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Thomas Corsten  
Fritz Mitthof  
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# TYCHE

Beiträge zur Alten Geschichte  
Papyrologie und Epigraphik

HOLZHAUSEN  
DER VERLAG

Band 25, 2010



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## Land Tenure and Taxation from Ptolemaic to Roman Egypt\*

## Introduction

The transition from the Hellenistic to the Roman period marked a major transformation in the agrarian economy. The Ptolemaic dynasty in Egypt gave special fiscal privileges and large grants of land to the priests, soldiers, and other elites, whose loyalty was vital to political stability. On the other side, they subjected Egyptian peasants and landowners to a heavy taxation regime that discouraged investment and tended to perpetuate small-scale subsistence agriculture. The Roman conquest of Egypt in 30 BC brought about dramatic changes. Individuals amassed private estates that were not linked to political patronage or military service. It was a shift from a more redistributive, status-based economy to one based on property ownership and market relations. Despite a relative abundance of evidence, this transition has not been adequately studied or explained.

The prevailing view is that Augustus introduced a comprehensive set of legal, administrative, and municipal reforms, including the privatization of land enabling people to acquire estates through the market<sup>1</sup>. The notion that private ownership and the hereditary accumulation of land did not exist in Ptolemaic Egypt is deeply entrenched in papyrology<sup>2</sup>. In an influential paper, Naphtali Lewis writes that Ptolemaic Egypt was based on the ancient Egyptian principle of royal ownership, which was “alien to Roman tradition and practice, [so] the Roman emperors frankly encouraged the acquisition of Egyptian land in full-fledged private ownership”<sup>3</sup>. However, rather than explaining this transition, it has been used as a license to treat Ptolemaic and Roman Egypt as completely separate entities to judge by the scarcity of recent studies that bridge this gap<sup>4</sup>. Moreover, explanations have gone little further than Lewis with

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<sup>1</sup> Two of the most often discussed articles are N. Lewis, “*Greco-Roman Egypt*”: *Fact or Fiction?*, in: D. H. Samuel (ed.), *Proceedings of the Twelfth International Congress of Papyrology* (Am.Stud.Pap. 7), Toronto 1970, 3–14 and A. K. Bowman and D. W. Rathbone, *Cities and Administration in Roman Egypt*, JRS 82 (1992) 107–27.

<sup>2</sup> For example, Lewis, “*Greco-Roman Egypt*” (s. note 1) 8–9; Bowman and Rathbone, *Cities and Administration* (s. note 1) 109–10, 112; H.-A. Rupprecht, *Kleine Einführung in die Papyruskunde*, Darmstadt 1994, 171–2; J. Bingen, *Hellenistic Egypt: Monarchy, Society, Economy, Culture*, Berkeley 2007, 203.

<sup>3</sup> Lewis, “*Greco-Roman Egypt*” (s. note 1) 8.

<sup>4</sup> L. Capponi, *Augustan Egypt: The Creation of a Roman Province*, Oxford 2005, is an exception but her attempt to trace institutions over the poorly documented transitional period has

his appeal to Roman tradition and practice as the cause of change. Bowman and Rathbone regard the privatization of land as part of a policy of municipalization<sup>5</sup>. Critics argue that such a fundamental reorganization does not fit with the general Roman policy of building on existing institutions and that proponents of this view underestimate continuities and the gradual pace of change<sup>6</sup>.

This article suggests that fiscal reform rather than land tenure reform was a key factor in the transformation. In doing so, it also addresses what effect taxation could have had on the agrarian economy and Egyptian society. In contrast to legal and administrative changes, relatively little attention has been paid to the differences in the methods and rates of land taxation. The prevailing view accepts a practically unbroken continuity in this area<sup>7</sup>. A comparison of taxation of private land in Ptolemaic and Roman Egypt indicates that this was not the case. Not only was the rate for private landowners in the Roman period lower than before but the principles of inspection and assessment of private land changed as well. The implications of fiscal reform for agricultural intensification, the formation of land, labor, and credit markets, and the growth of private estates merit further investigation. Moreover, lower taxes on landowners make sense in the context of the Roman Empire<sup>8</sup>. Taxation is intimately bound up with the political economy of the state, where differences between the Ptolemaic kingdom and the imperial province of Egypt are to be expected.

#### Land Tenure in Ptolemaic and Roman Egypt

Private ownership of land entails the legal rights not only to use the land but also to alienate it by sale and inheritance. This was the typical bundle of rights for landowners in the Nile Valley during *both* the Ptolemaic and the Roman period. In the Nile Valley during the Ptolemaic period, there is plenty of evidence for inheritance, private sales of land, and auctions of royal land to private owners<sup>9</sup>. Demotic sale contracts of agricultural land from Upper Egypt survive from the whole of the Ptolemaic period from the third to the first century BC<sup>10</sup>. In addition, there are a number of Greek land sales from late Ptolemaic Pathyris, many of which reveal the purchase

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been sharply criticized; A. Jördens, in: *Laverna* 17 (2006) 156–72; cf. D. Rathbone, in: *CR* 57 (2007) 488–90.

<sup>5</sup> Bowman and Rathbone, *Cities and Administration* (s. note 1) 112, 125–6.

<sup>6</sup> See R. Haensch, *Die Provinz Aegyptus: Kontinuitäten und Brüche zum ptolemäischen Ägypten. Das Beispiel des administrativen Personals*, in: I. Piso (ed.), *Die römischen Provinzen. Begriff und Gründung*, Cluj-Napoca 2008, 81–105; cf. H. J. Wolff, *Das Recht der griechischen Papyri Ägyptens in der Zeit der Ptolemäer und des Prinzipats. Erster Band* (HdAW 10.5.1), Munich 2002, 111–3.

<sup>7</sup> Bowman and Rathbone, *Cities and Administration* (s. note 1) 112; A. Jördens, *Statthalterliche Verwaltung in der römischen Kaiserzeit. Studien zum praefectus Aegypti* (Historia Einzelschriften 175), Stuttgart 2009, 107–10.

<sup>8</sup> On low taxes in the Roman Empire, cf. K. Hopkins, *The Political Economy of the Roman Empire*, in: I. Morris and W. Scheidel (eds.), *The Dynamics of Ancient Empires*, New York 2009, 175–204 at 183–4.

<sup>9</sup> J. G. Manning, *Land and Power in Ptolemaic Egypt*, Cambridge 2003, 182–225, esp. 193–97, 205–9.

<sup>10</sup> Manning, *Land and Power* (s. note 9) 267–76.



price of the land unlike Demotic sales<sup>11</sup>. A papyrus from the notary office for the Pathyrite and Lycopolite nomes in southern Egypt records contracts of sale for grain-producing land being registered almost daily<sup>12</sup>. The language of the contracts distinguishes sales of land from cessions of leaseholds, so private land was not merely a form of hereditary lease<sup>13</sup>. It did not matter whether the land was classified as royal or temple land and one need not have any temple-status to acquire private temple land<sup>14</sup>. These were fiscal domains within which both leasehold and private ownership were possible modes of land tenure.

A land survey of the Apollonopolite nome of southern Egypt in the late second century BC furnishes further evidence for the extent of private land<sup>15</sup>. Over 28,000 arouras (97%) were classified as private land (ιδιόκτητος γῆ), while the other two categories that appear, cleruchic land (κληρουχική γῆ) and land “in release” (ἐν ἀφέσει γῆ), totaled less than 1,000 arouras (3%)<sup>16</sup>. Royal land is conspicuously absent as are the estates of major temples, including that of the god Horos, which controlled 9,182 arouras in this nome according to the temple’s own monumentally inscribed land survey<sup>17</sup>. It is conceivable that royal and temple land were included under the category of private land since other texts show that it could be privately conveyed during this period<sup>18</sup>. However, it is also possible that those categories were simply not included in this document. This Apollonopolite land survey was not available to earlier scholarship and is still not properly published. In some respects, however, what it shows is not surprising. The designation of the largest area as private land accords with the abundance of private land sales and inheritances in Upper Egypt.

The previous literature about Roman land tenure reform is based largely on the evidence from the Fayyum. Here the significance of Roman privatization is exaggerated because private land ownership is largely unattested during the Ptolemaic period. The early Ptolemaic reclamation of this swampy marshland in the third century BC

<sup>11</sup> H. Cadell, *Le prix de vente des terres dans l'Égypte ptolémaïque d'après les papyrus grecs*, in: S. Allam (ed.), *Grund und Boden in Altägypten*, Tübingen 1994, 289–306.

<sup>12</sup> K. Vanderpe, *A Greek Register from Pathyris' Notarial Office. Loans and Sales from the Pathyrite and Latopolite Nomes*, ZPE 150 (2002) 161–186.

<sup>13</sup> For example, P.Grenf. II 33 (100 BC, Pathyrite) is the cession of a share of a leasehold of temple land, while P.Lond. III 1206 (99 BC, Pathyrite) is the sale of (private) land; cf. P.Schreibertrad. 30 and 115 (184 BC, Diospolite), for a Demotic sale of (private) temple land. On the language of ownership in Demotic land sale contracts, see also, J. G. Manning, *Demotic Instruments of Transfer as Evidence for Private Ownership of Real Property*, Chicago-Kent Law Review 71 (1995) 237–68.

<sup>14</sup> E.g. in P.Schreibertrad. 30 and 115 (see n. 13) a Greek cleruch sells a plot of temple land to a woman.

<sup>15</sup> T. Christensen, *The Edfu Nome Surveyed: P.Haun inv. 407 (119–118 B.C.)*, Ph.D. Thesis, Cambridge 2002.

<sup>16</sup> P.Haun. inv. 407: 20,968 ar. of sown private land (col. 15, l. 334); 7,335 ar. of derelict (private) land (col. 16, l. 368); 370 ar. of sown cleruchic land (col. 10, l. 247); 288 ar. of unsown cleruchic land (col. 10, l. 246); 265 ar. of sown land in release (col. 2, l. 32); 58 ar. of unsown land in release (col. 2, l. 31); 62+x ar. of brushwood land (col. 36, l. 374).

<sup>17</sup> Manning, *Land and Power* (s. note 9) 74–9.

<sup>18</sup> K. Vanderpe, *The Ptolemaic Epigraphic or Harvest Tax (shemu)*, APF 46 (2000) 169–232 at 173.

entailed the settlement of peasant communities from the Nile Valley. They corporately undertook the cultivation of villages or parts of gift estates and had their own village elders to distribute land and mediate disputes<sup>19</sup>. These cultivators had customary use rights, which they ceded to other cultivators or to their village elders when they or their heirs wanted to give them up. Most of the land they cultivated was royal land, subject to royal officials and taxation. These royal officials could also make short-term leases on specific terms to encourage reclamation or the production of particular crops. This type of agrarian organization probably coexisted with private ownership in other parts of Egypt but nowhere is it so well attested as in the Fayyum.

Royal land cultivated by peasant communities and cleruchic land awarded to Ptolemaic soldiers were the two largest categories of land in the Fayyum but this probably misrepresents the situation elsewhere. Land grants to Ptolemaic soldiers were concentrated in this region to stimulate reclamation and development. Based on the mid-third century BC tax registers, Thompson estimates that cavalry cleruchs with one-hundred-aroura estates had a total of 106,800 arouras, which is at least 20% of the whole Fayyum<sup>20</sup>. A roughly contemporary land survey from a southern Fayyum village shows that 2,184 arouras (58%) were probably royal land and roughly 1,500 ar. (42%) cleruchic but the amount of temple land is uncertain<sup>21</sup>. The late second century BC land surveys from the village of Kerkeosiris provide a more complete picture with 2,428 ar. of royal land (52%), 1,564 arouras of cleruchic land (34%), and 271 arouras of temple land (6%) as well as several other minor categories (8%)<sup>22</sup>. Royal and cleruchic land is also found in surveys from the Herakleopolite nome in the late Ptolemaic period but so is private land (ἰδιόκτητος γῆ), just as in Upper Egypt. These sources are insufficient to estimate the relative proportion of each category, though there is no reason to think it was similar to the Fayyum villages<sup>23</sup>.

The prevailing explanation for the extent of private land in the Roman period is that the new regime fully privatized the cleruchic land of Ptolemaic soldiers and sold state land to private owners<sup>24</sup>. Cleruchic land or katoikic land, as it came to be called

<sup>19</sup> P.Lond. VII 1954 (257 BC, Philadelphia); M. I. Rostovtzeff, *A Large Estate in Egypt in the Third Century B.C.*, Madison 1922, 83–4; see generally, A. Tomsin, *Étude sur les presbyteroi des villages de la chora égyptienne. Première partie*, Bulletin de la Classe des Lettres de l'Académie Royale de Belgique, fifth series 38 (1952) 95–130.

<sup>20</sup> D. J. Thompson, *The Exceptionality of the Early Ptolemaic Fayyum*, in: M. Capasso and P. Davoli (eds.), *New Archaeological and Papyrological Researches on the Fayyum* (Pap.Lup. 14), Lecce 2007, 303–10 at 309.

<sup>21</sup> P.Cair. II 31073 (c. 240 BC, Tebtunis?), recto A, col. 2, l. 2, recto B, col. 2, ll. 5, 15, A. Monson, *An Early Ptolemaic Land Survey in Demotic: P. Cair. II 31073*, Version 2.0, Princeton/Stanford Working Papers in Classics, www.princeton.edu/~pswpc (2007).

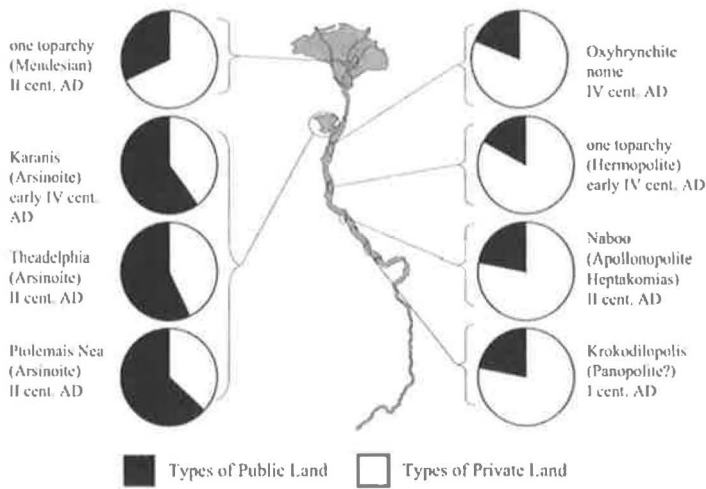
<sup>22</sup> P.Tebt. I, p. 538.

<sup>23</sup> Contra Bingen, *Hellenistic Egypt* (s. note 2) 201–2, where he is presumably referring to BGU XIV 2439, lines 8–11, showing about 1,200 ar. of various types of royal land — but this is only half of what one finds in Fayyum villages — and to BGU XIV 2437, listing tiny amounts of private, sacred, and cleruchic land by village and toparchy — but these are so small that they cannot possibly be the totals for those areas.

<sup>24</sup> For example, M. I. Rostowzew, *Studien zur Geschichte des römischen Kolonates* (APFBeih. 1), Leipzig 1910, 89–99; Bowman and Rathbone, *Cities and Administration* (s. note

in the late Ptolemaic period, was initially given only for the maintenance of the soldier but underwent a partial privatization over the course of the Ptolemaic period, so that sons could inherit without being soldiers and eventually even wives and heirs could alienate the land. These conveyances, however, always took the contractual form of cessions, just as conveyances of leaseholds, never of sales. Moreover, the purchasers of such land evidently needed to belong to the military status group of katoikoi or “settlers”<sup>25</sup>. Even in the Roman period, conveyances of katoikic land were phrased as cessions rather than as sales and were recorded in a separate register in conformity with Ptolemaic practice, which suggests greater continuity<sup>26</sup>.

Figure 1: Proportion of Public and Private Land in Roman Egypt<sup>27</sup>



1) 112; J. Rowlandson, *Landowners and Tenants in Roman Egypt*, Oxford 1996, 41–55; Jördens, *Statthalterliche Verwaltung* (s. note 7) 107–8, 485.

<sup>25</sup> C. Préaux, *L'économie royale des Lagides*, Bruxelles 1939, 463–77; J. F. Oates, *Cessions of Katoikic Land in the Late Ptolemaic Period*, JJP 25 (1995) 153–61; Bingen, *Hellenistic Egypt* (s. note 2) 132–40.

<sup>26</sup> Bowman and Rathbone, *Cities and Administration* (s. note 1) 112; Rowlandson, *Landowners and Tenants* (s. note 24) 43; cf. H. J. Wolff, *Das Recht der griechischen Papyri Ägyptens in der Zeit der Ptolemäer und des Prinzipats. Zweiter Band* (HdAW 10.5.2), Munich 1978, 201, 218.

<sup>27</sup> Data: Krokodilopolis (P.Lond. III 604A, 47 AD, Panopolite?); Naboo (P.Giss. 60, 118 AD, Apollonopolite Heptakomias); Theadelphia (P.Berl.Leihg. 5, 158/9 AD, Arsinoite); Ptolemais Nea and Hiera Nesos (P.Bour. 42, 167 AD, Arsinoite); the Oxyrhynchite nome (SB XIV 12208, IV cent. AD); Phernouphite toparchy (P.Oxy. XLIV 3205, c. 297–308 AD, Mendesian); Karanis (P.Cair.Isid. 11, 308/9 AD, Arsinoite); one district in the Hermopolite nome (P.Ryl. IV 655, early IV cent. AD). For the relationship between these data and population densities, cf. A. Monson, *Communal Agriculture in the Ptolemaic and Roman Fayyum*, in: S. L. Lippert and M. Schentuleit (eds.), *Graeco-Roman Fayyum: Texts and Archaeology*, Wiesbaden 2008, 173–86, esp. 178–82.

Figure 1 provides an illustration of Roman land categories based on tax registers. The privatization of Ptolemaic cleruchic land and the sale of state land simply cannot account for the abundance of private land in the Nile Valley, which is represented in the pie graphs on the right side. If the conventional model were correct, then one would expect private land in Roman Egypt to be concentrated in the Fayyum — where the most cleruchic land was located — and public land to be dominant in the Nile Valley. If one were also to believe that Augustus confiscated virtually all temple land and converted it into public land, this would further enhance the expectation that public land would be more extensive in the Nile Valley during the Roman period<sup>28</sup>. The sale of state land to private owners cannot account for this pattern either. It would require massive confiscations and auctions of land in the Julio-Claudian period to account for the staggering amount of private land in the Roman period, for example, in Krokodilopolis in the Thebaid in 47 AD<sup>29</sup>. It is implausible that Augustus or his successors would want to cause this much upheaval in the existing landholding patterns. A much simpler explanation is that most private land in Roman Egypt corresponds to the previous Ptolemaic private land in the Nile Valley. It goes without saying that this explanation remains a hypothesis, for which one would like more evidence of both periods in the same places in order to evaluate the continuity.

As early as the first and second centuries AD, more than 75% of the land was classified as a kind of private land in some villages in southern Egypt. The most telling piece of evidence is the land survey from a village called Krokodilopolis near the cities of Ptolemais and Panopolis Upper Egypt, dating to 47 AD. It shows that 2,233 arouras (56%) of the village of Krokodilopolis were classified as private land while only 853 arouras (22%) were royal land; another 21% should probably be identified as temple land in private ownership<sup>30</sup>. If one combines later evidence, there is a consistent pattern of regional differences between the Nile Valley and the Fayyum. The extent of public land in the Roman Fayyum reflects its peculiar development and agrarian institutions, which continued with few modifications from the

<sup>28</sup> For criticism of the view, see A. Monson, *Sacred Land in Ptolemaic and Roman Tebtunis*, in: S. L. Lippert and M. Schentuleit (eds.), *Tebtynis und Soknopaiu Nesos: Leben im römischen Fajum*, Wiesbaden 2005, 79–91.

<sup>29</sup> Thus Rostowzew's, *Studien zur Geschichte* (s. note 24) 93–4, 97–99, esp. 99, explanation for private land is untenable. He is right about the continuity with Ptolemaic Egypt but the Greek and Fayyumic bias of his sources leads him to underestimate its extent: "Wir trafen daselbe schon in der ptolemäischen Zeit. Doch werden unsere Nachrichten über die γῆ ἰδιόκτητος in der römischen Zeit viel zahlreicher und reichhaltiger. Die Eigenschaften und das Werden dieser Bodenklasse werden greifbar, und aus dem ptolemäischen Dunkel tritt in der römischen Zeit das Privatland in volles Licht" (93).

<sup>30</sup> P.Lond. III 604 A+B (47 AD); only royal land is explicitly named in text A; for the identification of the one-artaba rate with private land based on text B, see G. Plaumann, *Ptolemais in Oberägypten*, Leipzig 1910, 97–100; I propose to identify the  $\frac{3}{4}$ -artaba rate with temple land because the three categories mentioned in the heading of the text — royal, private, and temple land — ought to correspond with the royal, 1-artaba, and  $\frac{3}{4}$ -artaba land that constitute 99% of the land; *contra* S.L. Wallace, *Taxation in Egypt from Augustus to Diocletian*, Princeton 1938, 16–17.

Ptolemaic to the Roman period<sup>31</sup>. When Augustus reorganized the temple estates he only converted the leaseholds on temple estates into public land, while privately owned temple land remained undisturbed and was treated just as any other private land for taxation and legal purposes<sup>32</sup>.

Both before and after the Roman conquest, most landholders in the Nile Valley had the typical bundle of legal rights that we associate with private ownership. That means that the previous literature overstates the extent of privatization in Roman Egypt. A major source of confusion is the inconsistent use of the terms *katoikic* and *cleruchic* land in the Roman period. Some texts seem to use the terms *cleruchic* land (or *cleruchs*) and private land (or private landowners) interchangeably<sup>33</sup>. It is implausible that the roughly 2,980 arouras of *cleruchic* land (61%) in the village of Naboo in Middle Egypt in the second century AD were originally Ptolemaic grants of *cleruchic* land<sup>34</sup>. A recently edited land survey shows both private land (ἰδιόκτητος γῆ) and *katoikic* land organized under the general heading of *katoikic* land, where it designated land assessed a fixed rate as opposed to land assessed higher and more variable taxes<sup>35</sup>. One hypothesis is that the Romans extended the privileged fiscal regime that prevailed on *katoikic* land in the late Ptolemaic period to all private landowners in Egypt. Thus the term may have been equated with the general fiscal status of private landowners while being used in other contexts as a narrower legal definition for land that does derive from Ptolemaic military grants. The point is that most private land in Roman Egypt must have been a continuation of private land that existed within the royal and temple domains of the Ptolemaic period. Admittedly, there are preciously few places outside the Fayyum that have left us with both Ptolemaic and Roman evidence for land tenure. The Thebaid and, to some extent, the Herakleopolite nome provide the only basis for generalizing about the Nile Valley in the Ptolemaic period but the existence of private land is attested in both places.

#### Ptolemaic Harvest Taxes

If private land rights were already so extensive in the Nile Valley during the Ptolemaic period and the land tenure regime shows considerable continuity, then one must search for another explanation for economic changes under Roman rule. Those changes, mentioned in the introduction, include the growing importance of private estates and market relations in Egyptian agriculture. The answer lies in the reforms in the Julio-Claudian period that fundamentally altered the fiscal regime for private landowners. Their significance has gone unrecognized because the taxation of land in

<sup>31</sup> Monson, *Communal Agriculture* (s. note 27) 182–6.

<sup>32</sup> Monson, *Sacred Land* (s. note 28) 84–90.

<sup>33</sup> Compare P.Giss. 60 (118 AD, Naboo, Apollonopolite Heptakomias) and P.Flor. III 331 = W.Chr. 341 (c. 113–120), which refer to the same land as *cleruchic* and private respectively; similarly P.Berl.Leihg. 5 (158/159, Theadelphia) refers to owners of private land, including privately owned temple land, as “*cleruchs*”.

<sup>34</sup> P.Giss. 60 (118 AD), col. 3, l. 12.

<sup>35</sup> R.-L. Chang, *Un dossier fiscal hermopolitain d'époque romaine*, Ph.D. Thesis, Strasbourg 2010, 79; I thank him for showing me and discussing his work prior to publication.

Ptolemaic Egypt was not sufficiently understood until recently. Ptolemaic taxation of cleruchic land is still obscure in many respects. It is now clear that private land in Upper Egypt was assessed a variable harvest tax that was much higher than the fixed rate, usually one artaba per aroura, charged on all types of private land in Roman Egypt<sup>36</sup>.

One can go even further and suggest that the “harvest taxes” on private land in Ptolemaic Upper Egypt were virtually identical to the “rents” from cultivators of royal land in the Fayyum. Both “rent” and “harvest tax” are translations of the Greek term ἐκφόριον or the Egyptian term *šmw*, neither of which tell us anything about land tenure. A treatise on political economy of the Aristotelean school, written in the early Hellenistic period, refers to the main revenue from agricultural land in the provinces of the Persian empire as ἐκφόριον<sup>37</sup>. Private landowners in the Thebaid and in the Herakleopolite nome as well as peasants on royal land in the Fayyum all paid in principle the same tax to the king, which is called alternatively, ἐκφόριον or σιτική μίσθωσις or Egyptian *šmw*. The administration often used the more ambiguous and euphemistic term “assignment” (ἐπιγραφή) for this tax, especially when referring to private land in Upper Egypt, but even there the same tax could be called ἐκφόριον or σιτική μίσθωσις<sup>38</sup>. Thus the land survey from the Apollonopolite nome refers to the royal revenue from private land as “the harvest tax from the assignment established up to year 16”<sup>39</sup>. Even land purchased at state auctions, which became the buyer’s property, alienable by contracts of sale, was charged ἐκφόριον<sup>40</sup>. This and its Egyptian equivalent are the words most commonly used for “rent” in private tenancy contracts but a tenant’s rights in relation to the landlord were fundamentally different from those of landowners in relation to the state<sup>41</sup>.

Most cultivators of royal land in the Fayyum paid around 4 to 6 artabas per aroura. A land survey from a southern Fayyum village in the mid-third century BC gives four fiscal categories for non-pasture land (6¾, 5¾, 4¾, and 2½ artabas per aroura) and five categories for pasture land (ranging from 2 to 4¾ artabas per aroura)<sup>42</sup>. By far the greatest percentage of the land (68%) was in the highest category, 6¾ per aroura. This part of the survey seems to deal entirely with royal land, where cultivators had

<sup>36</sup> Vantorpe, *Ptolemaic Epigraphie* (s. note 18).

<sup>37</sup> Ps.-Aristotle, *Oikonomika* 2.4.

<sup>38</sup> Vantorpe, *Ptolemaic Epigraphie* (s. note 18) 193–6, cf. 198: ἐκφόρια was “a term which is closely linked to the epigraphie”.

<sup>39</sup> P.Haun. inv. 407 = Christensen, *Edfu Nome* (s. note 15), col. 13, ll. 284–5: ἐκφόριον ἐκ τῆς ἕως τοῦ ις (ἔτους) ἐσταμένης ἐπιγραφῆς.

<sup>40</sup> P.Eleph. 14 (223/222 BC, Apollonopolis?), l. 4.

<sup>41</sup> Preisigke, *WB* I 461; Erichsen, *Glossar* 507; H. Felber, *Demotische Ackerpachtverträge der Ptolemäerzeit* (Ägyptologische Abhandlungen 58), Wiesbaden 1997, 151–2; the legal right to sell private land makes it misleading to identify it as a hereditary leasehold on the basis of this fiscal terminology, see above, note 14 and below note 52, *contra*, most recently, K. Maresch, *Zur Frage der Erbpacht und des Privateigentums bei Wein- und Gartenland im ptolemäischen Ägypten*, in: R. Eberhard et al. (eds.), “... vor dem Papyrus sind alle gleich!” *Papyrologische Beiträge zu Ehren von Bärbel Kramer* (APFBeih. 27), Berlin 2009, 124–33.

<sup>42</sup> P.Cair. II 31073 (c. 240 BC, Tebtunis?), recto A, col. 2, ll. 1–19, A. Monson, *Land Survey* (s. note 21).

customary tenure rights. The total revenue expected from royal land in this particular year implies an average rate of 5.9 artabas per aroura. The royal cultivators in Kerkeosiris paid slightly lower but comparable “rent” (ἐκφόριον) at the rates  $4\frac{11}{12}$ ,  $4\frac{1}{2}$ , 4,  $3\frac{1}{2}$ ,  $3\frac{3}{4}$ , 3,  $2\frac{1}{2}$ , 2, and 1. Based on total revenue on royal land for the years 124–110 BC, the average rate was about 4 artabas per aroura, so again most land was in the highest categories<sup>43</sup>.

The rates of the harvest tax on private land in Upper Egypt were similar to the rates in the Fayyum. The royal revenue expected from the total area of private land in the Apollonopolite nome in Upper Egypt implies an average of 6.3 artabas per aroura, according to the land survey of 119/118 BC. Individual tax receipts from the Pathryite nome and from the Theban area provide evidence for a comparable tax rate on private land ranging from four to eight artabas per aroura<sup>44</sup>. These are slightly higher than the Fayyum rates, which may reflect higher yields in Upper Egypt or just variation in the state’s fiscal demands from one period (or place) to another. In the Herakleopolite nome, nearer to the Fayyum in Middle Egypt, private land, temple land, and cleruchic land, according to one register, were taxed at rates ranging from 2 to 4 artabas per aroura plus an additional 150 drachmas per aroura in money. As the editor notes, the graduated scale of these taxes in kind resembles the payments of peasants on royal land in the Fayyum and thus, one may add, the payments of private landowners in Upper Egypt as well<sup>45</sup>.

The similarities extend even to the method of assessing the harvest tax in the Fayyum and the Nile Valley. Strictly speaking “harvest tax” is a misnomer because the tax was not a percentage of the harvest but an assignment that was fixed before the harvest, though it was supposed to correspond with land quality and annual flood conditions. Officials determined the rate during the sowing season by placing the land within one of the graduated fiscal categories. In Upper Egypt, the cultivators received a receipt confirming the assessment of their fields. In many receipts, the rate of the tax is not even mentioned, only the size, presumably because it remained the same as in years past. Nevertheless, an annual survey was in principle required in order to ensure that it corresponded to current conditions<sup>46</sup>. In the Fayyum the process was comparable, though our sources are somewhat different. Instead of receipts, we have copies of the annual land surveys performed by the village scribe, which do not survive from Upper Egypt. Thanks to the archive of the village scribe of Kerkeosiris, the process is known in some detail over several years. The rates assessed on individual cultivators did indeed change but seldom<sup>47</sup>. Thus in the earlier survey from the

<sup>43</sup> See Keenan and Shelton, P.Tebt. IV, pp. 5–6.

<sup>44</sup> See, for example, U. Kaplony-Heckel, *Das Acker-Amt in Theben-West von 151–141 v. Chr.*, *Enchoria* 18 (1991) 59, 61, texts 3 and 10; U. Kaplony-Heckel and B. Kramer, *Ein griechisch-demotisches Holztäfelchen mit Sitologenquittung und Privatberechnung für Epigraphe aus Krokodilopolis*, *ZPE* 61 (1985) 43–57; Vandorpe, *Ptolemaic Epigraphe* (s. note 18) 196.

<sup>45</sup> BGU XIV 2437 (II or I cent. BC, Herakleopolite nome) with Brashear’s introduction, pp. 136–7.

<sup>46</sup> Vandorpe, *Ptolemaic Epigraphe* (s. note 18) 185–91.

<sup>47</sup> Shelton on P. Coll.Youtie 15, pp. 118–20.

southern Fayyum, 68% of the land could be charged 6¾ even though there must have been variation in its productivity.

In the early Ptolemaic period, it seems that temples continued to collect the harvest taxes from their own domains but in Upper Egypt starting in the late third century BC they were paid directly to state officials for the royal granaries<sup>48</sup>. Some receipts include payment for both the harvest tax and the one-artaba tax to which temple land was also subjected<sup>49</sup>. Vandorpe has suggested that the Ptolemies wanted to undermine the temples' power and autonomy in Upper Egypt, a policy that she links to the subsequent outbreak of revolts<sup>50</sup>. According to this view, the temples in the Fayyum and Middle Egypt continued to be charged only the fixed tax of one artaba per aroura on non-royal land. This requires further research because some evidence points to a wider extension of the harvest tax regime. According to the Herakleopolite register mentioned above, temple land, private land, and cleruchic land were taxed in kind at variable rates, ranging from 2 to 4 artabas per aroura, resembling the harvest tax<sup>51</sup>.

Temple land in Kerkeosiris in the southern Fayyum seems to have been charged only a fixed "one-half artaba" tax, which is perhaps a variant of the one-artaba tax<sup>52</sup>. However, a series of Demotic leases of one small plot of (private) temple land in Tebtunis in the late second and early first century BC show that 2½ artabas per aroura were paid to the king. This rate is within the harvest-tax range but relatively low for what was evidently fertile land<sup>53</sup>. The "rent" (*šmw*) that the tenant paid to the landowner is the same term as the "royal tax" (*šmw pr-ꜥ*) paid to the king<sup>54</sup>. A more abstract expression, literally "royal thing" (*md.t pr-ꜥ*), was synonymous to the latter and was used for the same tax on the same land in another document<sup>55</sup>. Wegner has shown that irrigation improvements on this plot did not lead to an increase in the royal tax, even though the landowner was able to raise the tenant's rent substantially, so it is conceivable that this was a fixed land tax but further evidence is needed<sup>56</sup>.

The taxation of cleruchic land poses more questions that require future research. Before the second century BC, there is little evidence for any direct taxation of cleruchic land or harvests. From a recently published papyrus of the later second cen-

<sup>48</sup> K. Vandorpe, *Agriculture, Temples and Tax Law in Ptolemaic Egypt*, in: J. C. M. García (ed.), *L'agriculture institutionnelle en Égypte ancienne* (CRIPEL 25), Villeneuve d'Ascq 2006, 165–71 at 168–9.

<sup>49</sup> Ptolemy V's abolition of this tax on temple land in the Memphis decree of 197 BC was ignored or the tax was reintroduced soon afterwards, see Pestman, *P.Batav.*, pp. 115–9.

<sup>50</sup> Vandorpe, *Agriculture* (s. note 48) 168–9.

<sup>51</sup> BGU XIV 2437 (II or I cent. BC).

<sup>52</sup> P.Tebt. IV 1149 (113/112 BC), ll. 54–6, refers to it as a "contribution" (εἰσφορά), see P.Tebt. I 98 (c. 112 BC) with comments, pp. 430–1; P.Tebt. I 61(b) (118/117 BC), l. 324; Keenan and Shelton, *P.Tebt. IV*, p. 13.

<sup>53</sup> P.Cair. II 31079 (105 BC), 30615 (98 BC), 30626 (96 BC); see W. Wegner, *Die privaten Geschäfte zweier Soknebtynis-Priester*, forthcoming in the *Proceedings of the Tenth International Congress of Demotic Studies* in Leuven 2008.

<sup>54</sup> E.g. P.Cair. II 30615 (98 BC), ll. 7, 9, 11.

<sup>55</sup> P.Cair. II 31079 (105 BC), l. 27; this contradicts Vandorpe's, *Ptolemaic Epigraphie* (s. note 18) 197, identification of these terms.

<sup>56</sup> Wegner, *Geschäfte* (s. note 53).



tury BC, we learn that members of the katoikic cavalry — a specially privileged class of cleruchs — were collectively liable for a large sum of wheat, with the exception of katoikoi in the Thebaid. It would be distributed among them partly as a fixed two-artaba land tax and partly as a variable harvest tax, “in those nomes in which a tax assignment (ἐπιγραφή) was paid”<sup>57</sup>. Perhaps the royal decree of 118 BC, freeing katoikoi from contributions (εἰσφοραὶ) and tax assignments (ἐπιγραφαί) in times of need (κατὰ καιρόν), refers to these measures, which would imply that they were meant to be temporary<sup>58</sup>. However, a harvest tax assignment (ἐπιγραφή) shared among the katoikoi still existed or was reintroduced in the first century BC<sup>59</sup>. Vandorpe interprets such evidence as a sign that the harvest tax regime was extended to cleruchic land in the Fayyum and Middle Egypt during the second century<sup>60</sup>. This may reflect the increasingly precarious political situation and the urgency of tapping new sources of revenue.

At least some cleruchic land was charged a low fixed rate roughly corresponding to a one-artaba tax (ἄρταβεία). The best evidence for this is again from Kerkeosiris, where it was charged a “one-half artaba” tax just as temple land was, which subsequently went up to  $\frac{3}{4}$  or 1 artaba per aroura for some cleruchs<sup>61</sup>. Late Ptolemaic Herakleopolite registers of cleruchic land contain an abbreviation designating the fiscal status that is resolved as “one artaba” (μονᾶρταβος) and is also found throughout the Roman period<sup>62</sup>. Even in the same nome at the same time, however, cleruchic land appears under different fiscal institutions, which more closely resemble the harvest tax<sup>63</sup>. Thus the picture is far from clear. However, it is still a plausible hypothesis — one that Rostovtzeff already proposed — that the privileged fixed rate on cleruchic

<sup>57</sup> P.Lips. II 124 (137 BC or later, Herakleopolite nome?), col. 3, l. 36 with Duttonhöfer’s comments, p. 17–18, 28, 38–40, where she argues that the katoikoi paid either the two-artaba tax or the epigraphe; P.Tebt. I 99 = C.Ptol.Sklav. 242 (137 BC, Tebtunis, originally Herakleopolis?); P.Tebt. III.2 860 (c. 138 BC, Tebtunis, originally Herakleopolis?); cf. SB XVIII 13095 (c. 142/141 BC, Arsinoite nome).

<sup>58</sup> P.Tebt. I 124 = C.Ptol.Ord. 54 (c. 118 BC), l. 35; cf. P.Bingen 45 (33 BC), l. 11, and P.Lips. II 124 (137 BC or later) with commentary on pp. 17–8; in P.Tebt. I 99 (c. 137 BC), col. 2, ll. 54, 57, 59, the contributions of katoikoi to the κοινὸς στέφανος and ἐπιγραφή correspond precisely to the special taxes, levied κατὰ καιρόν, from which Cleopatra VII reconfirmed the exemption of Alexandrian landowners: C.Ord.Ptol. 75–6, l. 28 with Bingen, *Hellenistic Egypt* (s. note 2) 141–50, esp. 149.

<sup>59</sup> BGU VIII 1785 (c. 64–44 BC, Herakleopolite); Préaux, *L’économie royale* (s. note 25) 512.

<sup>60</sup> Vandorpe, *Ptolemaic Epigraphe* (s. note 18) 197: “But the high amounts recorded in, for instance P.Tebt. I 99 ... show that the epigraphe or harvest tax becomes an important tax in the Fayum for grain land in the second half of the second century BC.”

<sup>61</sup> See P.Tebt. I 98 with comments, p. 430–1; P.Tebt. I 61b (118/117 BC), ll. 327–45; Keenan and Shelton, P.Tebt. IV, pp. 11–12.

<sup>62</sup> BGU XIV 2441 (II or I cent. BC, Herakleopolite), ll. 124, 133, XIV 2446 (II or I cent. BC, Herakleopolite), l. 56 with note, BGU XVI 2559 (after 9 AD, Herakleopolite), l. 8, P.Oxy.Hels. 9 (26 AD, Oxyrhynchite), l. 12; for discussion of the abbreviation, see P.Oxy. XLII 3047, l. 11 note, p. 121 and P.Diog. 17, ll. 12–13 note, pp. 131–2.

<sup>63</sup> BGU XIV 2437 (II or I cent. BC).

land in the Ptolemaic period formed the basis for the Roman fixed land tax of one artaba per aroura on private land<sup>64</sup>.

The Ptolemaic harvest tax regime was pervasive in every nome for which we have evidence and shaped the economic structure. It also throws a sidelight on the distribution of power within Ptolemaic rural society, where the military and the Egyptian priesthood were preeminent and accordingly obtained fiscal privileges. An amnesty decree from 118 BC granted relief from the harvest taxes to private landowners who had been enrolled in the class of military settlers (the so-called *katoikia*) during the recent civil war<sup>65</sup>. This underscores the relationship between fiscal rights and social status. Ordinary peasants and private landowners were subjected to high variable taxes ranging from 2 to 8 artabas per aroura.

### Roman Land Taxes

The Roman administration extended the one-artaba tax to all private landowners in Egypt, without regard for military or priestly status. Some land was assessed slightly higher or lower amounts but it was a fixed tax of typically one artaba<sup>66</sup>. Only cultivators without individual property rights, whose tenure was based on leaseholds of royal land or membership in associations of royal cultivators (or “public cultivators” as they were now called), continued to pay the variable harvest tax or rent (ἐκφόριον). Those with leaseholds or other non-private forms of tenure on temple estates were included in the same category after the prefect Petronius confiscated the temple estates (c. 25–21 BC). Private ownership of temple land, on the other hand, was recognized with the same fiscal status as other private land<sup>67</sup>. Buyers of state land at public auctions were also entitled to the low fixed rate and private property rights.

The extension of this one-artaba rate and the abolition of harvest taxes for private landowners took place during the Julio-Claudian period but its precise timing is unknown. Under Augustus, *katoikic* land was charged a fixed one-artaba tax but, as noted above, this was probably already the case in the late Ptolemaic period<sup>68</sup>. The last known receipts for land measurement, which were used to assess the harvest tax, are from the Thebaid and date to 14 AD<sup>69</sup>. 47 AD is the date of the land survey from the village of Krokodilopolis, located near Ptolemais and Panopolis in the Thebaid. This land survey lists the complete distribution and tax rate of land in the village. As much as 80% of the land was assessed at the fixed rate, mostly 1 or  $\frac{3}{4}$  artabas per

<sup>64</sup> Rostowzew, *Studien zur Geschichte* (s. note 24) 91 n. 1; comments to P.Giss. 60, p. 28.

<sup>65</sup> P.Tebt. I 124 (118 BC), ll. 37–40.

<sup>66</sup> Wallace, *Taxation* (s. note 30) 13–19; Rowlandson, *Landowners and Tenants* (s. note 24) 31–8, 53–4.

<sup>67</sup> See above and Monson, *Sacred Land* (s. note 28).

<sup>68</sup> E.g. BGU IV 1060 (14 AD, Herakleopolite), l. 23; cf. Rostowzew, *Studien zur Geschichte* (s. note 24) 91 n. 1 and 92 n. 2 for continuity with the Ptolemaic ἀραβεία and for the distinction between the fixed one-artaba taxes (καθήκοντα) and the variable rents (ἐκφόρια).

<sup>69</sup> See U. Kaplony-Heckel, *Theban Ost-I*, ZÄS 120 (1993) 42–71, *Theban Ost-II*, ZÄS 126 (1999) 51–54, *Theban Ost-III*, ZÄS 129 (2001) 24–40; reprinted in: *Land und Leute am Nil nach demotischen Inschriften, Papyri und Ostraka* (Ägyptologische Abhandlungen 71), Wiesbaden 2010.

aroura, which can probably be identified with the private and temple land in the initial heading<sup>70</sup>. Land surveys from the second century, like the one from Naboo in Middle Egypt, portray a similar situation with the largest percentage of land in the village (over 75%) being some form of private land assessed the fixed land tax of roughly one artaba per aroura<sup>71</sup>. Thus by 47 AD, at the very latest, the new Roman structure of land taxation in Egypt had been established.

There are some signs that implementing the decision to reduce taxes on land in Egypt was a gradual process. The prefect Tiberius Julius Alexander issued a decree in 69 AD, in which he condemns tax collectors in the nomes for charging the buyers of land from the state the old Ptolemaic harvest tax or rent (ἐκφόριον)<sup>72</sup>. Ptolemaic auctions of private land seem to have carried the obligation to pay such taxes at the high variable rates discussed above<sup>73</sup>. Alexander's decree reiterated the orders of prefects before him, Postumus (45–47 AD), Balbillus (55–59 AD), Vestinus (60–62 AD). It mentions that the prefect Flaccus (32–38 AD) had (re-)introduced a harvest tax (ἐκφόριον) assessment for such land, which lasted until the prefecture of Postumus, when an imperial decree of Claudius confirmed the exemption of private land bought from the state from this kind of taxation<sup>74</sup>. This suggests that the original decision was introduced by an imperial decree, probably sometime before 32 AD, and that local officials continuously resisted its implementation.

The methods of assessing the taxes also changed under Roman rule. The annual survey of land, which was essential for the Ptolemaic harvest tax regime, gradually fell into disuse<sup>75</sup>. For land taxed at a fixed rate it sufficed for the administration to know the size of the private estate, which could be ascertained without inspecting the land itself, for example, from the state property archive, where owners registered their land<sup>76</sup>. This led to problems for the cultivators of public land, who were still subject to the old system with higher rates. They complained that officials neglected to adjust the fiscal category of their land in accordance with its actual worth. Edicts of the prefect Tiberius Julius Alexander and of the emperor Hadrian responded by ordering officials to make adjustments<sup>77</sup>. However, the endemic problem gradually led to the ossification of the rents on public land into fixed taxes and to the introduction of new

<sup>70</sup> P.Lond. III 604 A (47 AD, Krokodilopolis, Panopolite?).

<sup>71</sup> P.Giss. 60 (118 AD, Naboo, Apollonopolite Heptakomias); P.Flor. III 331 = W.Chr. 341 (c. 113–120); cf. Rowlandson, *Landowners and Tenants* (s. note 24) 66 n. 124.

<sup>72</sup> G. Chalon, *L'édit de Tiberius Julius Alexander*, Lausanne 1964, § 7–8, ll. 26–32.

<sup>73</sup> Cf. P.Eleph. 14 (223/222 BC, Apollonopolis?), l. 4.

<sup>74</sup> Chalon, *L'édit* (s. note 72) 144–57; Jördens, *Statthalterliche Verwaltung* (s. note 7) 271–80, esp. 275–6 n. 44, cf. 488–9, where she attributes such reforms concerning the sale of state land to Augustus.

<sup>75</sup> Jördens, *Statthalterliche Verwaltung* (s. note 7) 103–6.

<sup>76</sup> Cf. K. Maresch, *Die Bibliothek der Enktesis im römischen Ägypten: Überlegungen zur Funktion zentraler Besitzarchive*, APF 48 (2002) 233–46.

<sup>77</sup> Chalon, *L'édit* (s. note 72) § 15, ll. 55–9; P.Giss. 4 (118 AD, Apollonopolite Heptakomias) = W.Chr. 351 = Sel. Pap. II 354; Jördens, *Statthalterliche Verwaltung* (s. note 7) 278–9, 473–77.

declaration procedures in the late second century AD for requesting a land inspection and tax reduction<sup>78</sup>.

Table 1 provides a schematic comparison of the Fayyum and the Nile Valley. This simplifies drastically but serves to illustrate how misleading it is to extrapolate from the Fayyum. A hypothetical uniformity has been imposed on the Nile Valley to illustrate the implications of the argument for our understanding of land tenure and taxation in the two periods. It is worth stressing again that most of the Ptolemaic-period sources for the Nile Valley with which to compare the Roman period actually come from Upper Egypt. The Herakleopolite evidence is more ambiguous, showing some similarities with the Fayyum, but seems on the whole to be consistent with the continuity of private land ownership and the change in taxation postulated here. Needless to say, additional evidence — especially from Ptolemaic Middle Egypt — could modify this picture.

Table 1: Simplified Schema of Land Tenure and Taxation

	Fayyum	Nile Valley
<b>Ptolemaic</b>	Royal land charged “rent” (ἐκφόριον) and cleruchic land charged the fixed tax (≈ 1 art./ar.)	Private land charged the “harvest tax” (ἐκφόριον)
<b>Roman</b>	Public land charged “rent” (ἐκφόριον) and private land charged the fixed tax (≈ 1 art./ar.)	Private land charged the fixed tax (≈ 1 art./ar.)

Previous scholars looking only at the Fayyum exaggerated the significance of land tenure reform and privatization under Roman rule. It seemed to be the completion of the partial privatization of cleruchic land in the Ptolemaic period. In the Roman Fayyum it is plausible that Ptolemaic cleruchic land formed the basis for private land. However, the relatively small extent of Ptolemaic cleruchic land in the Nile Valley requires one to search for another explanation for private land in that region<sup>79</sup>. Moreover, the development of the Fayyum gives the impression that the Romans made no significant changes in the realm of land taxation since most of the cleruchic land in the Fayyum was already assessed the one-artaba tax. The royal land leased out or typically cultivated by associations of peasants continued to be assessed at the same high variable rates under Roman rule. Thus one assumed that there was continuity in how land was taxed but change in the law of land tenure.

<sup>78</sup> Jördens, *Statthalterliche Verwaltung* (s. note 7) 111–20.

<sup>79</sup> There were cleruchic settlements in Middle and Upper Egypt but evidently less than in the Fayyum; Thompson, *Exceptionality* (s. note 20) 308–9 and C. Fischer-Bovet, *Army and Society in Ptolemaic Egypt*, Ph.D. Thesis, Stanford 2008, 196–200. The ossified *kleros*-names applied to plots of land in Middle Egypt in the Roman period reflect the earlier presence of cleruchic land but provide no reliable measure of its extent at any particular time; cf. F. Zucker, *Beobachtungen zu den permanenten Klerosnamen*, in: *Studien zur Papyrologie und antiken Wirtschaftsgeschichte Friedrich Oertel zum achtzigsten Geburtstag gewidmet*, Bonn 1964, 101–6.

No one has yet recognized the impact of the transition from a harvest tax regime to a fixed tax regime on the agrarian economy but this is an area where future research is needed. Under the harvest tax regime, taxes varied according to the productivity of the land, which was assessed during the sowing season. Land that could not be cultivated for the year was not taxed. This meant less risk for the farmer. But it also meant that the return on his investment in the productivity of the land or in the reclamation of new land would be captured by the state. On top of that, one has to bear in mind the extraordinary costs of organizing and monitoring the assessment of harvest taxes in order to prevent unfair distributions and corruption by local officials. Under the fixed tax regime, the taxes were assessed on the area of land rather than its productivity, which made annual land surveys unnecessary. That means that landowners would keep any long-term increase in the yields. They would have more incentive to bring unproductive land under cultivation.

The harvest tax regime generally encourages small-scale subsistence farming and modestly sized family farms. There are a few private estates of 30 to 80 arouras in Ptolemaic Egypt but most of those attested were 10 arouras or smaller<sup>80</sup>. The annual survey may have protected smallholders from complete annihilation due to unexpected floods and shortfalls in their taxes but at the same time it reinforced the social structure by redistributing the fruits of investment into the hands of hereditary priestly elites and royal officials. The harvest taxes also make it complicated for landowners to manage large estates by leasing out land to private tenants. Tenancy was an option but the margins of profit were small compared to tenancy on private land in Roman Egypt. It was often the case that the tenant in Ptolemaic Egypt was in a stronger economic position and of similar social status to the owner<sup>81</sup>. Larger estates and lower status tenants are found primarily among cleruchic landholders who were generally removed from the harvest tax regime<sup>82</sup>. It was the extension of the fixed land tax of typically one artaba per aroura in the Roman period (rather than a change in land tenure) that most likely explains the explosion in the number of private lease arrangements and the growing size of private estates under Roman rule.

Finally, one expects that the transition from the harvest tax regime to the one-artaba tax would have stimulated investment in agriculture and raised land productivity. We can point to two indicators that are consistent with this hypothesis. First, there is the increasing diffusion of Hellenistic technologies such as the *saqqiya* and perennial cultivation with double harvests on private estates in Roman Egypt. Experiments of this kind were made in Ptolemaic Egypt but mainly on privileged gift estates and temple land<sup>83</sup>. For private landowners to undertake such projects, they needed suffi-

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<sup>80</sup> W. Clarysse, *Egyptian Estate-Holders in the Ptolemaic Period*, in: E. Lipinski (ed.), *State and Temple Economic in the Ancient Near East* (OLA 6), Leuven 1979, 731–43 at 734.

<sup>81</sup> Felber, *Demotische Ackerpachtverträge* (s. note 41) 99–115; cf. Rowlandson, *Landowners and Tenants* (s. note 24) 273–4, 276–7.

<sup>82</sup> Bingen, *Hellenistic Egypt* (s. note 2) 129–31.

<sup>83</sup> R. Johannesen, *Ptolemy Philadelphus and Scientific Agriculture*, CPh 18 (1923) 156–61; cf. Wegner, *Geschäfte* (s. note 53) for improvements on a small plot of temple land.

cient capital and fiscal incentives that the harvest tax regime did not provide<sup>84</sup>. Second, there is the dramatic increase in the price of land relative to the Ptolemaic period. We have a series of prices from land sales in late Ptolemaic Pathyris. This was regular grain-producing land that was subject to the high variable rates of the harvest tax. Adjusting for the difference in monetary units, the price of private land in Roman Egypt that was assessed the one-artaba tax was perhaps 10 times more expensive than private land under the harvest tax regime in Ptolemaic Pathyris<sup>85</sup>.

### Conclusion

The issue addressed in this article is the transition from the Hellenistic royal economy dominated by temples, the army, and the royal court to the more market-oriented economy dominated by cities and landowners in Roman Egypt. Previous scholars suggested that Augustus initiated these changes with a set of radical land tenure and municipal reforms, intended to create a new landowning elite capable of self-administration. The most important precondition was the private ownership of land. Proponents of this thesis abstain from giving an explanation for why Augustus found it necessary to alter existing social, administrative, and legal institutions or why he would want them to conform to other provinces in the empire. Moreover, the prevailing model of Roman land privatization is inconsistent with the evidence for land rights in the Ptolemaic Period.

Instead the argument proposed here is that fiscal reform was the primary mechanism of social and economic change. Whereas land tenure is rooted deeply in the ecology of the Nile and long-term historical processes, taxation is more closely linked to the political economy of the state. If the heavy Ptolemaic harvest taxes depressed agricultural productivity, one wonders why the Ptolemies did not abolish them. The Roman fiscal policy appears in hindsight more economically rational but this may not necessarily be the case. Political instability encourages rulers and officials to overtax the population at the expense of long-term productivity. As we know even from modern episodes of political instability, it is difficult to avoid corruption when those in power fear more imminent threats. Officials may rush to exploit

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<sup>84</sup> For the diffusion of the water-lifting devices in the Roman period, see J. P. Oleson, *Greek and Roman Mechanical Water-Lifting Devices: The History of a Technology*, Toronto 1984, 131–40. A. Wilson, *Machines, Power and the Ancient Economy*, JRS 92 (2002) 1–32, D. W. Rathbone, *Mêchanai (Waterwheels) in the Roman Fayyum*, in: M. Capasso and P. Davoli (eds.), *New Archaeological and Papyrological Researches on the Fayyum* (Pap.Lup. 14), Lecce 2007, 251–62; for double cropping on a private estate in Roman Egypt, see the Patron archive from Tebtunis, e.g. P.Tebt. II 375 (140 AD); P.Mil.Vogl. II 79 (143 AD), IV 212 (109 AD), VII 303 (164 AD); on this estate, cf. D. Kehoe, *Management and Investment on Estates in Roman Egypt during the Early Empire* (Pap.Texte Abh. 40), Bonn 1992, 74–92.

<sup>85</sup> See A. Monson, *Rule and Revenue in Egypt and Rome: Political Stability and Fiscal Institutions*, *Historische Sozialforschung* 32 (2007) 252–74 at 255–6; for the price of land assessed the harvest tax in pre-Ptolemaic Egypt, cf. K. Baer, *The Low Price of Land in Ancient Egypt*, *JARCE* 1 (1962) 25–45 and B. Menu, *Le prix de l'utile en Égypte au 1er millénaire avant notre ère*, in: J. Andreau et al. (eds.), *Économie antique: Prix et formation des prix dans les économies antiques*, Saint-Bertrand-de-Comminges 1997, 245–65.

their position either for personal gain or immediate protection. This may explain at least some of the capricious, predatory, and apparently irrational behavior of the Ptolemaic rulers and their agents. According to this model, we should expect the elimination of rivals and the establishment of security in the transition from the Hellenistic period to the Roman Principate to provide some relief from excessive taxation<sup>86</sup>.

If this argument is correct, then the analysis of fiscal institutions may open new avenues of research into the old question of continuity and change from Ptolemaic to Roman Egypt. As Goldscheid writes, “the budget is the skeleton of the state stripped of all misleading ideology”<sup>87</sup>. Greater attention to fiscal regimes has the potential to reveal underlying social and political dynamics. There is still considerable work to be done. Wallace’s study of Roman taxation is now over seventy years old and there has not yet been any attempt to write a synthesis of Ptolemaic taxation.<sup>88</sup> The discussion here leaves open a number of important questions, for which the growing body of primary sources may provide the answers. Future work ought to examine the economic effects of different fiscal regimes as well as how they relate to the administrative organization. Like many aspects of Ptolemaic institutions and social structure, the harvest tax system has deep roots in pharaonic Egypt. The introduction of a new tax regime under Roman rule was the beginning of a great transformation, which set Egypt on a different path of development.

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<sup>86</sup> See Monson, *Rule and Revenue* (s. note 85) for a fuller explanation of this model.

<sup>87</sup> Quoted in R. Swedberg, *Principles of Economic Sociology*, Princeton 2003, 25, with discussion of the goals and methods of fiscal sociology.

<sup>88</sup> Wallace, *Taxation* (s. note 30).