional papyri mentioning a safflower prohibition published in the meantime are *BGU* XV 2484 (TM 26494); *P.Coll.Youtie* I 27 (TM 10570); *P.Diog.* 26 (TM 10698); *P.Mil.Vogl.* VI 267 (TM 12432); *P.Soter* 3–4 (TM 13144–5); *SB* XIV 11718 (TM 14514), XVI 13006 (TM 14691), and 13007 (TM 14692); *ZPE* 220 (2021) 215 (TM 130570) and 218 (TM 969594). A specific charge on dyestuffs (*tny n nst*) is discussed in A. Winkler, “The Bilingual Archive of the Linen Weaver Petechonsis, son of Thoteus,” *AncSoc* 45 (2015) 97–123, at 109–111. In any case such measures did not impede large-scale safflower oil production, see e.g. *SB* XVI 12565 (TM 14618).

<sup>15</sup> Declaration: e.g. *P.Mich.* IX 539.10 (TM 12033). Staffing: e.g. *P.Fay.* 91 (TM 10934). Sale: e.g. *P.Vind.Tand.* 24.8 (TM 13684). Inheritance: e.g. *P.Münch.* III 80.10 and 13 (TM 12473). Cession: e.g. *P.Oslo* III 190.8 (TM 28923). Division: e.g. *P.Mich.* V 326.62 (TM 12137). Use as collateral: e.g. *P.Flor.* I 1.4 (TM 23525). Lease: many examples can be found in the list compiled by Johnson, *Roman Egypt* 364–366.

<sup>16</sup> *P.Mich.* IX 540.10 (TM 12034) *elaiourgion idiōtikou*.

<sup>17</sup> Y. Broux, *The Imperial Ousiai of Roman Egypt* (Leuven 2024) 62.

<sup>18</sup> See the Soknopaiou Nesos dossier discussed below, and *P.Erl.* 21.45 (TM 20939) and *SB* XVIII 13732 (TM 14756).

<sup>19</sup> E.g. *P.Laur.* IV 187 (TM 28768) or *P.Würzb.* II 39 (TM 989488).

<sup>20</sup> E.g. *SB* XII 11127 (TM 40821).

with the early Roman period without considering developments in the later Ptolemaic period. From the 110s B.C. onwards, we find clues that point to the abandonment of the strict ‘monopoly’ already under the later Ptolemies. At this time, oil seed could be purchased,<sup>21</sup> or loaned among private persons.<sup>22</sup> Significantly, one contract refers to the ‘price in the marketplace’ of castor.<sup>23</sup> In addition, oil production outside of state workshops is shown by the payment of taxes in oil,<sup>24</sup> the delivery of oil by a farmer to a merchant,<sup>25</sup> and expenses for oil-making in the account of another merchant.<sup>26</sup> Clearly, the oil industry underwent considerable liberalization in these decades. Unfortunately, the first centuries B.C. and A.D. are badly documented, and the measures replacing the ‘monopoly’ in the late Ptolemaic and early Roman period are wholly in the dark.

By the time fiscal evidence reappears, mainly in the second century A.D., certain localities in the Fayum were subject to exclusive retail concessions, despite the general liberalization of the industry. Three texts represent or include a bid for the retail trade (*kotylyzein* or *kotylysmōn*) of ‘all’ oil in a village or hamlet,<sup>27</sup> in one case explicitly to the exclusion of others.<sup>28</sup> All three are associated with a workshop, which in at least one case was leased out by the state itself, since the *fiscus* paid for repairs.<sup>29</sup> A fourth

<sup>21</sup> *O.Templeide* 78 (TM 50490); *P.Tebt.* I 120.47–48 (TM 3756); unpublished *P.Tebt.* UC Berkeley inv. 1731 (TM 988394) and 2489 (TM 996526), discussed in B. Muhs, “A Late Ptolemaic *grapheion* Archive in Berkeley,” in *Pap. Congr. XXV* (Ann Arbor 2010) 581–588.

<sup>22</sup> O.BM EA 10501 (TM 316); *JJP* 44 (2014) 101–107 no. 1 (TM 43045); *P.Adl.* 6 (TM 5); *P.Bru.* E 8442 (TM 65).

<sup>23</sup> *P.Adl.* 6.15–17 (TM 5) *tēn esomenēn en tēi agorai timēn*.

<sup>24</sup> O.Turin 12887 (TM 92478) and *O.Wāngstedt* 42 (TM 43508).

<sup>25</sup> *P.Vatican.Gr.* 22 (TM 3525).

<sup>26</sup> *PSI Congr. XVII* 22.33 (TM 41819).

<sup>27</sup> *P.Amh.* II 92 (TM 10116) and *P.Stras.* IV 269 (TM 13230).

<sup>28</sup> *SPP XXII* 177 (TM 15092).

<sup>29</sup> *SPP XXII* 177 (TM 15092).

proposal concerns the *elaikē* which probably refers to the local retail trade here, given the fact that its scope was a single hamlet.<sup>30</sup> Reiter has reconciled these exclusive rights with the evidence for private activities by positing a dual system: smaller localities were subject to concessions, oil sellers in larger villages and cities were taxed.<sup>31</sup>

This is undoubtedly accurate, but we can perhaps push the evidence a bit further.<sup>32</sup> Three of the four documents mentioned above concern the village of Herakleia or one of its hamlets, and the fourth an otherwise unknown hamlet with close connections to Soknopaiou Nesos, like Herakleia. The area around the village was a significant site of oil production,<sup>33</sup> and in the first century had been home to oil presses belonging to imperial estates.<sup>34</sup> These estates were brought under state administration by Hadrian,<sup>35</sup> and all our oil concessions postdate this reform, so one wonders whether at least some of them can be linked to prior imperial workshops or even entire hamlets under imperial control.<sup>36</sup> There would thus not necessarily have been a direct

<sup>30</sup> *P.Louvre* II 113 (TM 88780). The *elaikē* in the Roman period is discussed below. F. Reiter, *Die Nomarchen des Arsinoites: Ein Beitrag zum Steuerwesen im römischen Ägypten* (Cologne 2004) 176–177, suggests that *P.Fay.* 64 (TM 28608) could be related to concessions as well. In his commentary to *P.Louvre* II 113, he moreover suggests adding *SB XXII* 15789 (TM 41713) to the dossier.

<sup>31</sup> Reiter, *Nomarchen* 180.

<sup>32</sup> Reiter's point is supported by the non-payment of the sales tax by the lessee of *SPP XXII* 177 (TM 15092).

<sup>33</sup> The temple of Soknopaiou Nesos discussed below also owned an oil press in Pisais, a hamlet near Herakleia: *P.Dime* II 67.6 (TM 100275).

<sup>34</sup> *P.Lond.* II 280 (TM 11665), unidentified *epoikion* near the village; *W.Chr.* 176 (TM 15152), former estate of Narcissus, which according to *P.Ryl.* II 171 (TM 12953) included land near the village.

<sup>35</sup> Broux, *Imperial Ousiai* 131.

<sup>36</sup> See also the commentary to *P.Amh.* II 92 (TM 10116). *BGU XV* 2554 (TM 9816) may also deal with a formerly imperial oil press. Moreover, *P.Ryl.* II 215.1–3 (TM 27896) records the payment of *elaikē* to the *ousiakos logos* associated with former imperial estates.

connection to earlier Ptolemaic practice.

Private oil presses are known for Herakleia as well, and one of the retail concessions may point to a different dynamic. The lessee of *P.Stras.* IV 269 (TM 13230) refers to the oil press of Tauetis, identified by the editor as the lessee's wife and fellow owner of several oil workshops. These two may have attempted to corner the market and have this officialized through an *ad hoc* concession. In any case, the oil concessions are part of a larger corpus of bids of a diverse nature that needs to be investigated on a case-by-case basis.<sup>37</sup>

The main way of Roman state intervention in the production and sale of oil was through taxation. The best-known tax was levied on oil presses; the charge is attested in various regions of Egypt as *telos thuiōn* (Fayum), *paragraphē elaiourgiou* (Fayum), *telesma elaiourgion* (Fayum), and *telesma* or *telos organōn* (Mendesios and perhaps Oxyrhynchites).<sup>38</sup> In Demotic it was known as the *ḥtr pꜣ mꜣ<sup>c</sup>-īr-nḥḥ* (Fayum).<sup>39</sup> The tax appears to have been a property tax, since the owner rather than the lessee was liable in *P.Amh.* II 93 (TM 10117). The temple of Soknopaiou Nesos nevertheless recouped the sum from its lessees (see below). A combination of a tax on capital with a tax on its exploitation is also known for Ptolemaic bathhouses and dovecotes, and at least for the latter this continued into the Roman period.<sup>40</sup>

A craft tax for Roman-era oil workers is hinted at in *P.Phil.*

<sup>37</sup> G. M. Browne, "Kreopolike kai Tarichera (P. Mich. Inv. 178)," in *Pap. Congr. XII* (Toronto 1970) 63–68, updated by Benaïssa, *ZPE* 200 (2016) 379.

<sup>38</sup> Reiter, *Nomarchen* 173–174. Two additional texts have been published in the meantime: *P.Bastianini* 21 (TM 702988) and *P.Sijp.* 20 (TM 110154). Add also *P.Ryl.* II 213.444 (TM 27894), *P.Stras.* IV 299r.4 (TM 26986), and *PSI* III 232.21 (TM 20044) with diverse formulations.

<sup>39</sup> *P.Dime* II 66.7 and 67.6 (TM 100274–5).

<sup>40</sup> Dovecotes: K. Vandorpe and L. Vanoppré, "Private and Commercial Pigeon Breeding Taxed: Ptolemaic Levies on Pigeon Houses and their Revenues," *AncSoc* 50 (2020) 41–64, at 54. Baths: B. Redon, "Statut, revenus et fiscalité des édifices de bain en Égypte. 1. Époque ptolémaïque," *BIFAO* 111 (2011) 301–321.

1.26–34 (TM 12713), where they are included in a list of artisans exempt from liturgies associated with the *cheirōnaxion*. This term is derived from *cheirōnax*, ‘one who is master of his hands’, and the craft tax was accordingly levied from anyone engaging in artisanal or commercial activities. In the Roman period it was levied at fixed rates per head on all trades but subject to variation according to occupation and locality.<sup>41</sup> It is sometimes explicitly referred to as the *cheirōnaxion*, but in other cases the name of the trade is used as a specification. In addition to oil workers, oil sellers too were subject to a fixed-rate tax.<sup>42</sup> In the late-first-century *Peri Thebas*, general dealers who sold oil paid a higher craft tax than their colleagues, probably a leftover of the commodity’s one-time special status.<sup>43</sup> Those trading in oil also had to take customs into account.<sup>44</sup> Finally, oil-related contributions for visits of the emperor and high officials and for the military can be seen as a form of taxation as well.<sup>45</sup>

Temples played an important role in the taxation of the oil industry, reflecting the fact that at least some of them retained their privileged position and influence under the Romans. In the western oases,<sup>46</sup> temples benefited from an oil tax from the

<sup>41</sup> The Ptolemaic *cheirōnaxion* was paid at very low rates, apparently in addition to specific professional taxes farmed out separately. See especially SB X 10447 (TM 5804).

<sup>42</sup> Reiter, *Nomarchen* 178–180, to which is to be added the *kotylistmou telesma* of SPPXXII 177.23–24 (TM 15092) and perhaps the *hermēneia* of *P.Monts.Roca* IV 71 (TM 219246). See also the payments by oil sellers to the temple of Soknopaiou Nesos discussed below.

<sup>43</sup> SB XVIII 13315.8–9 (TM 18277).

<sup>44</sup> P. J. Sijpesteijn, *Customs Duties in Graeco-Roman Egypt* (Zutphen 1987) 61.

<sup>45</sup> *P.Hamb.* IV 260.6–8 (TM 41542); *P.Petaus* 45.10–12 (TM 8858) and 46.17–19 (TM 8817); *PSI* VI 683.32 (TM 13784); *SB* VI 9617.20 (TM 19134). This perhaps explains receipts for oil (*hyper elaiou*) or its price (*hyper timēs elaiou*) as well, for which see e.g. *SB* XX 15025 (TM 23848) or *O.Wilck.* 659 (TM 77169).

<sup>46</sup> D. Agut-Labordère, ‘What Remains in the Hands of the Gods: Taxation

Persian period into the reign of Augustus. Later in the first century A.D. and through the second, the temple of Soknopaiou Nesos owned and leased out several oil presses in the Fayum. A priestly agreement details the administration of at least part of them: oil producers, both priests and private persons, had to contribute quantities of oil in kind, partly destined for the cult of Soknopaios, while oil sellers had to pay a kind of proportional sales tax in cash.<sup>47</sup> *SB* I 5233 (TM 13981) also records a levy for the burning of the lamp payable by a priest of the temple on account of his ownership of an oil press.<sup>48</sup> The temple paid the tax on oil presses to the state,<sup>49</sup> and recouped the amount from the lessees either as part of the aforementioned revenues or separately.<sup>50</sup>

Finally, the term for the Ptolemaic ‘oil monopoly’ contract (*elaiikē*) is still found in about a dozen papyri from the Roman period. As indicated above, in some contexts it could denote local retail concessions.<sup>51</sup> However, the term also occurs in tax documents,<sup>52</sup> and it was used in private lease and debt con-

in Kharga Oasis through the Demotic Ostraca (Fifth Century BC to First Century AD),” in R. S. Bagnall et al. (eds.), *The Great Oasis of Egypt: The Kharga and Dakhla Oases in Antiquity* (Cambridge 2019) 122–132.

<sup>47</sup> P.Vienna D 4854+4855+4856+4857+4861+4864+4866+4867+6011+6110 (TM 112501), to be published in *P.Dime* IV and described in S. Lippert and M. Schentuleit, “Agreements and Accounts. On-going Research on Economic Activities of the Temple of Soknopaiou Nesos according to the Demotic Texts,” in A. Jördens et al. (eds.), *Accounts and Bookkeeping in the Ancient World* (Wiesbaden 2020) 141–157, at 155–156.

<sup>48</sup> *SB* XVIII 13732 (TM 14756) evokes a comparable situation for the temple of Narmouthis.

<sup>49</sup> *P. Louvre* I 4.11 (TM 11853) and *SPP* XXII 183.19 (TM 15096).

<sup>50</sup> *P.Dime* II 66.7 and 67.6 (TM 100274–5).

<sup>51</sup> *P.Louvre* II 113 (TM 88780); perhaps also *P.Fay.* 64 (TM 28608) and *P.Stras.* IV 269 (TM 13230).

<sup>52</sup> *BGU* III 753 v.6 (TM 31231) and VII 1618.18 (TM 27589); *P.Mich.* IX 544 (TM 12037); *P.Ryl.* II 213.30, 59, 63, 74, 111, 132, 201, 281, 353, 413,

texts.<sup>53</sup> It is thus best understood as an imprecise term referring to oil-related revenues. In fact, this is true for the Ptolemaic period as well, when *elaikē* was occasionally used for specific tax payments. It is perhaps not insignificant that it was distinguished from the tax on oil presses in several tax accounts,<sup>54</sup> and that the only late Ptolemaic attestation is among taxes on trades,<sup>55</sup> but there is no firm evidence that *elaikē* primarily refers to the craft tax in the Roman period.

## 2. *Continuity and change in state relations with weavers*

Contrary to scholarly insistence on some form of a ‘state monopoly’ under the Ptolemies, the basic organization of textile production and sale was similar across the Graeco-Roman period.<sup>56</sup> Artisans worked mostly in modest privately-owned workshops, relying on family, as well as hired and slave labor, the latter attested more often in the Roman period. Temples too were involved in the production of textiles. Weavers produced finished articles directly for customers or marketed their products through traders, whose role in coordinating production is debated. In both periods, raw materials were traded freely. They consisted principally of wool and various forms of linen (including inferior tow and superior *byssos*), with cotton gaining significance in the later Roman oases. The industry was highly specialized (with some geographical differences and chronological shifts) and involved various artisans.

What has been conceived of as a Ptolemaic ‘state monopoly’ was in fact a system of quotas to which the otherwise free

479 (TM 27894) and 215.1–3 (TM 27896); *P.Stras.* X 902 xxviii.15–18 (TM 341724); *P.Tebt.* II 539 (TM 13604); *PSI* I 106.14 (TM 27894).

<sup>53</sup> *P.Mich.* II 123r xi.11 (TM 11967) and *PSI* VI 715 (TM 18967).

<sup>54</sup> *P.Ryl.* II 213 (TM 27894) and *PSI* I 106 (TM 28127).

<sup>55</sup> *BGU* XIV 2370.65 (TM 3990).

<sup>56</sup> For an extensive discussion of and literature on the Ptolemaic textile industry see Dogaer, *Industry, Trade and the State* ch. 2. For the Roman period see K. Drob-Krüpe, *Wolle – Weber – Wirtschaft: Die Textilproduktion der römischen Kaiserzeit im Spiegel der papyrologischen Überlieferung* (Wiesbaden 2011).

weavers were subject. In addition, the Ptolemies levied a variety of taxes in cash on production and sale. To combat tax evasion, they did introduce restrictive measures on capital goods. The Romans likewise required a substantial number of textiles, and operated a system of compulsory purchases that shared important structural similarities to the Ptolemaic quotas. Like their predecessors, they taxed producers and sellers, but rates became fixed per head. As in the oil industry, the Romans may also have taxed capital goods (through the so-called *histōnarchēs*). They in any case lifted Ptolemaic restrictions on the alienation of workshops and looms, which I will argue may have had significant effects on credit supply.

The Ptolemaic system of quotas of ‘royal’ textiles to be contributed monthly to the state applied to every weaver, including those working for temples.<sup>57</sup> Obligations were imposed on a geographical basis, and further divided proportionally over the weavers. These artisans were not state employees, and the quota represented only part of their production volume. Nevertheless, the state furnished them with raw materials for their contributions, and the royal bank paid a fixed sum for them. Conversely, weavers who failed to deliver textiles had to pay their value as a cash penalty. Every level of the bureaucracy was involved, and compliance with the specific orders was checked closely. The management and related revenues were contracted out to private entrepreneurs, who sometimes used further intermediaries. The contract for linen (*othoniēra*) is best documented, but parallel contracts existed for wool, tow, *byssos*, and probably carpets.

This system combined elements of taxation, *corvée*, and compulsory purchase. It afforded the state an important role in the textile market, as arguably the largest buyer in the country. However, the textiles were not resold through retail concessions,

<sup>57</sup> Dogaer, *Industry, Trade and the State* ch. 2. For a concise discussion of the argument see N. Dogaer, “Spun and Fleeced? Spinning, the Wool Tax, and Gendered Labour in the Ptolemaic Textile Industry,” *ArchPF* 69 (2023) 353–370, at 366–367.

but put directly to practical use (e.g. clothing soldiers) or exported. In contrast to oil, the state did not try to suppress the market. Rather, the stable demand offered by the state orders, in combination with increased monetization and state enforcement of agreements, contributed to the development of the market. In addition to this system, a variety of taxes were levied on crafts, sales, products, transport, import, and export, and were guaranteed by tax farmers. The most invasive Ptolemaic measures targeted capital goods: while privately owned, looms were sealed and locked up when inactive, and they could not be alienated to non-weavers.

### 2.1 *Production of textiles for the Roman state*

The Roman state also turned to Egypt's weavers to meet its textile needs.<sup>58</sup> The term most often associated with this practice is 'public' clothing (*dēmosios himatismos*), reflecting the earlier 'royal' wool and linen. The evidence mainly concerns textiles destined for the army, but orders for gladiators and prisoners show that it was not solely a matter of military supply.<sup>59</sup> While there were significant differences, the contrast between the

<sup>58</sup> E. Wipszycka, "Das Textilhandwerk und der Staat in römischen Ägypten," *ArchPF* 18 (1966) 1–22, at 4–14; J. A. Sheridan, *Columbia Papyri IX The Vestis Militaris Codex* (Atlanta 1998) 81–86; A. Jördens, *Statthalterliche Verwaltung in der römischen Kaiserzeit. Studien zum praefectus Aegypti* (Stuttgart 2009) 215–219, 232–238; K. Droß-Krüpe, "Stoff und Staat – Überlegungen zur Interaktion von Textilökonomie und römischer Staatlichkeit im 1.–3. Jh. n.Chr.," in S. Günther (ed.), *Ordnungsrahmen antiker Ökonomie: Ordnungskonzepte und Steuerungsmechanismen antiker Wirtschaftssysteme im Vergleich* (Wiesbaden 2012) 215–226; M. Gibbs and C. M. Sampson, "A First-Century Receipt from the Receivers of Public Clothing in Tebtunis (P.Tebt.UC 1607C)," *BASP* 56 (2019) 65–78.

<sup>59</sup> Prisoners: *P.Graux* III 30 vii (TM 11312). Gladiators: *P.Lips.* I 57 (TM 22366). Based on the involvement of the *iridicus* and/or the nature of the textile, a *periskelis* (legband or loincloth), *P.Princ.* II 27 (TM 17354), *P.Eirene* IV 32 (TM 704223), and unpublished P.CtYBR inv. 1590 may also have concerned gladiators. See also *P.Bingen* 110 (TM 44513) for the manufacture of ropes for use in the quarries.

Roman compulsory purchases and the Ptolemaic system has been exaggerated.<sup>60</sup> At a structural level, both regimes sent highly specific orders from the central to the local level, which were enacted through a series of intermediaries, and they paid weavers for their efforts. Both systems were characterized by a similar dynamic whereby substantial state orders provided stability to weavers, offsetting part of the risk of market production.<sup>61</sup>

Evidence for the transitional period in the first centuries B.C. to A.D. is scarce.<sup>62</sup> Moreover, some changes can be observed throughout the Roman period, with a greater responsibility for the municipal authorities and local levies to cover costs in the third century.<sup>63</sup> In the reigns of Aurelian and Diocletian, the whole system was reformed into the *anabolikon* for linen and the *vestis militaris* for wool, ultimately evolving into a tax based on landholding.<sup>64</sup> But for the late first, second, and much of the third century, a more or less coherent picture can be reconstructed.

In contrast to the regular system of the Ptolemies, the Roman sources give the impression of orders sent from Alexandria whenever textiles were required, by the prefect for military

<sup>60</sup> E.g. by Gibbs and Sampson, *BASP* 56 (2019) 72. For the Ptolemaic parallels cited in the following passages see Dogaer, *Industry, Trade and the State* section 2.4.3.

<sup>61</sup> For the Roman period see the comments of Jördens, *Statthalterliche Verwaltung* 241.

<sup>62</sup> *BGU* VII 1615 (TM 9520) of 84 A.D. is the first certain testimony. However, the oaths in the *grapheion* register discussed in n.79 could push the evidence back to the 40s A.D.

<sup>63</sup> Municipal responsibility: *P.Lips.* I 57 (TM 22366). Local payments: *SB* VI 9406.289 and 302 (TM 14166), XXIV 15968 ii (TM 23257); perhaps *O.Kellis* 38 (TM 74562) and 39 (TM 74563). Earlier, soldiers themselves were at least partially responsible for the payment, see the pay deductions in *Ch.L.A.* I 7a and b (TM 69867).

<sup>64</sup> On the *anabolikon* see J. A. Sheridan, "The *Anabolikon*," *ΖΡΕ* 124 (1999) 211–217; on the *vestis militaris*, Sheridan, *Columbia Papyri* IX 87–105.

supply,<sup>65</sup> by the *iridicus* for gladiators,<sup>66</sup> and by a *procurator usiacus*, perhaps on behalf of the *dioiketēs*, for prisoners.<sup>67</sup> Nevertheless, some texts refer to commitments of a certain year,<sup>68</sup> and others show a succession of commissions,<sup>69</sup> suggesting some regularity. As earlier, central demands were highly specific and included the measurements, weight, and color of the articles.<sup>70</sup> They were transmitted to the *strategos*, who coordinated the collection of textiles on the nome level.<sup>71</sup> *P.Graux* III 30 vii (TM 11312) clearly shows the imposition of a fixed amount on the *meris*, a subdivision of the Arsinoite nome, while weavers at the village and city level often appear to have been responsible collectively.<sup>72</sup> It is not clear to what extent the authorities contracted with specific groups of weavers, or whether every individual weaver was compelled to contribute, as in the Ptolemaic period.<sup>73</sup> In practice, however, *BGU* VII 1572 (TM 9480) suggests that the participation of all weavers of a locality or at least

<sup>65</sup> *BGU* VII 1564.4 (TM 9473); *P.Oxy.* XIX 2230.4 (TM 22180), XXXVI 2760.5 (TM 16551).

<sup>66</sup> *P.Lips.* I 57.22–24 (TM 22366) and *P.Princ.* II 27r (TM 17354).

<sup>67</sup> *P.Graux* III 30 vii.15 (TM 11312).

<sup>68</sup> *ChrÉg* 85 (2010) 244–246 no. 2.9–10 (TM 140712); *P.Lips.* I 57.10–13 (TM 22366); *SB* XXIV 15968.10 (TM 23257). See also the description ‘customarily’ for shipments in *P.Princ.* II 27.2 (TM 17354) and prices in *P.Graux* III 30 vii.18 (TM 11312).

<sup>69</sup> *BGU* VII 1572 (TM 9480) = *P.Phil.* 10 (TM 12714) and *P.Graux* III 30 vii (TM 11312).

<sup>70</sup> *BGU* VII 1564 (TM 9473); *P.Eirene* IV 32 (TM 704223).

<sup>71</sup> *BGU* VII 1572 (TM 9480); *P.Giss.* I 69 (TM 19458); *P.Graux* III 30 vii (TM 11312); *P.Princ.* II 27 (TM 17354); *P.Oxy.* XIX 2230 (TM 22180), XXXVI 2760.8 (TM 16551).

<sup>72</sup> *BGU* VII 1564 (TM 9473) and 1572 (TM 9480); *ChrÉg* 85 (2010) 244–246 no. 2.9–10 (TM 140712); *P.Lips.* I 57 (TM 22366); *P.Oxy.* LXIV 4434 (TM 23658); *P.Princ.* II 27 (TM 17354); *P.Ryl.* II 189 (TM 12963); *SB* XX 14288 (TM 23708).

<sup>73</sup> Unpublished P.CtYBR inv. 1590 is the only receipt for a single piece contributed by a single individual.

an association was required for a smooth processing of the orders. We should moreover keep in mind that weavers under the Ptolemies could ignore state demands and instead pay in cash.

Weavers were paid for their work and may have been eager to participate, as indicated above. The orders usually involved a partial pre-payment,<sup>74</sup> probably in part to procure raw materials, which were no longer furnished by the state.<sup>75</sup> As earlier, the state does appear to have set the amounts paid.<sup>76</sup> Payment often involved the public bank, and payment orders bear striking resemblances to those directing Ptolemaic royal bankers to pay weavers.<sup>77</sup> Weavers received the full amount only after a verification of the goods (*syntimēsis*) upon delivery (*paradosis* or *paralēmpsis*), attested both for the local level and after transport to Alexandria.<sup>78</sup> Both the weavers and the intermediaries for the state swore oaths to take part in this procedure.<sup>79</sup> As in the Ptolemaic period, inferior products had to be compensated for, and

<sup>74</sup> *BGU* VII 1564.4 (TM 9473) and 1572.3–4 (TM 9480); *P.Eirene* IV 32.3–4 (TM 704223); *P.Graux* III 30 vii.17 (TM 11312). In *P.Oxy.* XIX 2230 (TM 22180) merchants receive a pre-payment, but they no doubt passed it on to weavers.

<sup>75</sup> Only *BGU* VII 1564.10 (TM 9473) refers to raw materials, specifying that the weavers should use high quality wool.

<sup>76</sup> *P.Graux* III 30 vii.18 (TM 11312).

<sup>77</sup> In particular *BGU* VII 1564 (TM 9473) and probably also *P.Eirene* IV 32 (TM 704223). In *P.Graux* III 30 vii (TM 11312) bankers pay merchants acting as intermediaries.

<sup>78</sup> *P.Oxy.* XIX 2230 (TM 22180), XXXVI 2760 (TM 16551); *P.Princ.* II 27v (TM 17354); *SB* XX 14288 (TM 23708).

<sup>79</sup> *P.Lips.* I 57 (TM 22366); *P.Princ.* II 27v (TM 17354); *SB* XX 14288 (TM 23708). *P.Mich.* II 123r iii.41, vi.25, xxi.31 (TM 11967) and 124 ii.15, ii.19 (TM 11969) are entries for written statements by oath (*cheirographiai*) by associations of weavers and wool sellers in the *grapheion* registers of Tebtynis. Given the fact that the weavers of *SB* XX 14288 (TM 23708) and the merchants of *P.Graux* III 30 vii.12–13 (TM 11312) were selected by their wider occupational groups to participate, it is tempting to link the *grapheion* entries to the compulsory purchases rather than to concessions, as Langellotti, *Village Life* 204–205, does.

the full value of missing pieces had to be paid, but the Ptolemaic weavers had not received a partial prepayment.<sup>80</sup>

The Ptolemaic fiscal contractors disappeared from the organization of state orders, but the Roman government too used various intermediaries. In line with broader institutional developments, liturgists called *paralēmtai* became responsible for collecting the textiles, and possibly for transporting them to Alexandria, if applicable.<sup>81</sup> In contrast to the earlier contractors, their employment was not voluntary. Their charges moreover do not seem to have been on the level of the nome and could be very specific.<sup>82</sup> Another change was the direct involvement of soldiers in the collection of textiles for the army, which strengthens the impression of an overall more *ad hoc* organization.<sup>83</sup> In *P.Oxy.* LXIV 4434 (TM 17354), moreover, some of the bureaucratic steps outlined above seem to have been bypassed. In addition, two ostraca from Elephantine and Syene may attest to a local arrangement for supplying the garrison.<sup>84</sup>

Other intermediaries show greater continuity with the Ptolemaic period and re-use of existing networks. In both periods, the state relied partly on textile merchants, a testament to the

<sup>80</sup> *BGU* VII 1564.11–13 (TM 9473).

<sup>81</sup> *BASP* 56 (2019) 65–78 (TM 832288); *ChrÉg* 85 (2010) 244–246 no. 2 (TM 140712); unpublished P.CtYBR inv. 1590; *P.Ryl.* II 189 (TM 12963); probably also the people involved in *P.Giss.* I 69 (TM 19458) and *P.Oxy.* XXXVI 2760 (TM 16551), and perhaps the swearers of *P.Princ.* II 27 (TM 17354). See also *P.Lips.* I 57 (TM 22366) for the ‘successors’ of the *paralēmtai* appointed by the scribes of the city in the later third century.

<sup>82</sup> *P.Ryl.* II 189 (TM 12963), with C.-L. Raschel, “Egyptian *monochitones* for the Roman Fleet? A New Reading of *P.Ryl.* II 189,” *Aegyptus* 104 (2024) 79–86.

<sup>83</sup> *BASP* 56 (2019) 65–78 (TM 832288); *P.Oxy.* XIX 2230 (TM 22180), LXIV 4434 (TM 23658); *SB* I 4355 (TM 23113). Perhaps also *Pylon* 3.1 (2023) (TM 987022).

<sup>84</sup> *SB* I 4355 (TM 23113), in the online edition of R. Duttonhöfer (elephantine.smb.museum/objects/object.php?o=310080), and *O.Cair.* 69 (TM 73415).

performance of textile markets.<sup>85</sup> The various middlemen appear to have had overlapping responsibilities, and in the present state of the evidence it is not possible to ascertain how this functioned. A logical assumption would be that merchants were engaged in urban environments, but we also find them in the countryside.<sup>86</sup> This situation occasionally leads to complicated dealings: *P.Oxy.* XIX 2230 (TM 22180) concerns a reimbursement by the *strategos* of a soldier who had paid merchants, who in turn would have paid weavers.

A final kind of intermediary that merits particular attention is the professional association. The significance of associations is usually seen as a phenomenon of the Roman period in particular, potentially marking a change from the Ptolemaic administration. However, recent scholarship has stressed their important role in the Ptolemaic period,<sup>87</sup> including in the textile industry.<sup>88</sup> As for the compulsory purchases, there is some debate about their involvement as intermediaries.<sup>89</sup> This issue is related to the organization of the industry more broadly, particularly the question whether associations attempted to obtain local monopolies, either privately or state-sanctioned.<sup>90</sup> It is worth stressing here that they may have acted as intermediaries

<sup>85</sup> *BGU* VII 1564 (TM 9473); *P.Graux* III 30 vii (TM 11312); *P.Oxy.* XIX 2230 (TM 22180). For the Ptolemaic period see the *s-n-ḫw* of the Phanesis archive discussed in B. Muhs, A. Grünewald, and G. van den Berg-Onstwedder, “The Papyri of Phanesis Son of Nechthuris, Oil-merchant of Tebtunis, and the Ptolemaic Cloth Monopoly,” *Enchoria* 28 (2002/3) 62–81.

<sup>86</sup> *BGU* VII 1564 (TM 9473).

<sup>87</sup> D. J. Thompson, “The Ptolemaic *Ethnos*,” in V. Gabrielsen et al. (eds.), *Private Associations and the Public Sphere* (Copenhagen 2015) 301–313.

<sup>88</sup> Dogaer, *Industry, Trade and the State* section 2.3.5.

<sup>89</sup> E.g. P. Venticinque, *Honor among Thieves: Craftsmen, Merchants, and Associations in Roman and Late Roman Egypt* (Ann Arbor 2016) 71–73, versus Gibbs and Sampson, *BASP* 56 (2019) 72.

<sup>90</sup> E.g. W. Broekaert, “Occupational Associations and Monopolies in the Roman Economy,” *RBPhil* 97 (2019) 5–41, at 17–18.

for the Ptolemaic compulsory quotas already,<sup>91</sup> and that there is evidence for attempts at local monopolies by late Ptolemaic associations of weavers.<sup>92</sup>

In view of the preceding discussion, it may not have been a coincidence that textiles produced for the army were often destined for legions outside of Egypt.<sup>93</sup> Rather than vaguely reflecting Egypt's fame in textile manufacture, its prominence as a textile hub may have been the result of the pre-existing institutional framework. The Romans could profitably use the tradition of and infrastructure for large-scale state contributions destined in part for export, including transport to Alexandria.

## 2.2 *Taxation of weavers*

The second main area of Roman state involvement with weavers was that of taxation. In this regard, the dossier of the *histōnarchēs*, unknown before the Roman era, has been linked with exclusive concessions. The nature of the charge has been interpreted in various ways, but the most recent treatment suggests that the *histōnarchēs* obtained the concession to assign licenses to weavers.<sup>94</sup> The bid *P.Ryl.* II 98 (TM 13010) shows that it indeed represented an exclusive contract of some kind.<sup>95</sup> In a small group of Theban ostraca, the *histōnarchēs* moreover grants permissions featuring the word *anaballō* (to 'strike up'), representing no doubt an authorization to carry out professional

<sup>91</sup> Dogaer, *Industry, Trade and the State* section 2.3.5.

<sup>92</sup> See especially *O.Medin.HabuDem.* 159 (TM 50054). Cf. also *P.Rain.Cent.* 51 (TM 8605) for the linen boilers.

<sup>93</sup> *BGU* VII 1564 (TM 9473), Cappadocia; *P.Oxy.* LXIV 4434 (TM 23658), Arabia; *P.Ryl.* II 189 (TM 12963), Judaea.

<sup>94</sup> K. Droß-Krüpe, "How (Not) to Organise Roman Textile Production. Some Considerations on Merchant-Entrepreneurs in Roman Egypt and the ἱστονάρχης," in M. Mossakowska-Gaubert (ed.), *Egyptian Textiles and their Production: 'Word' and 'Object'* (Lincoln 2020) 128–138, at 134–136; earlier literature is cited there.

<sup>95</sup> As opposed to the non-technical meaning of *histōnarchēs* as head of a workshop, e.g. in *P.Giss.* I 12 (TM 19414).

activities.<sup>96</sup> However, a payment related to the *histōnarchēs* is clearly distinguished from the weaving tax (*gerdiakon*) in an account.<sup>97</sup> Given the title of the position, one wonders whether he could have been the farmer of a tax on looms similar to the tax on oil presses discussed above.<sup>98</sup> *Histos* is the word for loom, while *-archēs* is used in the titles of some tax contractors (most notably the *arabarchēs* and the *nomarchēs*). Moreover, in *O.Wilb.* 75 (TM 76582) the object of *anaballō* is *ta erga* (the tools) and several hints of the existence of such a tax can be found.<sup>99</sup>

In addition, weavers were subject to craft taxes in both the Ptolemaic and the Roman period, but the modalities changed. The Ptolemaic weaving tax is poorly documented,<sup>100</sup> but the evidence suggests a calculation based on estimations of output.<sup>101</sup> As discussed above, Roman-era craft taxes were levied at fixed rates per head, which varied according to the trade and the locality. Wool and linen weavers were taxed separately, reflecting both the earlier fiscal contracts per material and the later *anabolikon* and *vestis militaris* discussed above. The tax on *gerdioi* is attested most extensively, under slightly varying names, all across Egypt.<sup>102</sup> Usually translated as a general ‘weaving tax’, it

<sup>96</sup> *O.Bodl.* II 1988–1990 (TM 72664–6); *O.Wilb.* 75 (TM 76582); *O.Wilck.* 1154–1156 (TM 77557–9). Perceived ‘prohibitions’ must be awkwardly phrased permissions, for it would make no sense to write them down on a receipt.

<sup>97</sup> *BGU* III 753 iv.4–5 (TM 31231).

<sup>98</sup> Wallace, *Taxation* 199, also presumes a link with looms.

<sup>99</sup> *I.Thèbes Syène* 191.12 (TM 88570) and the payment *hyper histou* of *O.Bodl.* II 1010 (TM 71698). A possible objection could be that monthly payments as witnessed by *SB XVI* 16365 (TM 97325) are unexpected for a property tax.

<sup>100</sup> The *telos tou (hy)phantikou* of *O.Bodl.* I 127 (TM 43694) nevertheless demonstrates its existence in unambiguous terms.

<sup>101</sup> *P.Count* 2 xi (TM 44106).

<sup>102</sup> Reiter, *Nomarchen* 111–144. In the meantime the following texts have been published: *ArchPF* 56 (2010) 270 no. 12 (TM 133439); *ArchPF* 61 (2015) 324–325 no. 1 (TM 641986); *ChrÉg* 85 (2010) 247 no. 3 (TM 140713); *O.Heid.*

may have been levied specifically on wool weavers, since a parallel linen weaving tax can be identified in several key locations.

In Thebes, Edfu, and Elephantine a tax was levied on the *linouphoi*, in some cases referred to explicitly as the *cheirōnaxion*.<sup>103</sup> In the Demotic receipts from Upper Egypt we find a similar duality between a *tny (n) (n3) sht.(w)*<sup>104</sup> and a *tny mdqn*,<sup>105</sup> both referring to weavers. The payer of one receipt for *tny n n3 sht.w* can be identified with a payer of the *telos linouphōn*,<sup>106</sup> while the explicitly attested monthly rate of the *tny mdqn* (2 dr.) corresponds to Reiter's reconstruction of the rate of the tax on *gerdioi* in Thebes.<sup>107</sup> The former was thus levied on linen weavers, whereas the latter was collected from wool weavers.<sup>108</sup>

Like the tax on oil presses discussed above, the tax on linen weavers had a different name in the Mendesios and the Oxyrhynchites. In these regions, the *othoniēra*, the old name of the

252 (TM 80470, the first receipt from Edfu) and perhaps 223 (TM 80442); *P.Cair.Reggiani* 13/1 (TM 998094) and 13/2 (TM 27586); *P.Oxy.* LXXIII 4953 (TM 118644); *P.Sijp.* 38r (TM 110191); *PSI* XVI 1621 (TM 316261, fleshing out the image of Hermopolis); *ZPE* 200 (2016) 411 no. 1 (TM 702616, with a differing rate for Soknopaiou Nesos).

<sup>103</sup> *O.Amst.* 37 and 38 (TM 70384–5); *O.Bodl.* II 1011 (TM 71699) and 1015 (TM 50391); *O.Cairo Gize* 4 (TM 52196) and 26 (TM 52195); *O.Heid.* 159 (TM 80382); *O.Leid.* 65 (TM 24637) and 179 (TM 24735); *O.Strasb.* I 280 (TM 75876); *P.Bingen* 85 (TM 78053) and 87 (TM 78055); *SB* IV 7274 (TM 18032).

<sup>104</sup> *DO* Vienna 175 (TM 51752); *O.Ashm.Eg.Inscr.* 57 (TM 987448); *O.Cairo JdE* 50453 (TM 397617); *O.Cairo Gize* 4 (TM 52196) and 26 (TM 52195); *O.Mattha* 19.7 (TM 49685) and 182–184 (TM 49839–41); *O.Medin.HabuDem.* 54–56 (TM 49949–51); *O.Theb.Dem.* 216 (TM 50643); *O.Zürich* 8 (TM 50812).

<sup>105</sup> *O.BM EA* 21493 (TM 51699). In Dendera *krtv zge* may have been used, as a transliteration of *gerdiakon*, see *O.Ashm.Eg.Inscr.* 166 (TM 56335).

<sup>106</sup> Winkler, *Anc.Soc* 45 (2015) 97.

<sup>107</sup> Reiter, *Nomarchen* 132–138.

<sup>108</sup> The connection between *mdqn* and *gerdios* has long been established based on bilingual texts, and it has been suggested that *mdqn.w* were wool weavers: see Winkler, *Anc.Soc* 45 (2015) 98.

Ptolemaic linen contract, was used for a tax related to linen, which was probably a craft tax.<sup>109</sup> It was used in this sense already in the Ptolemaic period,<sup>110</sup> and in *P. Oxy. XXIV 2414* (TM 26965) it is clearly distinguished from the *cheirōnaxion gerdion*.<sup>111</sup> The Mendesios in particular was an important center for flax and linen, which explains the occurrence of a *merismos* (additional levy to recoup deficits in tax collection) for the *othoniēra* there, since a shortfall in taxes from the linen weavers would represent a significant loss to state revenues.<sup>112</sup> The opposite was true in the Fayum, home to a significant wool industry. This may explain why we find very few references to a specific linen tax, but the *linikē* of *P. Tebt. II 347.12* (TM 13500) is nevertheless a plausible contender.<sup>113</sup>

For the collection of these taxes, the Roman state called upon a wide variety of intermediaries: tax farmers, their liturgical replacements (*epitērētai*), state collectors, bankers, and associations.<sup>114</sup> Contrary to the general development in Roman Egypt, tax farming grew in importance in the second century A.D.<sup>115</sup> Temples too played a role in the taxation of weavers. For instance, in the second century, priests of Soknopaiou Nesos

<sup>109</sup> For the debate and the texts see H. Verreth, “A Tax List from the Mendesios of the Time of Augustus,” in W. Clarysse et al. (eds.), *Egyptian Religion. The Last Thousand Years. Studies Dedicated to the Memory of Jan Quaegebeur I* (Leuven 1998) 455–476, at 457. Probably *SB VIII 9856.1* (TM 22917) is to be added, where we should read *otho(oniēras)*. *P. Oxy. XII 1438* (TM 28991) mentions a *linoupsikon* tax in addition to the *othoniēra*, and the editor suggests to read *linouphikon*, but a tax on linen boilers (*linepsoi*) may have been meant instead.

<sup>110</sup> *O. Vleem. 13* (TM 3009).

<sup>111</sup> ii. 11 and iii. 16, versus ii. 17.

<sup>112</sup> *P. Ryl. II 214.42–43* and 63 (TM 27895).

<sup>113</sup> *P. Alex. p. 29 no. 330* descr. (TM 25532) of an unknown provenance mentions *linouphoi* and *cheirōnaxion*.

<sup>114</sup> Reiter, *Nomarchen* 144.

<sup>115</sup> Reiter, *Nomarchen* 126.

paid substantial sums to the tax farmers,<sup>116</sup> and first-century Demotic texts from the temple archive show the levy of multiple contributions from the weavers, some linked to their association.<sup>117</sup> The nature of the levies is not entirely clear, but not all the money was forwarded to the state.<sup>118</sup>

### 2.3 *The lifting of restrictions on capital goods*

Perhaps the most impactful change over time was the lifting of restrictions on capital goods. As mentioned above, the Ptolemies closely controlled the (privately owned) workshops and looms of the weavers and limited their alienability. By the early Roman period, such restrictions no longer existed, and looms were sold, inherited, and leased on a regular basis.<sup>119</sup> The impression of greater market activity in the Roman period is caused to a considerable extent by the documents produced by this situation, but we should keep in mind the effects of preservation. Most of these texts come from the urban environment of Oxyrhynchos and the *grapheion* archive of Tebtynis, while Ptolemaic papyri are mostly rural, and a similar Ptolemaic *grapheion* archive remains largely unpublished.<sup>120</sup> This is highlighted by the comparable case of the apprenticeship contracts.<sup>121</sup> They have been pre-

<sup>116</sup> *P.Amh.* II 119 (TM 10101) and *P.Lond.* II 478 (TM 28055).

<sup>117</sup> *P.Dime* II 1 (TM 47531), 2 (TM 45590), 3 (TM 100226), 22 (TM 100240), 23 (TM 100241), 24 (TM 100242), 25 (TM 47536), and 61 (TM 47529).

<sup>118</sup> M.-P. Chaufray, “Impact of the Roman Conquest on Temple Economies in Egypt: A Case Study of the Temple of Soknopaios in Dime,” in A. Wilson et al. (eds.), *The Economy of Roman Religion* (Oxford 2023) 180–197, at 186–187.

<sup>119</sup> Droß-Krüpe, *Wolle* 147 for workshops and 204–206 for looms. See in addition *P.Dime* III 35 (TM 48587) and *P.Oxy.* II 367 (TM 20591).

<sup>120</sup> Muhs, in *Pap. Congr. XXV* 581–588.

<sup>121</sup> For the documents see Droß-Krüpe, *Wolle* 104–105. See also P.Berlin 9800 (TM 79333); *P.Fouad* II 90 (TM 999546); *P.Mich.* II 121r II.viii (TM 11964); *P.Oxy.* LXXXVI 5562 (TM 976574); *P.Tebt.Pad.* 19 (TM 412073), and perhaps *P.Monts.Roca* IV 83r (TM 219252). Note also that among the

served exclusively for the Roman period,<sup>122</sup> in largely the same places, but the practice of apprenticeship itself clearly existed before.<sup>123</sup> Nevertheless, the changes to the regulation of capital goods potentially created a more dynamic situation, as they could henceforth be used as collateral for loans, which increased credit supply and possibilities for investment.

### 3. *Beer tax reform, the end of state barley sales, and state breweries*

Compared to weaving, beer production was a simple process, which did not change from the Ptolemaic to the Roman period: it involved principally water, barley, and yeast. Production and sale were closely associated under both regimes, but not all sellers brewed their own beer. The beer industry was decentralized under the Ptolemies already, with even modest settlements employing several brewers and dozens of beer sellers operating in monetized beer markets.<sup>124</sup> According to the traditional narrative, professional brewing declined under the Romans as a result of the abolition of a Ptolemaic ‘state monopoly’, leading to a revival of domestic production. However, the sources do not show a decline but rather a semantic shift from ‘brewer’ to ‘beer seller’.<sup>125</sup> In both periods, the industry included independent entrepreneurs, but also artisans linked to temples and large estates. Moreover, there is indirect evidence for domestic production already under the Ptolemies, but fiscal changes discussed below

texts listed, *P.Tebt.* II 384 (TM 13540) is a *paramonē* contract and the nature of *BGU* III 855 (TM 9383) is unclear.

<sup>122</sup> *P.Oslo* III 140 (TM 5252), considered a Ptolemaic apprenticeship contract by some, is a *paramonē* contract. Demotic P.Berlin 9800 (TM 79333) dates to the very early Roman period and may still reflect Ptolemaic practice.

<sup>123</sup> *O.Medin.HabuDem.* 159.7 (TM 50054) and *Short Texts* I 158.15–16 (TM 53794). See also *SB* X 10447r.27 and 38, v.37 (TM 5804) for fullers.

<sup>124</sup> For an extensive discussion of and literature on the Ptolemaic beer industry see Dogaer, *Industry, Trade and the State* ch. 3.

<sup>125</sup> For the Roman era see L. Bigi and N. Dogaer, “The End of the Egyptian Beer Industry? Archaeological and Papyrological Perspectives on Beer Production in the Roman Fayum,” *Aegyptus* 99 (2019) 107–132.

do point to an intensification after the Roman conquest.

The Ptolemies derived revenues from this sector through a tax on brewers and beer sellers, as well as through the sale of state barley to producers. In addition, royal breweries existed, but their organization is unknown. The Romans discontinued supplying the grain, while reforming the taxation of brewers and beer sellers, who were henceforth charged fixed rates, as in the other industries. They moreover introduced a new tax, the *zytera kat'andra* (beer tax per head), levied from broad groups of the local population, apparently on domestic brewing (and selling<sup>2</sup>). A final source of revenues for the Roman state that will be discussed is the leasing of state-owned breweries.

The agreements interpreted as 'state monopolies' in the Ptolemaic period were in fact fiscal contracts for the revenues derived from the village beer industry.<sup>126</sup> The decentralized nature of this sector made it hard for the state to penetrate, resulting in the use of industry insiders as intermediaries. The main source of revenue was the tax levied from brewers and beer sellers (*zytera* in Greek, *tny* or *hd hmq* in Demotic).

In addition, the contractors were supplied with barley by the state, for which they paid, and which they probably distributed over all the brewers of a settlement. The dynamic here was the opposite of that in the oil industry: the state was paid for the use of state resources, rather than paying workers to convert state oil crops into oil. Moreover, grain could be traded freely in Ptolemaic Egypt. This situation nevertheless resulted in a kind of minimum quota, since the money spent had to be recouped in the form of beer produced and sold. A comparison with bakers, who were not supplied with wheat by the state, betrays the underlying dynamic. The state could profitably export wheat

<sup>126</sup> Dogaer, *Industry, Trade and the State* section 3.4. For a concise discussion of the argument see N. Dogaer, "Beer for the Gods and Coin for the Priests: Temple Involvement in the Hellenistic Egyptian Beer Industry," *AncSoc* 51 (2021) 81–100, at 84–88, which, however, goes too far in downplaying the role of the state in its insistence on tax farming.

but not barley, and the agreements with brewers provided an avenue for converting state revenues in kind into cash. Finally, a royal brewery is attested, but the limited evidence does not shed any light on its organization.

In the Roman period too, taxation was the main form of state intervention in the beer industry. The bulk of the evidence consists of receipts for the *zytera kat'andra* levied on a substantial part of the male population at a fixed rate per locality. Numerous interpretations have been proposed, but Reiter has suggested a connection with receipts for *parazytopoi(ia)*, evoking the secondary nature of the brewing, and he has argued for a tax paid for the right to brew beer domestically.<sup>127</sup>

Taxing domestic economic activities is an unusual step. The old view that the professional beer industry declined with the dissolution of a Ptolemaic 'state monopoly' is no longer tenable, and thus the tax could not have been intended to recoup the revenues formerly derived from such a monopoly. This raises the question whether income was derived from these domestic activities. This was the case for spinning in the Ptolemaic period: about one third of the women paid a capitation tax called the 'wool tax' (*ereōn*; *tny* or *hd inw*) on the income they derived from part-time spinning.<sup>128</sup> Moreover, in Ptolemaic villages, dozens of people had contributed small variable payments to the beer tax levied from brewers and beer sellers, presumably because they were engaged in small-scale retail of beer.<sup>129</sup> While the sheer number of payers for the *zytera kat'andra*, and the fact that they were exclusively male, complicates the hypothesis that they engaged in commercial activities, there was in any case a Ptolemaic precedent for beer taxes paid by broad groups of the local

<sup>127</sup> Reiter, *Nomarchen* 145–164. *P.Heid.* X 451 (TM 381910) and *P.Stras.* X 902 xxviii.9–14 (TM 341724) have been published in the meantime. The editor of the latter disagrees with Reiter and prefers the hypothesis of a general capitation tax.

<sup>128</sup> Dogaer, *ArchPF* 69 (2023) 353–370.

<sup>129</sup> *P.Žen.Pestm.* 63 (TM 1894).

population.

In addition, there is some evidence for the taxation of professional brewers and beer sellers in Roman Egypt.<sup>130</sup> While attestations of *zytera* often appear to be shorthand for the *zytera kat'andra*, this need not always have been the case. Particularly revealing in this regard is the case of Soknopaiou Nesos in the second century A.D. The fiscal declarations of the temple contain payments for the *zytera* to the state.<sup>131</sup> While these could represent *zytera kat'andra* payments by the priests, the temple possessed a brewery in the village, and we know from the priestly agreements that the lessee of the brewery was liable to taxation.<sup>132</sup> Other indications of taxes on brewers or breweries date to the very beginning of Roman rule.<sup>133</sup> A fixed craft tax on beer sellers is known from the later third century.<sup>134</sup> Both the tax on domestic brewing (and beer selling?) and the taxes on brewers and beer sellers were thus levied at a fixed rate per head in the Roman period, representing a simplification of the Ptolemaic-era village-level fiscal contracts.

Such a tendency extends to the other major component of these contracts: the sale of state barley to brewers. The Roman state no longer seems to have supplied raw materials.<sup>135</sup> While the last evidence for this practice dates to the mid-second cen-

<sup>130</sup> See also R. Bogaert, "Les opérations des banques de l'Égypte romaine," *AncSoc* 30 (2000) 135–269, at 156–157, for two *zyterai*, but without discussing the *kat'andra*. Reiter, *Nomarchen* 164, suspects that professional brewers were still taxed but that we do not possess the documentation that proves it.

<sup>131</sup> *P.Louvre* I 4.28 (TM 11853) and *SPP XXII* 183.40 (TM 15096).

<sup>132</sup> P.Vienna D 971 col. x+14.4–10 (text J), to be published in *P.Dime* IV. I would like to thank Maren Schentuleit and Sandra Lippert for sharing with me their ongoing work on the text.

<sup>133</sup> *I.Prose* 51 (TM 102682) and *O.Mich.* I 119 (TM 41885); perhaps also *O.Mattha* 144 (TM 49797).

<sup>134</sup> *BGU* I 9 iv.10–14 + IV 1087v ii.2–7 + XIII 2280 fr.B (TM 9131).

<sup>135</sup> Only *BGU XVI* 2608 (TM 23331) concerns state involvement with barley, but the crucial passage (lines 3–5) is garbled.

tury B.C.,<sup>136</sup> and it is thus unclear whether the Romans were the ones to abandon it, this would fit the broader context. Roman Egypt was no longer a kingdom in constant need of cash centered on a region with no natural silver sources. As a result, the new regime was not as preoccupied with monetizing its grain revenues. The abandonment of the state barley supply and more broadly of local village contracts partly explains the impression of a declining beer industry, since most of the evidence for beer in the Ptolemaic period was generated by these fiscal contracts and especially the sureties they required.

Like the Ptolemies before them, the Roman government owned breweries, e.g. that of Euhemeria.<sup>137</sup> In contrast to the oil presses discussed above, the Euhemeria brewery was leased out already before Hadrian's reform of imperial estates, and there was perhaps more direct continuity with former royal breweries. The case of Nomarchou Epoikion may have been different: dated early in the reign of Hadrian, a lease offer for a brewery there was addressed to an assistant of the predecessor of the *procurator usiacus*,<sup>138</sup> and the hamlet had earlier housed an estate of Antonia Minor.<sup>139</sup> The different officials perhaps reflect the way these workshops came into the possession of the state, but the *procurator usiacus* had broader responsibilities than the management of (former) imperial property.<sup>140</sup> Neither of the bids explicitly mentions a retail concession, but the bid for Euhemeria was quite substantial.<sup>141</sup>

<sup>136</sup> *P.Hels.* I 26 fr.A.17 (TM 5161).

<sup>137</sup> *BGU XI* 2032 (TM 9569) and *P.Fay.* 215 (TM 10803), with G. Claytor, "The Licensed Beer Shop of Euhemeria," *IWNW* 3 (2024) 45–51.

<sup>138</sup> *P.Prag.* II 132 (TM 12792).

<sup>139</sup> *P.Oslo III* 123 (TM 12569).

<sup>140</sup> Broux, *Imperial Ousiai* 83–86.

<sup>141</sup> Another lease is known from *P.Gen.* II 91.23–30 (TM 11262). *P.Mich.* II 123r vii.33–36 (TM 11967) contains two entries for written statements by oath for the *zytera*, perhaps linked to concessions, but they could have concerned any contract, including tax farming.

*Conclusion*

The regime change in Egypt did not entail a privatization of 'state monopolies' in the oil, textile, and beer industries. There were in fact few structural changes to the industry and trade sectors. The major Ptolemaic 'state monopoly', i.e. oil, had already been abolished under the late Ptolemies. The lack of evidence for the first centuries B.C. and A.D. complicates an assessment of the extent to which the second-century Roman oil tax policy built on late Ptolemaic practice. It is nevertheless significant that it included exclusive concessions, clearly not a specifically Ptolemaic practice. For weavers, the perceived 'monopoly' was a quota system applied to otherwise free weavers. The Romans appear to have relied rather on periodic compulsory purchases, but in practice both regimes awarded substantial state orders that provided a certain stability to weavers. Beer was retailed through monetized markets already under the Ptolemies, whose main source of revenue was a tax levied from producers and a broad group of beer sellers. The situation was similar under the Romans, who may have extended the already decentralized tax regime to include even purely domestic activities. They moreover owned a number of breweries, similar to earlier partial royal ownership of breweries.

Nevertheless, the Romans did enact real changes, resulting in a decrease of certain forms of direct state involvement. Rather than market exchange, these were concerned with raw materials and capital goods. While the Ptolemies had not accumulated all raw materials, they did supply both weavers with (a part of their) flax and wool, and brewers with (potentially all of their) barley. The rationale behind this supply was different in both sectors, but there is evidence for neither under the Romans. As for capital goods, we should not imagine a privatization of a regime of state workshops. Except for oil, there was no such general Ptolemaic policy, and the Roman government possessed a number of workshops too. The main regulation change in this regard was

rather the lifting of restrictions on looms, which had significant implications for the supply of credit.

Each of the three sectors moreover underwent some degree of fiscal reform. While several taxes were adopted outright, others were reformed, and new ones were introduced. Reform can be discerned in particular with regard to taxes on production and sale, which became fixed rather than proportional, while in several cases new taxes were levied on capital goods. Like the Ptolemies, the Romans used various intermediaries for the collection of these taxes. Some of those were the same in both periods, such as priests and association members, reflecting the re-use of existing networks. Others were new and reflected broader changes, especially the gradual replacement of tax farmers by liturgists, although this evolution was less pronounced than for other areas of state revenue.

The evidence shows above all two pragmatic regimes occupied with revenues and the acquisition of certain strategic commodities. In both periods, this went hand in hand with the development of markets. Their functioning and performance are still in need of further analysis for Ptolemaic and Roman Egypt alike. For the latter, a comprehensive study of the corpus of applications and permits for local concessions would be an essential complement to the three case studies presented here.<sup>142</sup>

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