CHAPTER SIX

CREATING A NEW ECONOMIC ORDER

ECONOMIC LIFE AND ECONOMIC POLICY UNDER THE PTOLEMIES

Government seems to have been primarily interested in agriculture as a tax base--i.e., as an end-product—contributing little to its direct organization or maintenance. Agricultural productivity, although influenced by public order and security and responsive to new technologies, was primarily a response to the Nile floods. The health of the overall economic system, overwhelmingly dependent on agriculture, was consequently controlled as much by environmental as by human variables. Ultimately, the central government was weak when the national economy was weak, although a weak government could equally well lead to a weak economy.

Butzer (1980)

In 225 BC, some twelve years after the inauguration of the great building project of the new temple of Horus, a prominent priestly family in Edfu found themselves in severe financial difficulty.[1] A state official had been appointed to investigate. Three brothers in the family were past due in payments for family land that they had mortgaged to securitize payments to the state for the cloth tax, and for the cloth tax itself. Private and public finance were entwined. The arrears had apparently been a long-standing problem, going back to at least the year 246 BC. Each of the brothers at various times, and their father as well, had served as the *lesonis*, (dem. *mr-šn*) a temple official who was

[1] The documentation of these events is recorded in a group of bilingual texts (32 in all, ten of them written in demotic Egyptian) known as the Milon archive. The Greek texts were first published by Rubensohn (1907), the demotic ones were treated initially by Spiegelberg (1908), and later by Sethe and Partsch (1920) with some dubious new readings. For a good summary of events and of the texts in the archive, see now Clarysse (2003).

responsible for payments to the state.[2] The manufacture and sale of cloth had been an ancient temple industry, Egypt producing from its flax crop some of the finest linen ever produced. In the Ptolemaic system, cloth was one of the "monopoly" industries that they state attempted to regulate. In return for allowing the temples to continue manufacturing cloth and receiving income from this, the temples had to pay a percentage of production to the state as tax.

The family of priests had apparently gotten behind in these payments. From the Rosetta stone, we learn that the tax was remitted, and so it appears that this problem has become widespread. As a result, the land that had been pledged by the priest as security for making these payments, as well as a house and a share of another house in Edfu, and a small shrine in Dendera was put up for public auction. We learn from the official archive that preserves the affairs of the priestly family about the detailed structure of the public auction, one of the new fiscal institutions introduced to Egypt from the Greek world in this period (further below).

We do not know what the subsequent history of this priestly family was, but we learn several other things from this archive that tell us a good amount about the new Ptolemaic economy and how it worked both in theory and in practice. The archive of documents derives from an official's papers, mostly those of a man named Milon, who had been appointed *praktor*, or "special commissioner" of the temples in Edfu.[3] It was his job, apparently, to resolve the financial problems of the priests and of the temple. In one letter, he was told to consolidate a kind of financial statement about funds raised to build the new temple of Horus and to send a report to the "city," which most scholars assume is

[2] On the *lesonis*: Redford (2001:156 n. 160).
[3] A few of the texts derive from Milon's predecessor in office that were subsequently handed over to Milon.

a reference to Alexandria.[4] Even though the monies and grain used to pay for the building appear to have been raised locally, and there are hints in the archive that this was the case, it is remarkable that officials, perhaps the king himself, showed an interest in the building finances of this temple.[5] We saw in the last chapter how important Edfu was to the Ptolemies.

Another fact, astonishing at first sight but perhaps absolutely typical in such a system, is the behavior of Milon himself. One of his jobs was to auction off the seized mortgaged property of the priests because if their arrears to the state. The rules and regulations of the state auction process were well spelled out and in fact are preserved in the archive.[6] He apparently had with him what he had to do in detail. And yet he did not follow them. Several bids were posted but the land was actually given to a lower bidder.[7] However ordered the Ptolemaic economy was, we can see in this the fact that, despite personal liability, officials did not always behave with the interests of the state uppermost in their minds. Milon was at one point scolded by his superior by letter on account of a delayed report:

> Euphronios to Milon, greetings. When we arrived in Edfu, I looked for you… in the (usual?) places, but they said that you were in Aswan. Therefore you are acting improperly by putting off the matter. When you read this letter, having come to me…bringing with you all documents, and if you have done anything else, bring also the copies of the receipts which you have made. We want to talk to you about these matters you sent. Farewell.[8]

[4] Interestingly, on 15 August 222 BC Milon's superior, Euphronios, wrote from Thebes, which in Egyptian was called "the city" (dem. *Ne*). One wonders if "the city" referred to in *pEleph.Gr*. 10, dated 7 August 222 BC, refers to Thebes, where Euphronios may already have been, rather than to Alexandria.
[5] On the building of the temple: Dietze (2000), stressing the "strategic influence" of the Ptolemies.
[6] *pEleph.Gr*. 14.
[7] A petition by one of the higher bidders is preserved in *pEleph.Gr*. 19 (= *pBerl.* 13508).
[8] *pEleph.Gr*. 11 (= *pBerl*. 13520, 16 November 223 BC).

and in fact we are told that he was beaten up in his reply, for reasons that will forever be obscure. We do know that he fled to the island of Elephantine at the Egyptian border, where his papers were eventually placed in a jar for safekeeping, to be forgotten about perhaps, until a German archaeologist in 1906 was fortunate enough to find them still in their (badly damaged) jar.

The Milon archive, dating to the final years in the reign of Ptolemy III Euergetes, is a good case study of what we might call the mature Ptolemaic economy.[9] We learn several things from the priestly family problems, and along the way some other basic facts about the local economy of Edfu. State income guaranteed by individual office holders. The auctioning off of land to the highest bidder, theoretically, but it did not always happen that state revenue was maximized. The state ran up against the problem of enforcement costs and of information. In both of these cases, the use of local elites was both practical and problematic. We also learn something about the financing of temple building in the period, although it is not completely clear. It seems other temples in the area contributed to the project. We also learn something about the bureaucracy and the flow of information. It also seems that the central state showed great concern in the use of the funds for building, and demanding an accounting. We learn also about the income of the priests in the temple. Temples continued to be important economic centers of production, in cloth and in other things.

From one fascinating archive, I want to move on to discuss its implications in the wider context of the Ptolemaic economy. In the last chapter, we have seen that the Ptolemaic kings were actively involved in political relationships with the key constituent

[9] Previous surveys of the Ptolemaic economy: Préaux (1939); Rostovtzeff (1941, rev. 1955); Habermann and Tenger (2004); von Reden (2006); Manning (2007).

groups. They took on the role of the pharaoh, and all of the theater that went with it. The economic and legal systems that I will examine in the next two chapters were the result of the political economy and its evolving nature.

In Chapter Three, I argued that a despotic or dirigiste model of the economy does not capture enough of the political economic realities of Egypt. There I argued that understanding the organization of the economy in top down terms does not sufficiently capture the dynamics between the state and local groups. More subtlety is called for, and an acknowledgment of what is called Fiscal Sociology (*Finanzsoziologie*), the study of :

> How the generation of income and its expenditure by the state and other political authorities affect the political authorities themselves, the economy, and the rest of society.[10]

Despite the lure of the documents, which makes the economy appear on paper as a rigid, hierarchical and rational system, Ptolemaic economic institutions were flexible, and utilized existing structure and social networks as far as possible. This is the context in which we must understand the introduction of new fiscal institutions. This state flexibility was indeed a tried and true recipe for success in Egypt, both before and after the Ptolemies, in part dictated as I have already said by a dynamic river system, flood recession agriculture and the ancient social structure that has adapted to these for millennia.[11]

The royal economy

The economy of the king and the Ptolemaic economy as a whole have usually been conflated into one entity, following Claire Préaux, called the "royal economy," i.e. the

[10] Swedberg (2003:174).
[11] Cf. the later Fatimid policy in Sanders (1998:161-65).

fiscal system created to finance the "household" of the king and the administration.[12] In that broad sense, it is an ancient notion.[13] It has been common to assume a private and a royal sector, or even a tripartite division into private, public and royal (Briant 2006). But the lines between these are unclear, and suggest a distinction that, in my view, does not matter. Moere importantly, though, such a conception tends to ignore private exchange.

Hellenistic economies as a particular phase of the ancient economy have usually been ignored by scholars, with the notable exception of Rostovtzeff who, with Weber, saw that world as modernizing.**[14]** Hellenistic, or better Ptolemaic, Egypt, was never specifically treated by Moses Finley because he did not isolate a "Hellenistic" economy. Rather, even in this period, the economy was bifurcated into an "ancient" and an "oriental" sector, without any development or rationalization of the two.[15] Ptolemaic state formation did not merely join two economic sectors, but attempted to integrate the ancient institutional structure within a new fiscal system.[16] From the point of view of Egyptian history, even if many of the institutions were not entirely new, the formation of the Ptolemaic economy can be seen as "modernizing," i.e. bringing a new institutional basis of economic behavior into Egypt, connecting it to the Mediterranean, and intensifying market activity across a wide range of economic activity.

---

[12] Préaux (1939:569); Descat (2003:156). The same working definition is adopted by Aperghis in his study of the Seleukid royal economy (2004).

[13] Not just from Pseudo-Aristotle, *Oikonomika*, as Descat (2003:153) points out, but even in much earlier Egyptian thinking. For the similar ancient Egyptian conception, the state as a large household (king = *pr-c3*, lit. "big house) among other households, see Goelet (2004). It is in fact a common conception in the ancient Mediterranean: Old Persian *vith*, Aramaic *beyt.*

[14] Well summarized by Descat (2003).

[15] Finley (1985:183). The "oriental" sector, the economies of Ptolemaic Egypt and Seleucid Syria predominantly, were in Finley's opinion unchanged by the new political regimes. They were merely extensions of the older system of exploitation, with large state sectors, and little private enterprise or private production. Saller (2002) is probably right to deemphasize the differences between Finley and Rostovtzeff when it comes to the "primitive-modernist" debate in the ancient economy, but on the issue of the hellenistic economy specifically, the differences between them are noteworthy. Cf. Davies (2001).

[16] I agree fully here with Descat's conclusions (2003:168).

The state as taxer and as consumer certainly had a profound impact on overall demand in the economy, both in its structure and in its scale. Public events such as the famous *pompe* at Alexandria under Ptolemy II described by Kallixeinos provides a rich background and perhaps, if we believe the numbers, a sense of the scale of state consumption.[17] We may assume that along with state festivals, the finance of the military was the major component of state expenditure.[18] On the other hand, its taxing power has perhaps been the most commented upon aspect of the Ptolemaic state. Did they extract more revenue from what existed (Cf. Samuel 1983:32), or did the tax stimulus drive overall demand and thus improve economic life as Rostovtzeff understood (1941:351)?

The sources of Ptolemaic revenue compare, broadly, very well with the second book of the well-known *Oikonomika*, probably written by one or more students of Aristotle.[19] This treatise, composed, probably, at the end of the fourth century BC, reveals much about the *mentalité* and the taxation policy of Hellenistic states, whether the Seleukid kingdom is the specific subject of the treatise or not (Descat 2003:154-56). In the most recent discussion of the text,[20] it has been argued that this treatise on revenue comes not from observance of the Persian empire but, more specifically, from the Seleukid economic system. Key revenue streams in order of importance were: revenue from land, revenue from natural resources, from markets, movement, of commodities and of property (sale tax), revenue from animals, revenue from capitation taxes and, finally, "extraordinary" revenue, war booty and the like. Officials were also responsible for creating new revenue streams, and even for decreasing spending in some areas where

[17] On this parade see Thompson (2000b).
[18] On the military, cf. Baker (2003). For festivals, see Perpillou-Thomas (1993).
[19] Descat (2003) on possible authorship of some of the work. Note that the role of satrap in the text does not compare well with late fourth century Egypt: Rostovtzeff (1941:444).
[20] Aperghis (2004:117-35).

possible. An equilibrium between the king and constituent groups was recognized as crucial with respect to revenue.[21]

Whatever source whence the text ultimately derives, and for whatever purpose it was written, Ptolemaic state revenue followed the same categorical pattern as outlined in Book II. In most respects the nature of state income did not differ from royal income in the New Kingdom or in the Late Period with the important exception being the income in cash generated by the Ptolemaic system. It came in various forms, initially war booty, a function of third century external warfare, must have been an important component of revenue.[22] With gradual loss of empire during the third century BC, and less overseas war, internal revenue, and revenue collection mechanisms probably played an increasingly important role in state finance.

In Rostovtzeff's view, the Ptolemies continued the tradition of ownership of the land by the king and the compulsory labor system, the "twin pillars" of an Oriental state."[23] All land was either "royal land," directly managed by the king, or was "conceded" to others to work, and could be confiscated by the king as he desired. Many scholars have assumed an erosion of state power over land from the third to the second and first centuries BC.[24] But the theory of the devolution of royal power on the land rests on two false assumptions. The first is that the king claimed all of the land in Egypt by royal right. This idea was supported by the land terminology used in official documents that divided the land into two large classes, royal land, which was directly controlled by

[21] Cf. the remarks of Descat (2003:165) concerning a third century BC inscription from Aiolis in Asia Minor, and Ma (2003:186) who also effectively utilizies the concept of equilibrium in discussing the relationship between kings and local communities.
[22] See Austin (1986); Chaniotis (2005:129-7). War booty, for example, has been estimated to amount to 10% of total income under Ptolemy III (Préaux 1978:367). Booty from the third Syrian War: *FGrH* 160.ii. Cf. Austin (1986:465).
[23] Rostovtzeff (1941:271).
[24] Lewis (1986:33). Taubenschlag (1955:235). Cf. Husson and Valbelle (1992:260-61).

the crown, and conceded land. The fiscal terminology, however, somewhat different in the south, reflects neither the maintenance of traditional land-holding patterns in the Thebaid nor the limited intervention there. A recently published text confirms the widespread private holding of land in the south, although the taxation of the land compares to that of royal land in the Fayyum.[25] State, or "public" revenue was distinguished from the personal revenue of the king and from private income of others although I would not strictly speaking insist on an absolute distinction between public and private in all spheres (Briant 2006).

We have also seen that the kings were involved in new settlement patterns, and in city foundations. There, the Ptolemies preserved Greek traditions of democracy and autonomy, and showed concern for the prosperity of the cities as well as harmony in them, although there this was not always achieved.[26] But in both of these cases, there were other actors too, the political relationships between the king and the ruling coalitions evolved and changed, and the role of individual actors on the ground was often more important than royal activity. In all of these cases, and in the introduction of new economic institutions, the creation of new organizations and new institutions raised the cost of collective action.

See Vandorpe's new summary piece on tax policy, syntaxis.

[25] Christensen (2003).
[26] Austin (2003).

The evolution of economic institutions in Egypt, as in other areas of social life, was driven by the intentions of the kings and their policies in the broader context of the society and its larger forces, demographic change, war, geography and climate, the interests of social groups, among other things. The new economic regime established by Ptolemy I and Ptolemy II affected Egypt for many centuries to come. Had some of the buildings of Ptolemaic Alexandria or Ptolemais survived, as did some of the contemporary Egyptian temples along the southern Egyptian Nile, we might well be disposed to speak about a "Ptolemaic economic miracle" that presaged, on a smaller scale certainly, the Fatimid one by some thirteen centuries.[27]

In terms of policy and its effects, as Runciman points out (1989:286), it is more often than not the unintended consequences that are rather more decisive in the evolution of institutions. Ptolemaic rule in Egypt created a new system, with new territorial boundaries and new institutions. If the state, as other pre-modern states, was weak regarding intensive power (capacity to organize the state internally to solve particular problems) as I suggested in the last chapter, what explains the evolution of Egyptian society in this period? The answer to that question is complex, and will require an analysis not only of the actions of the king, but also of the complex temporal and spatial interactions of a variety of social groups and indeed individual actors with respect to loyalty and the state's enforcement costs.[28]

[27] The phrase "the Fatimid miracle" is that of Goitein (1967:33) cited by Brett (2001:333).

[28] Bingen has stressed individual actors. This follows the Weberian tradition of course, and serves as a counterweight to the "top down" approach in the analysis of social systems. That point with respect to ancient Egyptian society has been well made by Lehner (1999:339), and Eyre (forthcoming). The opportunity to observe individual actors in society is one of the great appeals of the papyrological sources. For a good illustration, see *SB* XX 14708 (Theadelphia, 151 BC), documenting a private extortion racket of a local official in the guise of tax collection. For an English translation of the text, Bagnall and Derow (2004, text 98).

Eisenstadt (1993:121) identified three main goals of rulers: (1) to monopolize or at least to guarantee the mobilization of resources for the purpose of achieving the goals of the regime and to maintain services; (2) the continuous control and regulation of the economic resources, and (3) to maintain political control. The key to success was the ability of the state to obtain "free-floating" resources that provided both for royal power and for constituent groups in the society.

In the middle of the third century BC, Ptolemy II Philadelphus was probably the wealthiest man in the world. "So great are the revenues that come every day and from every direction to his rich store," the poet Theocritus tells us in his famous encomium to the king (Hunter 2003:87). Of course, as in earlier Egyptian history, the taxation system was a motor that created demand in the economy. But unlike previous regimes, that revenue consisted of two principal components, revenue in grain and revenue in cash, generated by a "new kind of economic machine" (Davies 2006:82) primed largely by cash. This new element, cash generated by taxation, was the product of policies of the early kings, particularly Ptolemy II and his major reforms (von Reden 2007). The coinage, in turn, allowed the Ptolemies to assert sovereignty over the whole of the country in an easier, more efficient manner.

State revenue, the subject of nearly the whole of Préaux's (1939) classic treatise on the Ptolemaic economy, was large, although, as with expenditures, we can only make an approximate quantitative guess given the state of knowledge of the population and land under cultivation at any one time.[29] The need to create "free-floating resources" was driven by military concerns of the king, among other issues. Only literary texts furnish us

[29] For the accumulated wealth of private individuals and kings in the Hellenistic world: Rostovtzeff (1941:1143-59)

with numbers, and they are, of course, suspect. Jerome's oft-quoted figures for Ptolemy II's annual revenue of 14, 800 talents and 1.5 million *artabas* (assuming 1 *artaba* normally ca. 40 liters, or 32 kg) of wheat are difficult to judge, the revenue in wheat considered too low by some scholars (Préaux 1978:34-65; Bowman 1986).[30] Reckoning at twelve *artabas* of wheat per adult per year revenue, that amount of grain revenue was probably sufficient to feed 500, 000 men. That estimate may be considerably off the mark. If modern minimum consumption estimates are any where near accurate for Ptolemaic Egypt, 1.5 million *artabas* of Jerome's figure would feed 192,000 persons.[31] If Préaux's estimate that 8 million *artabas* of wheat per year is a better estimate of Ptolemies state revenues, that would mean that state income in wheat could sustain over 1 million persons/year. The cash revenue, based on an average third century BC wage, would purchase roughly 500, 000- 750, 000 man-years of labor.[32] The number is massive compared to Fifth century Athens' annual revenue of 1, 000 talents, but of course the population of Egypt was considerably larger than Athens, but at least we have some idea of how potentially wealthy Egypt was. As Préaux (1978:365) rightly stressed, that revenue does not represent an exorbitant percentage of the total wealth of the country. Préaux reckoned a taxation rate of 16%, roughly the figure I reached of state revenue amounting to between 14-21 % of minimum GDP (Manning 2003:135 n. 21). That is an impressive number if one compares to the Roman taxation level estimates of Hopkins (1995/1996) of about half that level. If these estimates are anywhere near the truth, the

[30] Cf. the comments by Rostovtzeff (1941:1150-53).
[31] For the modern subsistence estimates based on developing world studies, I rely on Hopkins (1995/1996:197 n. 11).
[32] For the rough calculation of the order of magnitude, see Préaux (1978:364-66). Cf. New Kingdom temple revenue in Haring (1997:389): one million liters annually…CHECK, Warburton (2000).

Ptolemies must count as one of the most impressive taxing powers and mobilizers of resources in antiquity. That taxing regime was the engine for increased urbanization.

Institutional structure of the Ptolemaic state

Usual understanding of the Ptolemaic state is that it was strong, and could impose its rules on the countryside and on ancient institutional structure of Egypt without friction. I shall argue that economic relationships of production were important. Given the local nature of the control of irrigation and agricultural in Egypt, the economic relationships that arose in ancient times around production was a serious potential constraint on state action and power, but the taxing power of the state, and its distributional continued to be a major economic force under the Ptolemies.[33]

Most analyses of the Ptolemaic state begin with a basic structure of the state, essentially a pharaonic structure of governance through nomes, or administrative districts, with an overlay of Greek officials sitting on top of this ancient structure connecting villages to nomes to the capital. The ancient nome division of the country became, in the period, an ideal state order, a fixed "sacred" geography. Pseudo-Aristotle, *Oikonomika* II ii 33 mentions nome governors in charge of taxation in their districts at the end of the fourth century BC, these officials became increasingly unimportant in the Ptolemaic system. New tax districts were created. The Fayyum was divided in toparchies for taxation purposes. The system may not have been so uniform elsewhere, but there are symptoms of Ptolemaic imposition of administrative structure in Upper Egypt as well. Like the Dutch in Bali, the Ptolemies imposed a hierarchical structure of bureaucratic administration over Egypt. But we must be cautious in what the real effects of this were

[33] Cf. Haldon (1993).

on local production or tax collection.[34] As in earlier times, some areas, like the Thebaid, were administered more as a region than through the nome structure. The Ptolemaic state, however, was never static. The documentary papyri instead tell an evolutionary story of institution building, although we cannot know the details across Egypt from the three centuries of Ptolemaic rule.[35]

When it comes to the economy, the old view of a highly directed, centralized state economy has given way to a subtler view of the relationship of the state to the economy. Increasingly, the state's role is seen as more reactive to conditions and particular needs than planned out and directed from the center. The single most important shift in economic policy of the Ptolemies as compared to earlier regimes was the shift from the control and taxation of labor service to the taxation system dedicated to raising revenue in cash.[36] That brought with it several important new institutions: coinage, tax farming, banking and the census.

The most important of these new institutions was the introduction of receipts into the taxation system. These were tied into the banking and tax farming system, all introduced, it appears, into Egypt by the early Ptolemies. These receipts, normally recorded on ostraca, small shards of pottery or stone chips, were a regular feature of taxation at least in the Thebaid, where they are attested. Local nature of tax receipts, targeting local economies. Cf. Ma (2000). It was the number, the variety and the complexity of the system of taxation that was so impressive to Préaux (1939:427).

[34] See the analysis of Lansing 1991:17-36. In the end the Dutch "withdrew from most aspects of administration (P. 34)."
[35] A text from the mid-third century BC, known as the "Karnak ostracon," records the number of nomes in Egypt as 36, but the number is erased and 39 is written.
[36] The point is well made by Clarysse and Thompson (2006:34).

Derived from the inherent power of the king, and the complexity of institutions, similar to Ancien Régime France.

Writing and contract ensure trust and stability, and predictability, and thus more revenue. Here we can observe a likely improvement on the ancient Egyptian system that, like the Ptolemies, relied on village hierarchies and social obligations. The potential abuse of farmers by officials is well known in literary texts and in official decrees. The state attempted to counter this problem through force of morality, and increasingly, by the routineization of the process in the use of written records.[37] The introduction of tax receipts into the early Ptolemaic system must be seen in this light, and probably served to protect taxpayers from overzealous collectors.

Vandorpe shows clearly the link between politics, language and tax collection. Northern disturbances such as the invasion of Antiochus IV had consequences in the upper reaches of the Egyptian Nile as well as in the Fayyum where some of his soldiers damaged temples (*pTebt*. III 781) The switch from the use of demotic to Greek in the tax receipts may perhaps be linked to the imposition of stronger state control of the south in the wake of a series of rebellions. Vandorpe derives the following historical scheme: after the revolt of the Thebaid (208-186 BC), taxes were again collected, by Egyptian officials. After another brief period of unrest in the 160's BC, Greek officials were in charge of tax collection while Egyptians scribes were reduced to countersigning the tax receipts. By around 160 BC, the collection of taxes was split into several different collection points. But the collection of taxes never appears to have been stable over the long run, with problems emerging again in the early first century BC. Tax receipts were one of the fiscal innovations of the Ptolemies, and while a study of them shows strong correlation between

[37] Duties of the vizier, Van den Boorn (1988). Eyre (Forthcoming).

state control and tax collection, the absence of receipts in periods of unrest may not mean that taxes were not collected, but that they were not recorded, or the tax revenue went elsewhere other than into state banks.

Coinage

It has generally been assumed that the use of coinage had profound effects on social relations, but any assessment of the impact of Ptolemaic coinage must consider that Egypt had been partially monetized long before the Ptolemies. Bingen (1978 1981) gives a famous example, and stressed the dependence that the monetary system created. But I doubt the impact across the board was that oppressive. Profit motive of Greeks vs. "traditional networks of the old Egyptian economy." Bingen speaks of the "economy" for example and the use of the surety documents (*Cautionnement*). But they are limited in time (mainly Ptolemy III) and in space (the Themistos district of the Arsinoite nome, i.e. the Fayyum). Origin of these types of contracts? Persian?? Certainly pre-Ptolemaic ("receive the hand of PN"); group solidarity

Metals were used as a medium of exchange, a store of value, and a means of payment for more than a millennium before coins. Gold rings and copper blades as well as grain were well known in New Kingdom transactions, and a nominal exchange rate between copper and silver was fixed at 1:60.[38] An important Ramesside period letter shows, for example, that the harvest tax collected on private land was paid in "gold into the treasury of Pharaoh."[39] The term "gold" in this text is susceptible to several interpretations but it is at least plausible that the term refers in a general sense to "money"

[38] Summaries of the pharaonic Egyptian economy (i.e. primarily the New Kingdom economy, when the documentary evidence is at its thickest) may be found Warburton (1997); Menu (1998) and in Kemp (2006). Barter exchange measured against fixed value of a commodity (silver, copper/bronze, grain) is well known in ancient Egypt and well described by Janssen (1975) and by Kemp (2006:319-26).
[39] *pValençay 1*; discussed by Gardiner (1951); Katary (1989:207-16); Warburton (1997:136-37).

and that taxes in grain were conceived of in monetary terms. A silver standard was in place by the end of the New Kingdom. Under the Persians, the treasury of Ptah in Memphis was the guarantor of a silver bullion standard, and this standard may have been more widely accepted than in earlier times.[40] In the so-called Third Intermediate period (1069-664 BC), taxes were beginning to be monetized. A 10% transfer tax is known in a few documents.[41] Greek and Persian Silver coinage was certainly around, although it was used as bullion, i.e. weighed. But pRyl. 9 15, 15-19 no mention of weighed coin. End of Persian period Egyptian coins found with Egyptian writing

Increased monetization seems to be associated with a higher volume of trade with Greece beginning in the seventh century BC, at the same time as the Greek trading colony at Naukratis in the western Delta was established.[42] It is therefore not surprising to see an increase in coin hoards in the 6th century BC. If Kim's suggestion (2002) is correct, the use of small change in the Greek world speaks to a deeply embedded institution across the range of the social hierarchy and, as a Greek institution, would have been familiar to Greek immigrants in Egypt. As Muhs rightly (2005:4) argues though, monetized transactions were still limited to a small elite circle. By the fourth century BC, the evidence for the use of bronze coins in small transactions increases.

The use of coined money in the taxation system, as payment in wage labor and in small transactions was a new feature of the Egyptian economy under the Ptolemies. The establishment of the mint at Alexandria by 325 BC shows that coinage was a feature of the Ptolemaic system from the very beginning. The payment of taxes in the Ptolemaic

[40] See e.g. the demotic marriage contract dated to the reign of Darius I from Saqqara published by Martin (1999); Vleeming (1991:89).
[41] On the history of the transfer tax, see Depauw (2000:58-63); and briefly Muhs (2005:3-4).
[42] Muhs (2005:4).

period was divided into two types: those collected (or at least calculated) in terms of grain, and those taxes that were demanded in coin. Certain taxes on agricultural production were also required in cash. The most important of these were the *apomoira*, a tax on vineyards, the tax on fruit trees, and a tax on fodder crops.

Surely by the second century BC, and probably before, Egyptian temples were fully involved in the cash game. Recently published texts from Edfu, for example, suggests that temples were involved in the marketing of wine.[43] Other forms of business, beekeeping for example, were cash businesses in which the state normally received cash rents.[44] But as both von Reden and Rowlandson have pointed out recently, the persistence of the Roman policy of collecting the tax on grain-bearing land in kind for pragmatic reasons formed a natural limitation to monetizing the economy in coin.

The fixing of the value of each coin and the determination of how many of each type of coin should circulate was an additional, an important, source of sovereign power of the kings (Pseudo-Aristotle, *Oikonomika* II.1.3; cf. Helleiner 1998). As such, coins, their circulation and use are strongly linked to the early Ptolemaic project to integrate the royal economy with the ancient institutional structure of Egypt. A taxation system that demanded payments in coin was an imposition of state authority on villages just as, in ancient times, the king imposed a rural order in the establishment of nome (i.e. district) boundaries. The act of demanding coin was an act of sovereignty, a constraint on the hinterland, and a means by which state authority was imposed, at least in theory, in a uniform or standardized way. Thus the establishment of coinage as a means of the payment of taxes and in small transactions was part of the imposition of a larger political

[43] *pCarlsb. 409 and 410*, for which see Schentuleit (2006).
[44] See the comments by Bingen (1978b).

order, related, for example, to the formation of a legal order that incorporated both Greek and Egyptian legal traditions into one state system. The process in Ptolemaic Egypt is rather different than that described by Seaford (1994) for the Greek *polis*, and it did not involve as much of a threat against the local elite that undermined traditional society.[45]

Ptolemaic fiscal control of Egypt differed from earlier states in its demand for cash, but it took some time, presumably, for coinage and the idea of coinage to take hold in the countryside. Yet Egyptians switched to the new system almost, so it seems, without a flinch (Rowlandson 2001:154) even if the circulation of coinage fell short of the nominal amount of the taxes in money demanded by the Ptolemaic fiscal system.[46] The Ptolemaic state's demand for tax payments in coin was the principal engine of Ptolemaic monetization. The single most important tax, known in early Ptolemaic demotic sources as the yoke tax and subsequently as the salt tax, was assessed per capita, and it included animals as well. The *apomoira* tax on vineyards raised money for temples as well as for the cult of Arsinoe II (Clarysse and Vandorpe 1998). The state continued to collect the tax, thus keeping the revenue collection in state hands as a kind of "insurance" against revenue shortfall.[47]

A whole host of small taxes on professions and transactions was also collected in coin, either silver or bronze.[48] Coinage may not have transformed the Egyptian countryside but it must have affected social relationships to some degree. The Ptolemaic taxation system utilized tax farmers and banks, both new fiscal institutions with which the rural population had to deal. The establishment of state banks was surely one of the

[45] Cf. the remarks of von Reden (2002:165-66).
[46] von Reden (2002).
[47] Walbank (1993).
[48] See von Reden (2007) for the details.

key "political strategies" of the early Ptolemaic state.[49] Banks replaced the traditional economic function of temples as payment centers in areas such as the Thebaid, where tax receipts are documented by the end of the reign of Ptolemy I.

To be sure, the acceptance of coinage by Egyptians involved not only the Ptolemaic requirement that certain taxes be collected in coin, it also entailed the active willingness of the population to put faith in coins as a medium of exchange.[50] The availability of coinage for tax payments and in private transactions, of course, depended on circulation, a technical problem that I cannot not tackle here.[51] The accounting system was monetized, although payments could be rendered in kind. Certain taxes were calculated in terms of coin, but often they, and wages, were paid in kind (Keenan and Shelton 1976:2; von Reden 2001:70-71). The Ptolemaic monetization of the economy allowed for an easier conversion of crops into cash, and the inter-convertibility of different crops for the payment of rent, but it must be stressed again that coin did not fully replace ancient practice.

Lending at interest appears to have been an institution late in coming to Egypt. It is documented aroud ca. 900 BC, far later than the Near East.[52] While this is strictly speaking true with respect to loan contracts, loans with interest are well known before this date from the New Kingdom village of Deir el-Medina.[53] There are only a handful of

[49] von Reden (2001:66, n. 10).
[50] Von Reden (2001).
[51] See the excellent book on the history of small coinage by Sargent and Velde (2002). Cf. von Reden (2002:157).
[52] Van de Mieroop (2005).
[53] E.g. *P. Turin PR 9* mentioning a loan of grain with 50% interest. On the history of lending in Egypt, see Menu (1994); (1998).

pre-Ptolemaic money loan contracts, and thus it is not possible to establish the extent of private lending of money, or a standard rate of interest.[54]

Loan contracts in demotic Egyptian are known from the early Persian period, but their paucity cannot be used to assess how common written loan contracts were at the time. In general loans in kind and in cash are among the most common contract types in demotic, and loans in kind are still the majority of preserved loan contracts of the Ptolemaic period. The majority of these are from the Thebaid and dated to the second century BC but the distribution can in no way demonstrate secular trends in private lending, i.e. we cannot use the increase number of documented loans in the second century BC to suggest that private loans became more common in the later Ptolemaic period.

Coinage, to be sure, represented the authority of the king. That authority is found not only in the demand for taxes but in the power of the king to assigned tenure to land, to survey fields, to establish nome boundaries, to conduct censuses of men and animals, to guarantee justice, to establish weights and standards and so on. [55] Coinage, then, was a new institution brought to bear in the ancient power struggle between central and local authority in Egypt, and the establishment of the Ptolemaic mint in Alexandria in 325 BC was an important signal by a new sovereign state. Demotic legal texts show us the history of the relationship between money and the state in the first millennium BC rather clearly. In Saite demotic documents, as well as Aramaic ones, amounts of money are mentioned in terms of weighed pieces of silver against a certain weight standard of a temple: "silver, x *deben* of the Treasury of Ptah, refined". The Egyptian weight standard was known as

[54] See briefly Depauw (1997:146-47).

[55] Hicks (1969:63-80). The institution of public auction was a new mechanism introduced by the Ptolemies to assign tenure to land and to assign rights to tax farming contracts. On the history of standardization, see Hudson, ed., (2004).

the *deben*, and it was at the treasury of the most important temple of the Saite-Persian and Ptolemaic period, that of the god Ptah at Memphis, where the standard measures were fixed. This important role of the temple was replaced in the Ptolemaic period when the phrase "silver, x *deben* of the Treasury of Ptah, refined" was an archaism with the new meaning not of a standardized weight but a specific amount of silver in Ptolemaic coins.[56] This is a subtle yet important shift in political and economic power away from Egyptian temples into the hands of the Ptolemaic kings.

A group of demotic Egyptian papyri from Asyut now in the British Museum that does provide valuable insights into an Egyptian village in Upper Egypt preserves the oral transcript and supporting documentary evidence from a dispute between two half-brothers over the inheritance of two small plots of land that occurred in the early second century BC before judges in the temple of the local god.[57] During the course of the oral proceedings, a complete list of the property of the priestly family is listed. All of this property is real property or shares of offices (priesthoods or scribes). Nothing in this reveals much about the new Ptolemaic economy in coin, and we can only guess if any revenue from local storehouses was generated in coin or in kind.

An important archive revealing much about lending in practice in the Egyptian countryside is the second century BC archive of Dionysios son of Kephalas.[58] Napthali Lewis has made a good case that Dionysios son of Kephalas, from a Greco-Egyptian military family, at the end of the second century BC, utilized his social connections within the military to lend money and grain. Far from being in a debt trap as was

[56] See Vleeming (1991:88-89), with literature, and further below, p. xxx..
[57] Manning (2003:201-05).
[58] Boswinkel and Pestman (1982); Lewis (1986:124-39).

supposed, Dionysios was rather a "master of sharp practice."[59] Dionysios owned and rented land in the area around the garrison town at Akoris, but it is his role a lender that is the dominant feature of the papers that have come down to us. Two-thirds of the archive is devoted to his lending activities, and most of the loans were grain loans. In three cases, money loans were repayable in kind. Since the interest rate on loans in kind was traditionally set at 50% of the loan, it seems there was incentive, intentional or not, to lend in kind rather than in cash, and convert the grain to cash when and if necessary.[60] In both the case of the Asyut priests and Dionysios, access to real assets either through the temple or the new royal economy that privileged soldiers and state officials allowed persons to convert hard assets to liquid ones.[61] It is obvious enough to say, and hardly surprising, that elites took advantage of economic opportunities as they presented themselves. Soldiers receiving salaries could be instruments of monetization, but as Bingen (1984) has shown, access to land, and in particular to the all-important wheat crop, was only an ad hoc and irregular feature of the royal economy, and it could not apply to the entire Greek immigrant population. In Bingen's view, the Greek *mentalité* of a monetary economy came straight up against an ancient agricultural regime that was only partly altered by the new institutions within the royal economy. The credit market still relied on personal contacts and trust between individuals within a family, or within the same status group, as the Dionysios archive shows.

Much attention has been paid to the effect of the monetary economy on lower strata of society. Such is the case with the surety documents from the Fayyum in which

[59] Lewis (1986:131).
[60] For some cases of variable interest rate in loans in kind, see Vandorpe (1998).
[61] For loans in kind and in money for the military community at Pathyris in Upper Egypt, see the important discussion by Vandorpe (2002:105-217).

small amounts of cash were paid to guarantee that work would be period in certain industries such as beer making.[62] Mummification was another cash business, and Egyptian temples also raised cash that is accounted for by the Ptolemaic official known as the *praktor*, a Ptolemaic official in charge of temple finances, and the *lesonis*, a temple priest internally charged with fiduciary responsible of the temple to the state. If the third century BC archive of Milon from Edfu with which I began this chapter is any guide, industrial activities of Egyptian temples (*inter alia* beer making, the manufacturing of linen and papyrus) in general were vital generators of cash, with officials such as the *lesonis* personally liable for shortfalls in expected income.

The question of Egyptian practice, or the adaptation of coinage not only in taxation and also in small private transactions, is really a matter of assessing the degree to which the royal economy had penetrated into village and household economies. Alan Samuel (1984) has stressed the traditional peasant mentality that clung to barter transactions, with little resort to market or "public" transactions, and thus little use for coinage. Two levels were in place, even during the second century when bronze coins were used for small transactions. On one hand the Ptolemaic coinage system was fully embedded in practice as a unit of account. On the other hand, Egyptian peasants were more engaged with social relationships in their village that used barter to establish relative value of goods to be exchanged when needed.

> While the introduction of silver currency in Egypt by the Ptolemies was a century old by the time our second-century texts were written, the practice of using silver as the standard of exchange had by no means overwhelmed the long-established practice of reckoning in kind, and indeed, may even have receded to some extent after the first influx

[62] Bingen (1978b).

of Greeks into the countryside.[63]

Thus we may say that by the second century BC, coinage had penetrated into most Egyptian households, but coins never became a kind of multi-purpose money. It remained, rather, one means of payment, and it never fully replaced the natural economy.[64] Furthermore, many (perhaps even most) of Egyptian sales from the Ptolemaic period were probably not cash sales at all, but transfers of rights within families, and without, therefore, the need to draw up a written document. Many of the preserved written documents of sale were also not cash sales, but transfers of rights.[65] In other words, even though the language of these contracts expresses the fact that a satisfactory "price" had been paid by the "purchaser," the documents could be used for a wide variety of transfers of property rights, from proper sales that involved a transfer of cash to intra-family transfers that conveyed rights without payment. On the other side of the coin, as it were, are undocumented cash sales. These would include, for example, the sale of animals that are extremely scarce in the surviving Ptolemaic record for reasons I have laid out elsewhere.[66] Egyptian marriage "contracts" were also monetized, but they had been since the sixth century BC.[67] They express a cash sum that was payable to the woman upon divorce, and these marriage "contracts" specified the value of the dowry in terms of silver and under the Ptolemies in Ptolemaic coinage. Demotic documents, therefore and perhaps surprisingly, are probably not good gages of cash transactions in Egyptian villages and towns.

---

[63] Samuel (1984:202).
[64] Cf. Bingen (1978:212).
[65] For one cash sale of land purchased at a public auction, see *pHausw. 16* (Edfu, 221-220 BC) discussed by Manning (1999).
[66] Manning (2002-2003).
[67] See Lüddeckens (1960:289-321) on monetary values expressed in demotic marriage contracts.

There may well have been, for the third century BC especially, a regional difference between the newly exploited area of the Fayyum, and in the Thebaid, which was still dominated by ancient temple estates, was perhaps slower to accept the new monetary system.[68] The types of taxes also varied regionally.[69] While we cannot be sure, the extensive documentary evidence for wine (not only in the Fayyum) and fruit tree production is, perhaps, a good proxy measure of the reach of the Ptolemaic money economy into the countryside.

The history of coinage under the Ptolemies probably tracks rather closely the history of other Ptolemaic state institutions.[70] Given the elite and state bias of the documents, this is perhaps no surprise. But the use of coinage highlights both the process of Ptolemaic state formation, a desire for standardization and predictability by the state, and the flip side of this, the variable adaptation of the new rules by the population. It does appear to be the case, as Samuel has argued, that on one hands elites (Greeks, Greek-speaking members of the bureaucracy, soldiers and Egyptian priests) were more likely to buy into the Ptolemaic system and its institutions than peasant farmers. But we must remember that this dichotomy was not one that distinguished Greeks from non-Greeks entirely. As we have seen in the Milon archive from third century BC Edfu, Egyptian priests in the south were fully involved in the cash economy. Temple building projects there, beginning with the great Horus temple at Edfu in 237 BC, may have stimulated, in conjunction with the new tax system, increased circulation of coin through the cycle of wage payments. Whatever the extent of private cash transactions, however, the Ptolemaicization of Egypt, including the acceptance of coins as a medium of exchange,

[68] Reekmans (1948:22-xxx).
[69] On the impressive range of taxes, see Préaux (1939:591-95); Muhs (2005) for the Thebaid.
[70] See von Reden (2007) for the details of monetary integration and disintegration.

and its use in general accounting of state revenue and payments, was both successful and thorough by the end of the third century BC. The supply of coins lagged behind the use of coins a unit of account and as a symbol of royal sovereignty. The persistence of the natural economy may also have allowed people to disguise private economic activity, but we will never know the full extent of it.

Cities

The growth of Alexandria by immigration, and of other places as well, must have effected the organization of food supply. No figures survive on pre-Ptolemaic population, although most scholars assume population growth under the Ptolemies largely due to immigration into new urban centers.[71] The usually accepted estimate for the first century BC, including the city of Alexandria, lies between 3.5 and 4.5 million, on a theoretical maximum agricultural base of nine million *arouras* (1 aroura = ca. two-thirds of an American acre, or 2756 m^2; the total is about six million acres, 24, 793 KM^2), roughly comparable to Egypt at the beginning of the nineteenth century AD.[72] Greeks comprised roughly 10% of the population.

The growth of Alexandria and the reclamation of the Fayyum were without question the two most impressive developments of the period. The city of Alexandria, occupied by 311 BC, was the first "urban giant" in the Mediterranean.[73] The centralization of political power there, the rent-seeking behavior of the Greek elites, and its role as a trading center all played their part in concentrating a population of around

[71] For a recent treatment of the ancient Egyptian population, see Kraus (2004).
[72] Population estimates: Rathbone (1990:109-15); Scheidel (2001). Estimates based on documents are usually lower: Clarysse (2003:21) estimates a total population of 2.8 million on the basis of burial records from Edfu. The estimate of seven million by Turner (1984:167) is too high. The total arable and total cropped area would have fluctuated, and was no doubt considerably less than this maximum. The figure comes from a temple (Edfu) text, but it should not be dismissed outright.
[73] Ades and Glaeser (1995). Scheidel (2004) offers a model of urban growth in Alexandria.

200, 000 by the middle of the third century BC. We know very little about the grain supply to the city. It seems likely that market exchange, as in Memphis, played an important role. By the early Roman period the city had grown to perhaps 500, 000.[74]

The ancient capital city of Memphis, an important political center since the unification of the Egyptian state ca. 3000 BC, remained a vital economic center of manufacture, distribution and shipping under the Ptolemies.[75] The size of the city was something on the order of 50-60, 000.[76]

The reclamation of land and the settlement of new populations in the Fayyum and in the Herakleopolite and Oxyrhynchite nomes was surely one of the great accomplishments of the early Ptolemaic state. New land in the Fayyum was perhaps trebled (the exact amount of new land is debated). Ptolemaic expansion was centered in the Fayyum for two main reasons: (1) it was possible to reclaim land there, (2) it directly projected state power on new land and new settlements.[77] The new land was continually in danger of returning to marsh. Expansion onto new land allowed the Ptolemies to establish, as it were, new rules, and direct management of the land, although the process was a combination of the state and private initiative. The amount of royal land in the area was probably higher than elsewhere, and it became a kind of "showcase" of state power (density of banks, military population is notable).[78] Fayyum villages are believed, on average, to have been larger than those in the Nile valley, and the census registers suggest

[74] Delia (1988), Rathbone (1990) 120, Scheidel (2001).
[75] Thompson (1988).
[76] The lower estimate of Thompson (1988:32-5), cf. Rathbone (1990:141, n. 41).
[77] Rathbone (1996), (1997).
[78] Rathbone (1990).

a total population in the Fayyum of between 85, 000 and 100, 000 in the mid-third century BC.[79]

The most important center in the Thebaid was Ptolemais Hermiou discussed in the last chapter. Strabo (17.1.42) states that it was not less than the size of Memphis, and Akhmim (Panopolis), in the same area, may also have been a town of considerable size. In both cases, lack of real information limits our ability to quantify. Greeks from throughout the Greek world, and other groups, continued to be settled there for some time after its foundation.[80] Greeks came in smaller numbers to Thebes, a city of very roughly 50,000.[81]

The Ptolemies inherited a sophisticated economic structure that connected state finance to a regionally and hydraulically diverse agrarian environment based on flood recession agricultural production.[82] This system was a localized system centered on "small independent basins" (Eyre 2004:161) controlled and managed locally, with almost no state interference except in the collection of tax. Access to land, its registration and survey, and the control of labor, were the key drivers in ancient Egypt's economic history. All of this was dependent on adjustments to changing conditions of water and soil. The potentially very rich agricultural region of Middle Egypt, for example, was subject to cyclical Nile flood patterns and was therefore more prone to instability. Historically this was the region that was subject to continuous "colonization" of the soil, often by soldiers (Eyre 2004:161-62). The relationship between the central state and local

[79] Clarysse and Thompson (forthcoming).
[80] Plaumann (1910:3), *SEG* XX 665 discussed in Fraser (1960), a Roman copy dated to the second century AD.
[81] Clarysse (1995).
[82] Models of the ancient Egyptian economy have been much discussed in recent years. For one such model, see Warburton (2000).

power bases, always present, could be tipped by fluctuations in the average annual Nile discharge (Butzer 1984).

In the last chapter, I asserted that the Ptolemaic state was "built to control" rather than "built to last," a fact that stemmed from the state being a "capstone" established on top of populations, able to *prevent*, but unable to *organize* well. The documentation of the Ptolemaic economy fits this pre-modern pattern very well. Much of the economic organization was local. The central institutional concern of the early Ptolemies was to "gate" revenue flows. We have already observed the interest in "gating" trade flows with the foundation of the city of Ptolemais and the attention paid to Edfu. New fiscal institutions introduced by the first two kings also served to gate revenue. For example, the tax receipts for the transfer tax recorded on demotic Egyptian instruments of land conveyance. Once again, following Eisenstadt, their aims were resources, control and loyalty.

The state's encounter with the individual

Egypt, with its very well defined boundaries, and sharp contrast between cultivation and harsh desert was, perhaps, the best place on earth to tax people. The primary point of contact between the state and individuals was in the collection of taxes and the related institution of the census, which in turn formed the basis of Ptolemaic wealth.[83] The Ptolemies, just as the earlier pharaohs, "were obsessed with order."[84] Indeed the entire society was based upon the concept or order. That order of course, seen in the form of "rational" accounting of persons and of crops, in the bureaucratic hierarchy, the social order, and in the reckoning of time, were idealistic (and very ancient) expressions of state

[83] I rely here on the magisterial study of Clarysse and Thompson (2006).
[84] Eyre (2004:159).

ideology, an extension essentially of the theological system. The state wanted to count and control the movement of humans, animals and transactions; the individual desired invisibility, or at the very least wanted to be counted among a privileged group that was treated, and taxed, preferentially. The tension between the terror that the state projected, and the desire for avoidance by the individual is certainly observable in earlier Egypt. Weber described it in (over) stylized terms:

> We know how an Egyptian tax levy was made:
> the officials arrived unexpectedly, the woman began to cry;
> and soon a general fligt and hunt began; those liable for
> taxes were hunted down, beaten, and tortured into paying
> what was demanded by the officials, who were themselves
> held responsible fror quotas based on the official cadaster.
> This was the guise in which the state appeared to the peasants
> in the Near East, and as it appeared in modern times to Russian
> peasants.[85]

The complex Ptolemaic taxation system is still not perfectly understood in many of its details.[86] New feature of the system, gradually installed in Egypt from the Saite period on, were additional taxes on trade and commerce.[87] Its complexity, and the competitiveness of the tax farming system may have aided in the collection of greater revenue for the state, but it also served the interest of the king in creating new organizations in the state that prevented collective action against him.[88] Clarysse and Thompson (2006/1:348) in summarizing the new tax collection system, conclude:

> The degree to which such forms of adaptation are to
> be seen in the Hellenistic world more generally is
> hard to evaluate but complexity appears a characteristic
> feature of how things were done in Ptolemaic Egypt.

Cross cutting of registration of persons by household and by occupation for example might have served to reinforce solidarity along household and ethnic lines, and the

[85] Weber (1909 [1998]:131).
[86] Préaux (1939) provides an index with the wide array of taxes.
[87] General issues discussed by Hicks (1969:81-100). Saite text: Naukratis stela.
[88] See above, Chapter five.

increasing exemptions from the salt tax in the reign of Ptolemy III might suggest some success at small scale collective action. Local, competitive tax collection system shows clearly how the system may have worked to focus attention on local tax collection rather than on large-scale resistance to the ruler. But the texts also show that the economic relationship between temples and the Ptolemies was less direct in the third century BC, and the increase in the number of tax receipts in the period after the Theban revolt suggests stronger administrative control or a change in practice.[89] The land measurement receipts, again for the moment confined to the Thebaid, might suggest that these texts served to protect individual tax-payers by clearly establishing what they had paid in writing. While many of these ostraca come from a restricted group of people, there is a wide array of tax receipts, including salt tax receipts, which suggests that the issuance of tax receipts was common across a range of taxes.[90]

The tax on persons in the form of the salt tax, and taxes on professions, were the main sources of tax revenue in money. The taxation of persons, through the so-called salt tax (documented from 263-217 BC but probably collected through the mid-second century BC), was a both source of revenue (smaller than the Roman poll-tax) and a means to enhance loyalty between the ruler and the new elite. "Hellenes" were exempt from the largely symbolic obol tax; teachers and athletes from the salt tax. In the reign of Ptolemy III, priests, and even animals belonging to temples, and others associated with temples, were exempt.

[89] For the demotic receipts, Kaplony-Heckel (2000), Muhs (1996).
[90] Muhs (1996:2).

The collection of taxes can be documented through the granary tax receipts from the Thebaid, and it is only in this region that we can be certain of the process.[91] There may well be regional differences in the methods of collection, and much primary work remains to be done on the Ptolemaic taxation system before an overall assessment is possible. Grain taxes were usually paid at state granaries in installments throughout the year after the grain harvest, and a receipt was issued and countersigned by state officials for the taxpayer. [92] This method of payment applied to Upper Egypt as well as the Fayyum.[93] On the basis of the dates of the grain tax receipts, the taxes were paid after the harvest, due in full by the end of the regnal year, and transported to the royal granary by the taxpayer. This issuance of receipts, as far as we know, is a new aspect of the traditional grain tax process, and may have been designed to protect taxpayers from overzealous tax collectors. Because of the scattered survival of the receipts, it is very difficult to assess the overall revenue in any one area. Clearly though, there was a shift from the use of demotic to Greek for the issuance of receipts concomitant with the installation of Greek officials in the Thebaid after Antiochus IV's invasion in 168 BC.[94] But this shift in language was not permanent, and it is interesting to note that demotic as a "fiscal" language used in receipts emerges again in the early Roman period. On the basis of the published tax receipts from Pathyris, it seems clear that there is a correlation between tax collection and the installation of loyal state officials working in the granaries. The collection of taxes was a major problem for the state over the long term.[95]

[91] Packman (1968), Vandorpe (2000a), Idem (2000b).
[92] Packman (1968:62-63); Keenan and Shelton (1976:9). On installments for the grain tax, cf. *pSiut* 10597 (Asyut, 171 BC).
[93] Cf. Keenan and Shelton (1976:9).
[94] Vandorpe (2000b).
[95] Clarysse and Thompson (2006) Chapter 3.

Excellent sources, although the bulk of the evidence, like so much of the Ptolemaic administration comes from the Fayyum, and from the reigns of Ptolemy II and III, a period during which the new Ptolemaic system was replacing an earlier system (Clarysse and Thompson 2006 1:5). The Fayyum was divided into three divisions, a unique feature of the region. The documents do not show administrative uniformity, "local initiative might play a significant part" (Clarysse and Thompson 2006/1:7).

The Ptolemies exacted a tax on property transfers. This transfer tax, known as the *enkuklion* in Greek documents, was in fact a continuation of an Egyptian tax on transfers that was in the control of local temples. The tax has been studied recently by Depauw in the publication of an early Ptolemaic demotic family archive from Thebes.[96] A complex document (much remains obscure) from Thebes dated to 291 BC hints that taxes, in this case funerary taxes, were already being farmed in Thebes in the very early Ptolemaic period.[97] If the current understanding of this text is correct, it provides important documentary evidence that the either the Ptolemaic system was established quite early in the south, or, in my view more likely, the Ptolemaic system continued earlier economic institutions. The history of the transfer tax and related structures (banks, tax farmers, receipts) shows the mechanisms of Ptolemaic economic reform begun by Ptolemy II.

The census of people and animals was not new with the Ptolemies. The emphasis both on counting of people and things, and its accuracy, was a part of the ancient Egyptian state. A biennial cattle census goes back at least as far as the Old Kingdom, and much of the operation and categorization was a continuation from earlier times. Like so much else, Persian and Athenian antecedents may also have played an inspirational role.

[96] Depauw (2000).
[97] The text is *pBMGlanville 10528*, originally published in Glanville (1939). It was republished and discussed by Depauw (2000:70-74).

Counting people, of course, was important not only for state revenue, but for the revenue of those who whose business it was to mummify the dead as well.[98] I But the main interest of the state was in the new money raising capacity of the census. People, property including the registration of livestock. Personal declarations of property, measurement and valuation of property, apparent extensive use of writing, on occasion rather than regular-that may have been disruptive. Uncertain if the system was dependant on persons showing up at records office to declare, or inspection of scribes, or both. May have been an urban/ rural and an ethnic distinction on how the operation actually went (Clarysse and Thomson 2006 1:27). Profession also mattered, the military, for example, seems to have been in charge of the survey of the survey of soldiers' households and property.

The census may have reinforced group identity, and defined the culture to some extent of the state (Clarysse and Thompson 2006/1:12). It was also a tool of royal largesse. Salt tax rates decreased over time with increasing exemptions (Clarysse and Thompson 2006 1:88-89). Politeumata, ethnic groups, used to collect taxes and in turn reinforced boundaries Fixes a pop; probably more so than in the past, the Ptolemaic fiscal system was designed to fix people in a place.

We cannot confirm that the census was a regular feature of the tax collection system. May be the case that census lists were updated at some regular (?) interval (Clarysse and Thompson 2006/1:19). An irregular census would have enormous implications for collection process and the level of payment. Declaration of households and by occupation, an ancient feature. The primary purpose of the census was the determination of the salt-tax, the head tax. It was introduced by Ptolemy II, perhaps as a better means to raise revenue for the military. For which almost all of the adult

[98] *pLouvre* 3266, de Cenival…..

population, at differing rates, was liable (Clarysse and Thompson 2006/1:40). A notable feature of the documentation for the census is its lack of uniformity or standardization (Clarysse and Thompson 2006/1:66). Carrying over of old information, and a lack of audit, and the bilingual nature of the system, reinforces the view that the bulk of the material that survives reflects tax liability rather than actual amounts collected (Clarysse and Thompson 2006/1:74). Also true of the bureaucratic system, both established in response to a state's desire for information, and a variable response to it at local levels. There may have been some training, but we do not know much about this. Circular letters were used to inform officials of state expectations, and their particular duties, another ancient feature of the Egyptian bureaucracy.

The individual's encounter with the state

The individual encountered the state voluntarily usually at the level of the local bureaucratic web of officials, in the case of petitions to the king, or to royal officials to initiate legal proceedings.[99] Egypt and China, the two historical examples of what Hicks (1969:20) called "classical bureaucracies," show similar patterns in the maintenance of a general state framework throughout their dynastic histories, even when taken over by outside groups.[100] The articulation and the framework of the bureaucracy was established in literary texts emphasizing expected behavior and the maintenance of the hierarchy, the ideology of which was reinforced in literary and funerary texts. The Nile river communications corridor provided good conditions for bureaucratic administration. The basic structure of the bureaucracy was similar to that in ancient times as well as the classical Chinese system (Deng 1999).

[99] See further below, Chapter 7.
[100] For a classic account of the later Chinese bureaucracy, see Huang (1981).

royal court in Alexandria

regional officials

nome officials

district officials

village officials

households

Fig. x The basic structure of the Ptolemaic bureaucracy

The Ptolemaic bureaucracy differed from earlier systems in several important ways, not the least of which was its bilingual nature.[101] The survival of documentary papyri from Egypt tend to give the impression that the bureaucracy was massive, and unique to Egypt since very few documents survive from elsewhere in the hellenistic world. That impression is probably wrong, an artifact of the pattern, and luck, of survival. Thompson (1994) has argued that the increase in the number of documents that survive are probably proxy measures of an increase in the size of the bureaucracy as well as in literacy rates, producing an "intensified bureaucratic form of government" (1994:83). Be that as it may, the literacy rates, pre-Ptolemaic literacy rates in demotic, based on an assumption of the number of persons having some ability to read and write, have been estimated at ca. 7% (Ray 1994), and assuming an increase, mainly of Greek writers, in the Ptolemaic period something on the order of 7-10% of the population (approximately 245,000-350,000 persons), comparable in scale to early China, would provide the upper bounds of the bureaucracy's size.[102] We must remain cautious in assessing a growth in

[101] On earlier bureaucracy in Egypt, see Kemp (2006:163-92).
[102] For China: Deng (1999).

the writing habit, not least because so little of earlier periods has come down to us. Consider for example, the emphasis on both the recording and publishing of a wide variety of official acts already in the Old Kingdom.[103]

New forms of texts such as tax receipts, an increase in the use of letters (Depauw 2006), more scribes in charge of accounting and checking, the seeming emphasis on written rules of behavior (*pRev*., *pEleph*. 14 on auctions)-- all of these give the impression of an increase in the size of the bureaucratic system, parodied in the well known *Letter of Aristeas* that recounts the historical background to the creation of the Septuagint.[104] The size and the operation of the Ptolemaic bureaucracy come into sharp focus in a famous mid-second century BC text from Saqqara.

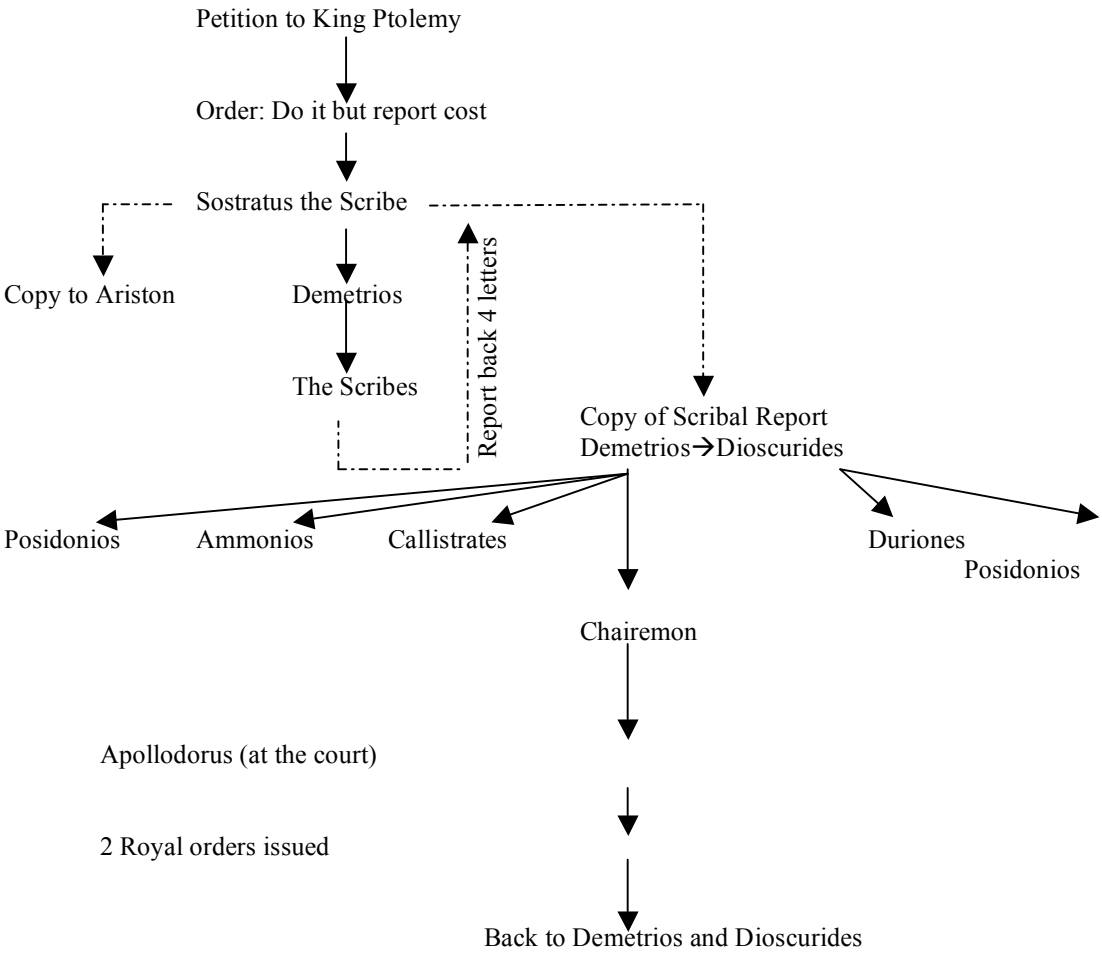
The Ptolemaic bureaucracy was not merely a continuation of earlier Egyptian practice. It was in fact built up on an ancient structure but on an entirely new basis, and was overwhelmingly concerned with revenue, but the resoution of legal disputes was also a key function.[105] It was bilingual, with a basic division between Greek and Egyptian "functions" depending on the level in the administrative hierarchy, with Egyptian-named persons at lowest levels of administration, and Greek-named officials functioning at nome level and higher, and in the context of tax collection.[106] We should not forget that the bureaucracy, along with the army, represents the employment function of the state. Overall the bureaucratic system was "Hellenized" to the extent that the important functions of state service were occupied by persons having Greek names, and probably

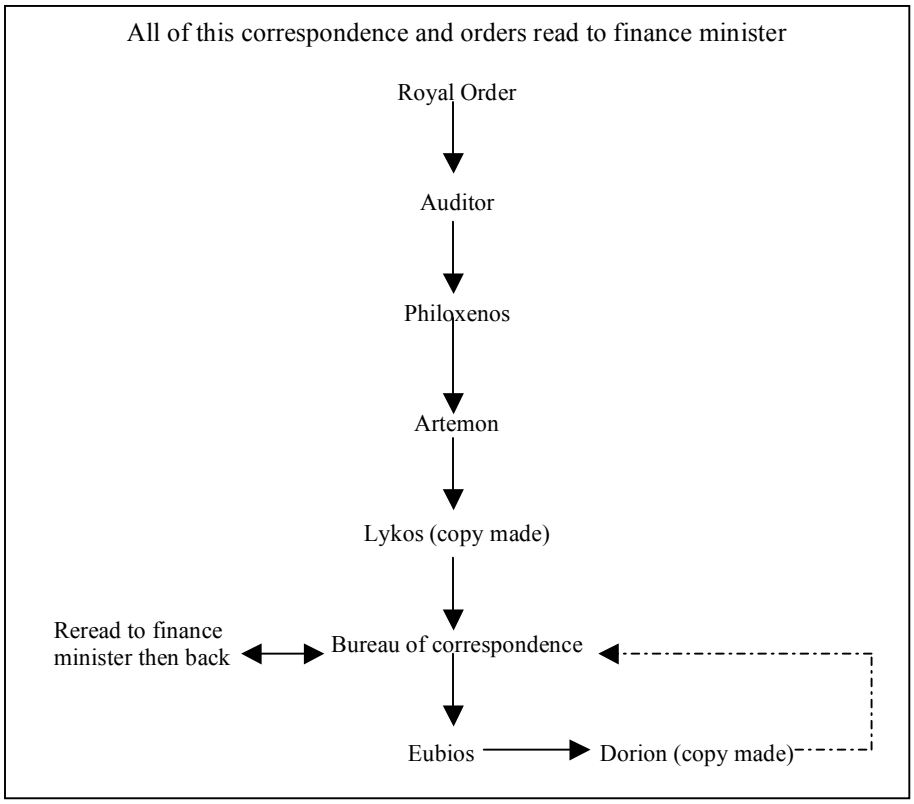
[103] Variety of texts and officials involved discussed by Redford (2001:146-50). The text known as the *Duties of the Vizier* from the New Kingdom also emphasizes the use of written documents.
[104] On the letter, which has generated a mountain of scholarship, see Gruen (1998:Chapter six).
[105] For an overview, Bagnall and Derow (2004:285-88); Falivene (1991). For legal disputes, see below Chapter 7.
[106] Falivene (1991:217).

sufficient knowledge of Greek to function within the system. In many cases scribes and other officials were Egyptians who adapted to the new system. Tensions existed between the traditional practice of inherited office and the state's desire to control loyalty. The chief of state finances, the *dioikêtes*, was certainly an office that existed before the Ptolemies, as were officials known as nomarchs in the Greek texts, albeit with a different function under the Ptolemies. But many official functions were new with Ptolemaic administration, and in charge of monitoring revenue collection at a local level. Recording of contracts we can see this clearly, the day-to-day record keeping function of a village notary office.

Writing from his retreat inside a shrine in the ancient necropolis at Saqqara, Ptolemy, the son of a soldier, who is for some reason living in retreat inside the temple walls, wrote a petition, in 158 BC, to the Ptolemaic monarchs who were visiting the area.[107] The petition was an attempt to get his younger brother enrolled in the army. The petition generated at least thirty-two more documents, and took five months to crawl its way through two parallel bureaucracies, one civil, the other military.[108] We can see the machinations of the fully developed bureaucracy, its complexity, it specialized scribes and its specialized documents. The petition was, it seems, quickly approved with the rather efficient "Do it, but report how much" note scribbled in, perhaps in the king's own hand. There follows, though, an adventure, rather reminiscent of the Chinese story *The Wan family's lawsuit* (Chen Yuanbin) that took the petitioner and a messenger back and forth, and up to Alexandria and back, to get the approval approved.[109]

[107] For the background, see the masterful study by Thompson (1988:chapter 7); Ray (2002:chapter 8).
[108] *UPZ* I, 14.
[109] Lewis (1986:78); Shipley 2000:227- to avoid mistakes? With Lewis, unlikely.


Petition to King Ptolemy
Order: Do it but report cost
Sostratus the Scribe
Copy to Ariston
Demetrios
The Scribes
Report back 4 letters
Copy of Scribal Report
Demetrios→Dioscurides
Posidonios
Ammonios
Callistrates
Duriones
Posidonios
Chairemon
Apollodorus (at the court)
2 Royal orders issued
Back to Demetrios and Dioscurides


All of this correspondence and orders read to finance minister
Royal Order
Auditor
Philoxenos
Artemon
Lykos (copy made)
Reread to finance minister then back
Bureau of correspondence
Eubios
Dorion (copy made)

There was greater autonomy of the bureaucracy than in ancient times (Eisenstadt 1993:389). It must have taken time to establish loyal Greek-speaking officials throughout the state, although we know little about developments in the reign of Ptolemy I, whether because he was primarily occupied with overseas events (Hölbl 2001:28), or by accident of preservation. We begin to hear about it in the reign of Ptolemy II because of the significant amount of papyri preserved from his reign by the re-use of papyri as mummy cartonnage.

We tend to imagine the bureaucracy as being rationally conceived and structurally consistent, top down. In reality it was neither rational nor uniform. Bureaucracy, and the bureaucratic "attitude of mind," (Kemp 2006:182), arrived early in Egypt, and it is of course the production of the bureaucracy, the administrative documents, that scholars have relied on to build a picture of the pharaonic and Ptolemaic states. It was surely never "perfected" (Hölbl 2001:25), but it did evolve over time. It was indeed probably quite variable and fluid, and therefore there was considerable competition over turf. Clarysse and Thompson's detailed study of the census records is important for many reasons, but perhaps of utmost importance is the evidence these texts provide for the evolution of the bureaucratic system. Relied on demotic scribes, use of demotic slowly replaced by Greek at local levels, but not uniformly so. In some areas like the Lykopolite nome in the south demotic continued to be important in the local administrative machinery (Clarysse and Thompson 2006, 2:6-7).

Alan Samuel has stressed the ad hoc nature of the Ptolemaic system, and thus its "irrationality." This "irrationality," though, and what has been seen as bureaucratic dysfunction, is a distinctively modern view of the ancient Egyptian bureaucracy. The bureaucratic system was neither "irrational" nor "dysfunctional." It was, instead, more limited in its extent and effect that the modern mind might conceive.[110] It is true that the Ptolemaic version showed greater attempts at systemizing it, and creating clear lines of authority. What was not changed, however, is the local character, and the inherent overlap between religious, fiscal and administrative responsibilities and the tensions between royal authority and hereditary claims to offices (Cf. Lloyd 1983:332).

Tax farming

The farming of certain taxes, and the related institutions of money, banking and public auction, all derived from fourth century Greco-Macedonian experience. All of the theoretical predictions of tax farming—bribery, collusion, evasion, information problems—are borne out by the Ptolemaic documenation. The terminology is fourth century Athenian, and the early Ptolemaic adaptation shopws that the kings relied on Greco-Macedonian fiscal institutions that had worked well during the fourth century, and attempted to apply them to the new setting of Egypt. We do not know how early the mechanism was first introduced, but it is full operation by the middle of the third century BC.[111] Their application to the ancient economic structure during the third century BC reveals much about the nature of the reforms of the economic system. Behind its use was,

[110] I am very much informed here by Kemp's treatment of the pharaonic bureaucracy (2006:163-92).
[111] An early Ptolemaic demotic text (*pBM* 10528, Thebes, 291 BC, discussed by Glanville 1939; Depauw 2000:70-74) has often been suggested to be a tax farming agreement. Its early date would be important evidence for Ptolemaic penetration the southern Egyptian economy. However, as far as I can determine, nothing in he text suggests a tax farming areement. Rather, it mentions local agents collecting a certain type of tyax on behalf of the state, an ancient system.

of course, the desire of the ruler to maximize revenues in an environment of information assymetry.

The key text is the well-known Revenue Laws Papyrus (*pRev*.), the preserved sections of this very large text, dated to 259 BC, are concerned with the farming of money taxes, the taxes on orchards and vineyards, two oil crops (sesame and castor oil) and banks.[112] The text does not cover all types of revenue that were collected by tax farming.[113] Thus the Ptolemaic system, as in Republican Rome, would seem to combine both direct (i.e. taxes on production) and indirect taxation. The taxation of the land itself, being the most valuable asset in the state, was left to the ancient system of state agent collection (cf. Kiser 1994:293). Bingen's (1978) perceptive analysis has demonstrated that the text is not a codified treatment of the new economy, as Rostovtzeff (1922) once suggested but, rather, a whole series of texts collected together that imply that the process of using tax farming was a recursive or "experimental" process, being solved in real time.[114]

Unlike in fourth century Athens, where the tax farmers were responsible for the entire system, the tax farming and collection functions were very often decoupled in the Ptolemaic system.[115] As Préaux (1939:450) has observed, the tax farming system would seem to be superfluous given the bureaucracy in charge of collecting the various taxes. In

[112] For *pRev*., see Grenfell and Mahaffy (1896), Préaux (1939:65-93), Bingen (1952), (1978). On Ptolemaic intentions, see Samuel (1983).
[113] Other areas subject to the farming of taxes include beer and natron production, and the tax of transactions (egkuklion).
[114] *pRev* cols…..showing corrections and changes. The experimental nature of some aspects of tax farming suggested by *pRev*. is predicted by agency theory, and derives from the normative need of the ruler to maximize revenue in an environment of assymetric information. Cf. Kiser (1994:293).
[115] For the Athenian tax farming system, see On the decoupling, see the remarks by Bingen (1978:166).

most cases of tax farming systems, tax collection devolved either to state agents or to tax farmers.

The Ptolemaic system was a hybrid, like so much else in the Ptolemaic system, in which certain taxes were farmed but collected by state agents (*logeutai*), a traditional feature of tax collection in Egypt and widespread in the Hellenistic world.[116] So why the decoupling? The traditional answer has been that the Ptolemies were solving one of the basic problems of tax farming for the state-distrust of tax collectrores loyalty. They may be part of the answer. But the political economy of the state, the variety of taxes collected, and the state's need for cash may also be brough in. The early kings needed to attract Greeks familiar with the monetary economy in order for them to extract the required revenue that the kings needed to maintain their power base. Tax farming created an incentive structure that aligned the interest of individuals with the ruler's and, at the same time, aided the ruler in maintaining a monopoly on political power in the capital. Tax farming was often used where monitoring and transaction costs are high, poor communication conditions, and a lack of record keeping prevailed (Kiser and Kane 2007). But this was not the case in Egypt. Kiser's (1994) study of early tax farming systems suggests several factors were at work in the choice of farming certain taxes, among which were the size of the state, and cases of high variability, mobility and measurability of the taxed asset.

In Kiser's model, the ruler has the aim of maximizing revenue and will choose a taxation system that produces the most efficient solution to the agency problem. The Ptolemaic solution fits the model. The collection by state agents also shows the Ptolemaic reliance on the ancient bureaucratic record keeping function of the Egyptian state.

[116] On the role of state agents in collecting revenue, see Polyb. 22.13.2 on the viceroy of Cyprus.

Efficiency in raising cash, required to finance military operations, may be an explanation here. Indirect taxes usually the object of tax farming, and the emphasis was placed on the taxes in money, Greeks had knowledge and access to capital, served as a kind of loan to the ruler to finance the army (Kiser 1994:289).

The introduction of banks played an important role in the collection and payments of farmed taxes.[117] Despite the fact that banks are well documented for the period (1,750 papyri), it is not easy to establish connections between them and the performance of the economy. There were two types -state banks and private banks. Both were licensed by the state. They formed, along with the tax farmers, the intermediary between production and state revenues, the latter concentrated on currency exchange. The granaries received payments in grain and held deposits of individual taxpayers. The state granaries were also an important means by which of the local state bureaucracy was paid.

Public bids for the right to collect a certain tax for the short term (one year, in some cases for longer periods) in a specific territory were posted by the tax-farmers at royal banks. It served not only to guarantee revenues but was probably also a recruiting device to incorporate persons within the bureaucratic structure (Eisenstadt 1993:129). The competitive nature of the system provided an incentive to collect the tax.[118] We might expect in such a short-term system that there was an increased incentive to overcollect. But *pRev* suggests that the use of written contracts carefully specified rights and duties of the tax farmers. Sale of farm in name of king, auction, in Greek and Egyptian (p. 451 with biblio; tax auction); organized at nome level; name and nationality

[117] Now summarized in Bogaert (1994), idem (2001).
[118] A sense of the atmosphere of an auction is conveyed by *PLBat* 20, 30.10-15 (142/141 BC); *pKöln* VI 260 (213 BC). Harper (1934); Préaux (1939:450-59), Rostovtzeff (1941:328-30); Bingen (1978 [2007]); Turner (1984). 2 rolls, 7 or 8 docs trans Bagnall and Derow (2004:181-95) & *UPZ* 112 (204/03 BC) "an institution of guarantee, not a tax institution."

declared in front of oikonomos, Egyptians and Jews, texts cited p. 452, n. 2. Written tenders precedes the bidding. Cf. process of auction in PEleph 14. Guarantors make pledges….. reinforced often by royal oath. With the security provided by the guarantees, a second is added some: the sequestration of the sums which the taxpayers pay at the bank with the account of the farm. The banks are the instruments of state control. *PRev* 1-22 concerns only taxes farmed in money; 1-15 mutilated. Insulates king from risk in theory by incentivizing the collection. We would expect to find the farmers of the tax and the collectors working together, and indeed there is good evidence to suggest that this is what happened (Clarysse and Thompson 2006 1:77). Information may be important here (cf. Rostovtzeff 1941:329); just as the use of ethne, such a system of tax collection may also have reinforced group identity and so have been another means of preventing collective action. Tax farmers could be jailed in the case of failure of collection.[119] The system had built in very powerful incentives to participate in the system and was reinfoirced by personal relationships.[120]

Alan Samuel, in a series of influential articles, has argued that scholars should be wary of using the administrative papyri for too much, suggesting that the realities were probably quite different than the intentions, continuing a line of thought developed by Crawford (1978), that there was no effective means of distinguishing public from private sectors, the two being often implicated in the same official.[121] In many ways Samuel's views are a radical departure from established views of Ptolemaic institutions. The kleruchic system, for example, was not a means primarily to "compensate" soldiers but to

[119] *pTebt*. III 772 (236 BC = Bagnall and Derow, text 101).
[120] *pTebt.* I 40 (117 BC = Bagnall and Derow text 97) showing a patron-client relationship.
[121] Samuel (1966), (1983), (1989), (1993).

establish loyal, Greek tax-payers throughout Egypt. The two, of course, are not mutually exclusive. Grants of land to the military was an ancient practice in Egypt but of course the terminology was entirtely Athenian, and this is important. The need to have a ready fighting force inside Egypt was a perceived advantage, as was having loyal Greek-speaking tax payers established throughout Egypt. Here Samuel's emphasis is correct, and the contrast between the structure of the Seleukid and Ptolemaic kingdoms are clear. The Ptolemaic aim of establishing "royal areas" was successful.

In contrast, the Ptolemaic bureaucracy as a whole appears to Samuel to have been irrational and incoherent, modified when "circumstances required" (1993:175), and suffered from a "shortage of personnel" (1966:229). An ad hoc irrational and dysfunctional bureaucratic system only compounded economic troubles when Ptolemaic political problems began to accumulate. The Ptolemaic system evolved because of local officials' pragmatic needs and the needs of local populations. There was none, or little guidance from the capital, and no distinctions drawn between official and private functions (1993:178). Ptolemaic officials, in Samuel's views were making it up as they went along.[122] There was an effort to establish a hierarchy of officials, but there were many problems in establishing this, not the least of which was the shortage of manpower.[123] There is indeed no reason to assume that the Ptolemaic system devolved from a well-organized, centralized bureaucracy to one in which local officials slowly gained power for themselves. This was a well-entrenched phenomenon in Egypt, made more difficult now by the use of a new administrative language.

[122] The view finds support in some of the records of Menches, village scribe at Kerkeosiris toward the end of the second century BC.
[123] On this last point, see especially Samuel's critique in Samuel (1966).

The problem of enforcing the rules, and official's abuse of position, was outlined already by Préaux (1939) and stressed by Samuel more recently (1993:179). The bureaucracy developed in part from the behavior of local officials, the king thus only a part of the overall system, and only effectively a part of the state, coexisting with not only the bureaucratic hierarchy but also the military and indeed the Egyptian priests (Samuel 1993:180). All of these problems and constraints of Ptolemaic political power led Samuel to argue that Ptolemy II, the great reformer, had little impact. "We can no longer understand Philadelphus' kingship," Samuel concluded, "as worked out in terms of his establishment of administrative control over the land" (1993:180).

It was the shift in administrative language, from what would have technically been Aramaic under Persian rule to Greek that marks the most important and substantive change. Aramaic certainly had some certain impact on Egyptian language, its literature and institutions (Ray 1994; Clarysse 1987), but it was probably rather limited (Porten xxxx; Depauw 2006:292). The shift to the use of Greek under the Ptolemies, however, had, it appears, even more profound and long-lasting affects, and John Ray's observation (1994:62) that Ptolemaic demotic documents consistently filtered out Greek loan words that must have been common in the spoken language tells us much about cultural politics under the Ptolemies. Greek was certainly in everyday use, increasingly, in the administrative centers, and an examination of the technical vocabulary developed by administrative scribes shows the extent of the imposition of a new economic system, at least in the Fayyum (Thompson 1994:77). In this sense the settlement of Greeks, and the establishment of the administrative center at Ptolemais served to "Hellenize" Egypt, in

terms of the use of language in the administration, and also in scribal practice.[124] But kings had their place in setting reforms in motion, and it is one king above all who must be considered above all in shaping the state.

Ptolemy II and the reforms

In Turner's treatment (1984) of the Ptolemaic economy, Ptolemy II is assigned the role of both of builder of the new economic system and as the cause of its ruin. All of the evidence suggests that Ptolemy II instituted major and widespread reforms of the economic and legal structure of the state (Chapter seven). A clear shift in tax collection can be observced in the documents from his reign, with Greek *strategoi* in the nomes in charge of taxes (Falivene 1991). Coinage reforms. The fiscal reforms have usually been understood as a move to finance the Second Syrian War (Turner (1984). But it is possible to see the fiscal reforms, including the creation of a fiscal calendar year, the creation of the salt tax in 264/2643 BC that functioned as a poll tax, the use of tax receipts, the lowering of interest rates on loans, perhaps the recycling of documents to mummifiers together with the legal reforms, and the Egyptian priest Manetho's history of Egypt, ending with the new Egyptian dynasty of the Ptolemies, as something more broadly and systematically concerned with the governance of Egypt.[125] Of course, military finance was always a major part of state finance.

Technology

[124] The adoption of Greek writing instruments was in place by 230 BC, after which the Egyptian reed brush became quite rare. See Clarysse (1993); Depauw (2006: 297).

[125] For a good overview of Ptolemy II's reign, see Thompson (forthcoming?). On the salt tax, a commonly taxed item in antiquity, but associated with the capitation tax only in Egypt, see Clarysse and Thompson (2006 1:36-89).

Despite Hellenistic advances and the impressive scientific output in Alexandria, productivity was probably only marginally improved by new technology.[126] Much has been made of the new technologies of the period, but as far as evidence permits, the use of new machines was rather limited in the Egyptian countryside before Roman times.[127] The waterwheel and the Archimedean screw, certainly attested for the first time in the Ptolemaic period, intensified local irrigation possibilities, mainly in orchards and vineyards, although, like double cropping, the use of these machines was probably limited before the Roman period.[128]

New technology it seems, whether it was machines, or the alphabetization of census registers, was slow to reach the countryside.[129] Some advancement in irrigation machines, and perhaps a greater use of draft animals, may have had some impact on agricultural productivity on marginal land and in gardens.[130] The introduction of iron into Egypt for agricultural implements and other devices, is documented in the mid-third century BC Zenon archive although its use does not appear to have been widespread.[131] Irrigation in the Fayyum was not limited to water-lifting machines, the ancient basin irrigation system (relying on the annual flood of the river) was also used in there. Taxation of the land was, therefore, more important than new technological improvement in Ptolemaic productivity. Hellenistic building technology was important in the construction of new villages in the Fayyum.

---

[126] On Alexandrian science, see Fraser (1972). Cf. Préaux (1966).
[127] Wilson (2002), Lewis (1997). On the relationship of technology to economic development in the ancient world, see Schneider (2007).
[128] Samuel (1983:58); Rowlandson (1996:20). See Rathbone (2007, n. XX).
[129] Alphabet: Clarysse and Thompson (2006: Chapter 3).
[130] Bonneau (1993:106).
[131] Rostovtzeff (1941:362-63, 1197).

Despite the changes, Egyptian temples, with their endowments in land, people and livestock, remained vital. Temples historically played several key economic roles-centralization of information, documentation, land management and grain storage being among the most important. Their land endowments, which allowed temples to sustain the cycle of divine offerings/payments to the priests and support staff, continued, as did their right to collect revenues from their land, including vineyards and gardens. In some aspects, the Ptolemies subordinated traditional temple privileges to the new regime. A lump sum payment to temples (*syntaxis*) may have served to subordinate the traditional economic role of temples, although this is not altogether clear.[132] What is clearer is that the royal banks and royal granaries into which tax payments were made displaced a traditional economic function of temples.[133] While the economic function of temples became subordinated to the new royal economy, temples continued to be the location for elite "display of self-presentations" (Baines 2004:45).

The price of commodities, and the role and circulation of coinage are the most problematic area of the Ptolemaic economy, and much work remains to be done.[134] Some considerable advances in the understanding of Ptolemaic coinage have been recently.[135] It is clear that Ptolemaic taxation policy, and the creation of banks, that required some taxes to be collected, or at least calculated, in terms of money played key roles in monetization.[136] There may have been a regional difference in the process, influenced by where Greeks settled. On the basis of the scanty evidence, commodity prices appear to

[132] Thompson (1988:110-12), Maresch ??.
[133] On banks, see Bogaert (1994), idem (2001), von Reden (2007).
[134] Prices for land in Cadell (1994), prices for wheat in Cadell and Le Rider (1997).
[135] A good summary is available in Hazzard (1995). Important new studies are forthcoming by von Reden; Picard (2004), Burkhalter and Picard (2004).
[136] Cf. Rathbone (1989), von Reden (2007).

have remained relatively stable.[137] New fiscal measures were taken in the production, manufacture and sale of key items such as flax, salt, beer, and for certain oil crops. Here the Ptolemaic state utilized competitive bids and labor contracts that fixed workers in a specific place over the length of the contract, often supplied raw materials and tools, and granted state licenses for the sale of the finished product (the so-called Ptolemaic "monopolies," although they scarcely were). The aim here, as throughout the Ptolemaic fiscal system, was to secure labor, and to produce predictable income for the state.[138]

The paucity of price data preserved in the papyri is a serious barrier to understanding the long-term performance of the Ptolemaic economy. References to items in the papyri can be frustratingly obscure, small items such as hoes are rarely given values, we are not always sure whether a price is reckoned in silver or bronze, and there are significant gaps in our information (e.g. for the price of wheat from the mid-third century BC to 209 BC).[139] The data derived from penalty clauses in contracts can mislead. The explanation for the long-term history of commodity prices is exacerbated by our lack of knowledge about the amount of money in circulation and the velocity of circulation.[140] The supposed price inflation that occurred in the reign of Ptolemy IV Philopator has received extensive comment and various explanations.[141] Earlier analyses have focused on the reduction in precious metal of the silver coins, in a new bookkeeping system, or in a reduction of the weight of the bronze drachma and the consequent increase in the value of coin in circulation.[142] Much of the so-called price inflation,

[137] Land prices: Samuel (1984), Cadell (1994). Cf. Baer (1962).
[138] Turner (1984) 151-53, von Reden (2007). *pRev*. is the key document.
[139] Samuel (1984). For the gap in wheat prices, see Cadell & Le Rider (1997).
[140] Bagnall (1999).
[141] Reekmans (1951), Maresch (1996), Cadell & Le Rider (1997), Bagnall (1999).
[142] Reekmans (1951).

however, is derived not from a single new bronze accounting standard but from multiple re-tariffings of the bronze coins against silver and gold.[143] An independent bronze standard was introduced at the end of the third century BC.

The one place in Egypt that was susceptible to reclamation and intensification on a significant scale was in the Fayyum depression, a state of affairs coinciding very likely with the fact that prior claims to land in the valley made taking over such land politically difficult. Other areas (the eastern Delta and the region around Alexandria) were also developed or received renewed attention, and there were new settlements in the Herakleopolite and Oxyrhynchite nomes.[144] This expansion of the Fayyum was probably already underway in the reign of Ptolemy I Soter, although once again the lack of documentary evidence for his reign limits certitude.[145] To be sure, the documentary evidence of reclamation and settlement is extensive for the reign of Ptolemy II, who visited the area on at least two occasions.[146]

Ptolemaic expansion in the Fayyum was a massive project, accomplished probably by restricting the flow of water into the Fayyum at a regulator at Lahun, thereby lowering the level of Lake Moeris. New canals were also dug.[147] This, along with the building of Alexandria and the southern capital Ptolemais, were the largest public works projects of the Ptolemaic state. The state's ability here to coordinate the work, the supplies, the men and the donkeys is quite impressive. The size of the projects, both in

[143] Bagnall (1999) 198; von Reden (2007).
[144] On the Delta, see Davoli (2001). New Upper Egyptian foundations in the second century, Vandorpe (1995:233); Kramer (1997).
[145] See Thompson (1999b) 125. Cf. Diod. Sic. 18.33.
[146] *PSI* 4 354 (253 BC); *pPetr*. II 13, 18a (253 BC, on the date see Clarysse (1980) 85; *pPetr*. II 39 e 3 (247-245 BC?). The first visit may be tied to kleruchic settlement in the area. See Clarysse (1980), Idem (2000).
[147] Butzer (1976:36-38). The exact processes involved in the reclamation project, and the pre-Ptolemaic reclamation, are still contested. See briefly Rathbone (1990:111-14); Idem (1996:52).

reclaiming land and in maintaining the existing canal networks, as Thompson has pointed out, was enormous.[148] One document mentions a proposal to organize a work force of 15,000 men to work on embankments of an "island," to be funded from the harvest of emmer.[149] The size of the labor force, it has been estimated, was sufficient for the sixty days' work covering a large portion of the Fayyum. Whether the proposed project was ever carried out we do not know, but it reveals, at a minimum, the ambition of some men in these early years of development.[150] Correspondence addressed to nomarchs in the mid-third century BC (listing more than 4,000 tools, including axes, plowshares and rope) certainly conforms to similar ambitions, and many texts suggest massive and successful coordination.[151] The supply of tools by the state, and the requisition of the labor force culled from each of the nomarchies (the original development areas in the Fayyum), shows the direct involvement of the *dioikêtês* and the role of regional officials. One has the strong impression here that the work was directed by ambitious men like Apollonios (see below), who were given land grants to develop, and by other officials and soldiers with an incentive to succeed. The apparently state-supplied tools, the requisition of labor, and the payment of wages were largely traditional in the Egyptian countryside.

We are somewhat hampered by both the qualitative and quantitative differences of the third century BC data from the Fayyum and from Upper Egypt which limits our hopes of a testable hypothesis. Nevertheless some broad facts can be stated. In the early Ptolemaic period, land in the Fayyum was reclaimed under state direction, and new

[148] Thompson (1999a) 112.
[149] Clarysse (1988), Thompson (1999a:112-13).
[150] On the labor estimates, Thompson (1999a:112).
[151] *pPetr*. III 49, Clarysse (1997:70-72).

settlements of soldiers and Egyptians were established. No similar "investment" is known in the Nile valley. The Ptolemaic maintenance of an old land tenure regime in the Thebaid, where the right to convey land already existed, the granting of land to important new constituents, and the use of agents to collect taxes all combined to reduce state revenue, but it followed from the political necessity of a regime that sought legitimacy from old institutions, and loyalty from the bureaucracy and the army.[152] The traditional temple-administered estates appear to have continued, and held privately by soldiers, temple dependents and leased out to others on short-term leases.[153] The picture of regional differences in the early Ptolemaic regime is the result of historic patterns of land exploitation. The private archives from Upper Egypt suggest, however, that soldiers became well established in the south during the second century BC.

The transmission of property, both real and rights to income from office, by written legal instruments had a long history before the Ptolemies, although most transactions probably occurred within family and social groups without written legal instrument. Such “paperless” transactions would have reduced transactions costs, but they also reflect limited market mechanisms and created more uncertainty. Family and other group holding of land alleviated the cost for the state of defining and enforcing individual property rights in land, something that we know from recorded disputes was difficult.

Access to land and to the market in land was limited, but this does not mean that land was not potentially available. The shortage of labor applied to the land was a serious long-term problem.[154] The historically low price of land, a low multiple of the value of a

[152] For the problem of limited Greek access to land, and the consequent problems affecting royal revenues, Bingen (1984).
[153] Manning (2003).
[154] Samuel (1989).

year's harvest, is another indication of the limited "market alienability" of land—it was the rights to the income from land ("economic rights") rather than individualized "legal rights" to the land itself that were "owned."[155]

The land survey established the state's authority as well as private interest in the land. But this authority, and therefore the economic power of the state, rested on the knowledge of local officials who performed and recorded the survey. Land surveying is one the oldest state institutions in Egypt, and centralized knowledge of the exact extent of each nome, measured by its length along the Nile— in essence a theological statement of the political control of Egypt — can be traced back to the Middle Kingdom (Dynasty 12, ca. 1991-1783 BC).[156] The problem for the Ptolemaic state, as it was for other states, was to obtain accurate information each year on local agricultural production. This, once again, required (although not always obtained) both loyalty and accuracy of the village scribe and his assistants in charge of land survey and registration.[157] The survey of standing crops and the fixing of rents, of course, give the impression of accurate measurement and recording, but there are examples of figures being carried over from old records, and land being misclassified.[158]

A key to royal revenues was the tenancy on royal land leased by one or more "royal farmers."[159] Royal farmers were direct tenants of the king, the land was leased year to year with the terms adjusted to take account of fluctuating conditions. What were technically short-term grants of land became stable, and tenure could be passed to heirs.

[155] On the distinction between economic and legal rights, see Barzel (1997). For the price of land in ancient Egypt, Menu (1997), Baer (1962). On prices of land in the Greek papyri, Cadell (1994).
[156] Manning (2003:146-48).
[157] Verhoogt (1998).
[158] Crawford (1971) 20-23; Verhoogt (1998:132, n. 121).
[159] Rowlandson (1985).

The term "royal farmer" was used in official contexts as a status designator for those men who took on leases to farm royal land.[160] It was thus not an indication of class but of status, and it was a status that was sought after, not forced upon the farmer. [161] It was then used of a wide range of men from peasants to priests, and the status provided access to both land and capital. So much so that in fact groups of men took on leases of small plots of royal land simply to obtain the status designation. The range in the size of the plots of royal land were generally small, but there are documented royal leases of up to 160 *arouras*.[162] It appears that the status within the royal economic sphere carried with it certain benefits, including protection from military billets, the stipulation that royal farmers could only be brought before Greek courts, and the right to be left undisturbed during sowing and harvest time.[163] Clearly individuals with this status exploited it.[164] Recently published documents from the Fayyum, however, show that the terms of the leases of royal land could be changed frequently, that rent fluctuated with annual production, and that transfers between farmers were frequent. This suggest that the Ptolemaic system was probably much more flexible, and more adaptive to rural realities of Egyptian agricultural production, than Rostovtzeff's view admits.[165]

The early Ptolemaic kings decided to settle soldiers on land in Egypt in order to retain a loyal fighting force available for call up when needed. At the same time, the

---

[160] Rowlandson (1985:331).
[161] *Pace* de Ste. Croix (1983:153).
[162] *pLille* 8, 4 (third century BC). On the range, see Shelton (1976:152).
[163] Shelton (1976:118). *pTebt.* 5 (= *Select Papyri*, vol. 2, text 210; *C. Ord. Ptol.* 53; [118 BC]), 221-26, Rowlandson (1985: 331).
[164] On the extent and variety of the business activity of one royal farmer, see Boswinkel and Pestman (1982), Lewis (1986:124-39).
[165] The papyri discussed by Shelton 1976 (esp. *pTebt.* 1103, 1105, 1107) are crucial in demonstrating, for example, that the rate of cessions of royal land was as high as one-third from year to year. This contrasts sharply with Rostovtzeff (1941) 284-87. See the remarks of Rowlandson (1985:337), Shelton (1976:120-21), and Verhoogt (1998:27).

placing of Greek soldiers in the countryside served to pacify, in theory, troublesome areas and to get marginal land under cultivation. They were given plots of land (*kleroi*) according to their rank. The 100-aroura cavalry-men were the largest group of *kleruchs* in the third century.[166] Other *kleruchs* had smaller plots of land, thirty *arouras* (infantry soldiers), twenty-five and twenty *arouras.* This class of land evolved into hereditary tenure, leaving in the main Greeks in a better position on the land than their Egyptian counterparts. The kleruchic system had a long-term impact on the land in the parts of Egypt that had a large contingent of military settlers, forming a major part of what was classed as private land in the Roman period.[167]

The gift of large estates to high officials, not new with the Ptolemies, enabled large tracts of land to be developed quickly. The land was a temporary grant by the king, called a "gift estate" (*dorea*) in the papyri, and could not be transferred privately. The ephemeral nature of tenure on this class of land shows that such estates were essentially royal land created as a means of providing revenue for the king and his circle. The land, then, was "ceded" by the king to others to use. The estate of the *dioikêtês* (the chief financial officer of the state) Apollonios near Philadelphia is the most famous example. This was a "model estate," or an "experimental farm"[168] that took advantage of economies of scale to exploit labor and production, as well as the private initiative and the capital of ambitious officials as well as immigrants.[169] The "gift" of land was in fact a creation of a potential revenue stream for Apollonius; it was up to his own initiative and ambition to take advantage of this potential. By all accounts, he seems to have done so,

[166] Uebel (1968), Clarysse and Thompson (2006).
[167] Rowlandson (1996:45-46).
[168] Edgar (1931:12).
[169] Cf. Rostovtzeff (1922:145).

for the ten or so years that the estate is documented directly, but his involvement in the management of the estate appears to have waned after only a couple of years, if the survival of his correspondence preserved in the archive accurately reflects his involvement. The cultivation of vines, however, was both impressive and long lasting.[170]

We can also see that the size of the operation took advantage of the centralization of information. Unlike Apollonius' estate in the Memphite nome, which was composed of scattered plots of land around several villages, the estate at Philadelphia was one large parcel of land. Apollonius kept a close watch on the operations although the land was leased out and even turned over to others to manage.[171] Each year, for example, memos were sent out by Apollonius to his manager telling him what seed and what amounts were available.[172] From the records of some accounts at least, these memos were not followed particularly closely.[173] The estate seems also to have been a place where experiments could be tried, although many appear to have failed.[174] Economic activity was particularly dedicated to commercial operations in viticulture and later in oil crops.[175] The weaving industry was an important component on the Memphis estate of Apollonios, while the short-lived success of poppy cultivation on the Philadelphia estate, grown largely on marginal land, can be attributed to the decline of the these estates by the end of the third century BC.[176] Their purpose was certainly to establish the state's direct control

[170] Thompson (1999b:134); Clarysse and Vandorpe (1998).
[171] In the latter case, it seems that kleruchs were given land from the estate itself. See further Crawford (1973:240-41). A group of Egyptian farmers who had come to Philadelphia from the ancient center at Heliopolis took a lease of 1,000 *arouras* within the estate. See *pLond*. VII 1954 (Philadelphia, 257 BC), Rostovtzeff (1922:73-75); Thompson (1999b:136).
[172] P. Cair. Zen. 59292, 420-430, cited by Crawford (1973:236).
[173] This is especially true in the case of over-producing what was specified and with important crops like poppy. So Crawford (1973:245).
[174] On the experimental nature of the estate, see Orrieux (1983:77-97).
[175] On viticulture, Clarysse and Vandorpe (1997), Préaux (1947) 22-26; and for oil crops, Sandy (1989).
[176] On weaving: Wipszycka (1961:185-89). On cultivation of the poppy: Crawford (1973:248).

over new land, to settle new populations, to establish revenue streams for state officials, and to exact as much new revenue as possible.

Conclusions

The Ptolemaic state has often been regarded as highly centralized, usually conjuring up the image of a despotic ruler who commanded the economy, and all those within the state. But a distinction should be drawn here between "centralized" and "bureaucratic," and between the direct revenue of the king, and the revenue of the state. State revenues were no doubt impressive by ancient standards, but there were limits on the degree to which economic production could ever be centralized (i.e. planned, or commanded from the center), given the nature of the Nile valley, the distances between center and periphery, and the nature of irrigation, which dictated local control and placed the emphasis on local knowledge of agricultural conditions**.** The link between the central state and the irrigation of land in Egypt was always indirect. There were certainly interventions by the state in the improvement of the irrigation system and the extension of arable land.

The development of the bureaucracy was a double-edged sword. On the one hand, it kept the rulers in power, but on the other it probably had similar “pulling” effects, stifling develoment and growth, as John Fairbank argued for early China (1973; cf. Deng 1999) in what he called a “bureaucratic determinism” model. The bureaucracy was organized, coercive, controlled “merchant class” and siphoned off resources. This is a slightly different picture than Rostovtzeff gave for the evolution of power in the later Ptolemaic period. Rostovtzeff, using documents like the first century asylum decrees (Bingen 1989), saw real power shift from the king and his ministers to a small “clique of

selfish, greedy, and lawless officials who formed a new, wealthy, and influential aristocracy of the kingdom" (Rostovtzeff 1941:896). The social trend was actually broader than Rostovtzeff's language admits (cf. Bingen 1989).

The ability of the Ptolemaic state to direct new irrigation work that trebled the land base in the Fayyum is the classic example of state intrvention in the economy. The impetus for such a project came from the external demands of new population and the need to settle a loyal fighting force within the country. The Ptolemaic bureaucracy was large, and it is not surprising therefore that the taxation regime was far more extensive and successful than in earlier Egyptian history. Yet the management of the irrigation regime remained diffused and in charge of local officials. Despite the earlier central planning or estatist model of the Ptolemaic period, the Ptolemaic agrarian economy, as it was earlier, was rather more reactive, or ad hoc, than centrally planned

The path of economic change in the Ptolemaic period can be traced back to the Saite (650-525 BC) social and political reforms, and to Persian imperial rule. Greek immigration, and the use of demotic for private contracts begin then. Ptolemaic taxation policy, which demanded some taxes be paid in coin, certainly increased the amount of revenue captured by the state. There were, however, strong structural constraints to the development of the economy. The structure of the ancient property regime remained, initially at least, in areas such as the Thebaid, although over the long term it was altered by land grants to soldiers, and, to a certain extent, by the use of public auction. The taxation in kind of agricultural production on grain-bearing land limited the ability to monetize the economy.[177] There were new fiscal institutions which allowed greater capture of revenue, at least over the short term, but the continuation of ancient structures,

[177] Rowlandson (2001).

the structure of the bureaucratic system that was developed over the course of the third century BC, and the concessions to local elites, severely limited potential for sustained *per capita* economic growth, which, after all, was not the aim of the regime.[178]

The Ptolemaic dynasty, built on Egyptian institutions, was a remarkable and important era in the economic history of the ancient world. There was much innovation in the fiscal system, but overall the economy was shaped by the immediate needs of politics and the constituent groups that the rulers needed to survive. Many things remain obscure. Among them: the performance of the economy over time, and the overall GDP. Older views of the role of central planning have been replaced by a richer picture of the interplay between new state fiscal aims and private incentives. Military demand played the key role in this development in terms of land settlement, monetization and, to some extent, trade (e.g. African elephants and the eastern desert roads). State direction was important, but private initiative and old institutions cannot be ignored. The promotion of "Hellenic" status in the taxation system may have exacerbated social tensions and created serious barriers to the formation of a unitary state. This should not surprise given the variable ecological system dependent on the annual flood of the Nile, and the nature of the regime itself. Agricultural technology remained at a low level of development. New irrigation technology probably increased agricultural production only at the margins, on garden and fruit tree land, and there were efforts early on to introduce new crops and new livestock. But on the whole, Rostovtzeff's view (1941:1197) that we are dealing not so much with a "radical change" in the economy as with "its partial improvement and its systematic organization" is sound. In many ways, indeed, it was a continuation of earlier pharaonic development of irrigation and agriculture, although much of the observed

[178] Samuel (1983:41).

change came in newly developed areas and with Greek institutions, some of which had long-term consequences.[179] The Greek language was among the most important. Others include the state's promotion of the circulation of coinage driven by taxation policy, the cultivation of wheat, the tax farming system, and the formation of an urban "Hellenic" class. Modest gains in efficiency in scribal practice, the control of interest rates (perhaps), the use of tax receipts (only in the Thebaid?) may have been offset by agency problems in the farming of taxes, ethnic divisions that were reinforced by taxation policy, and inefficiencies in legal institutions. It is to those institutions that I now turn.

[179] Rathbone (2007) and Bagnall (1993:310-25).