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The Ptolemaic economy, institutions, economic integration, and the limits of centralized political power

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Abstract: In this paper I discuss the relationship between the Ptolemaic state and economic development. My approach is informed by New Institutional Economics (NIE) and also by insights offered by Economic Sociology. I argue that the incentive structures that the Ptolemies established probably did not allow sustainable, or aggregate, economic growth despite important new fiscal institutions, some capital investment in new agricultural areas, and the possibility of new technology. I begin with a discussion of institutions and the Ptolemaic state, and move on to discuss, briefly, developments and the structure of the economy, before ending with an examination of the land tenure regime and how it relates to performance.

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Introduction

In this paper I ask the following question: how did the Ptolemaic state and its fiscal institutions affect economic performance? The question is, of course, not easily answered, and I can only lay out here some aspects of what I hope to develop in future work. Most analyses of the Ptolemaic economy have implicitly adopted an autocratic (or despotic) state model, although those who work on papyri in particular have been aware for some time of individuals, or groups of individuals, as economic actors.¹ I believe, therefore, that it is important to develop a model of the state and economic performance that incorporates both the political and economic aims of the state, and the incentive structure of individuals and groups. A model of the state (explicitly lacking in Ptolemaic studies), and its institutions, e.g. an analysis of the manner in which property rights are specified and enforced, is a *sine qua non* in any assessment of historical change and economic performance over time.

Institutions

In a seminal paper on the Ptolemaic administration of Egypt some years ago, C.B. Welles asked: "what actually was the nature of this administration?"² The question lies at the heart of an important issue in the Ptolemaic economy, i.e. what the impact of Ptolemaic fiscal institutions was on economic performance. The details of Ptolemaic administration have been the subject of intense scholarly activity since Welles, but his straightforward question, and how it affected economic performance remains to be answered. In part this will be improved by major new studies of important new papyri, the Ptolemaic census, and coinage.³ Beyond the new studies, though, one must say, is the need to consider in more detail two general issues: (1) the theory of Ptolemaic institutions, and (2) the nature of the state. I shall treat each in turn.

I follow the standard definition in NIE that an institution as the informal or formal "rules of the game" that establish incentive structures that individuals and organizations (defined as institutions together with people taking advantage of them) follow in a given society.⁴ They empower or constrain what an individual can do. Institutions, thus, are the key to understanding change over time, and have been central to both Marxist and neoclassical economic theory. Understanding institutional or the incentive structures in a society, in turn, is essential in predicting economic growth. As the best introduction to the NIE states, "(t)he central message of the New Institutional Economics is that institutions matter for economic performance."⁵

I am well aware of the risk of applying modern social science theory to the study of the ancient economy given some of the assumptions of modern theory, and given the fact that much social science theory historically has derived from attempting to understand the modern nation state. Nevertheless, all states have rules and incentive

¹ Finley (1999):154.

² Welles 1949:21.

³ On the census, see Clarysse and Thompson, forthcoming. On coinage, Burkhalter and Picard (2004), von Reden (forthcoming),

⁴ Furubotn and Richter (2000): 6-7; cf. North (1990): 3; Cohen (1996). On comparative institutional analysis, see North (1991), Aoki (2000). A good general institutional treatment of the ancient economy will appear by Frier and Kehoe (forthcoming).

⁵ Furubotn and Richter (2000):1.

structures, and it is the analysis of these that is the key to understanding economic development and performance, no less so for Ptolemaic Egypt as for modern states. There are two choices if we are to discuss economic performance: (1) good statistical analysis of reliable data in time series (not yet possible; archaeological survey may yet help) and (2) theory from which we may posit plausible hypotheses. NIE offers a valuable approach to economic analysis in the real world since it focuses on the concept of path dependence (i.e. the long term effects of institutional continuity), the role of agency, on information and transaction costs, and property rights and their enforcement. All four of these issues are important in the Ptolemaic economy. In short, an institutional approach is valuable because (1) it forces us to refine concepts and methods in a field with abundant, yet not always well-anchored, documentary evidence, which in turn may lead to the ability to correlate socioeconomic phenomena, and (2) it allows us the possibility of building a more dynamic model of economic change and performance, and (3) if the ancient material contradicts the NIE, ancient history may prove quite valuable for building more robust models in economic history and at the very least offers even clearer contrasts between pre-modern and modern states.

The Ptolemaic state

Most definitions of the state agree that it is a bounded territory with a "comparative advantage in violence" controlled by a legitimate ruler having sustainable ability to tax.⁶ Beyond this, we have two basic models that have been proposed for the origins of the state.⁷ These are the contract or neo-classical theory and predatory or exploitation theory of the state. In the predatory model, the state functions as the agent of one group or class, collecting and distributing revenue to that one group or class. In the neoclassical model, the state acts as wealth maximizer, the ruler exchanging protection and justice for revenue. Property rights are specified to guarantee maximum revenue, or "monopoly rents," but the property rights structure tends to benefit local constituencies (in order to maintain stability for the ruler), creating inefficiencies that will add costs to the state. Additionally, the state acts as a third party to every contract, standing beyond them to enforce private rights, and functioning as a "monopolist" in assigning property rights to each group or class within the state that maximizes revenue. Because revenue is collected by state agents, principal-agent problems can arise, exacerbated by asymmetric flow of information to the center, which creates uncertainty and higher enforcement costs. The social and cultural isolation between the elite and the agricultural producers observed in all pre-modern agrarian states adds another dimension to the general problem of loyalty and compliance.

In Egypt, we are dealing, obviously enough, with a monarchic system in which the economy is viewed as an extended household of a divine ruler. In most analyses of the Ptolemaic economy, a simple "predatory" or despotic model has been used. Indeed monarchs tend to act despotically, extracting as much revenue as possible, but there is another side of the equation, and that is local elites/state agents who have bargaining power with respect to the ruler. The simple despotic model has been reinforced by earlier scholarship that has often noted causal links between "hydraulic" agriculture and centralized political and economic power. The Ptolemies simply inherited, and improved,

⁶ North (1981):21.

⁷ North (1981):Chapter 3.

a despotic structure, by which they extracted resources where they could without opposition.⁸ This is, I think, the prevailing view within Ptolemaic studies.

But the historical relationship of the king to economic and political power in Egypt was more complex. There was in fact no direct connection between the irrigation system and the centralized, or “despotic,” control of the country. There were no central state officials in charge of irrigation at any point in Egyptian history. The natural “communication network” and the population cage that effectively captured farmers within a strongly circumscribed environment created by the Nile river was a decisive factor in the ability of the king to control the vast hinterland of the Nile valley (I leave aside here the issue of how uniform the written language was and the low literacy level), but this control derived from the coordination of agricultural production in irrigation basins that were administered by local elites. While the ruler could claim monopoly property rights in the state, it was always in practice restricted by circumstances and by the fluctuating bargaining power between him and constituent groups. To be sure, the Egyptian environment prevented persons from easily exiting the state, the river valley acting as a strong “social cage” that lead naturally to the ruler acting “opportunistically.”⁹ Nevertheless, the ruler regularly bargained with local elites. It was they who mobilized labor, collected the agricultural surplus, and enforced compliance.

What was the nature of the Ptolemaic state? The ruler, as always, acted despotically (there was of course no constitutional restriction on his powers), but in terms of economic development he acted contractually, subject to the bargaining power of local constituents, including soldiers, who were crucial for Ptolemaic power. It is this latter fact that added transaction costs, a serious factor in both revenue and in overall performance in an economy. The usual conception of the land tenure regime in Egypt, for example, is that the ruler had monopoly property rights, some of which were conceded to others. So, for example, temple land, or kleruchic land given to reserve soldiers in exchange for service, were conceded plots of land to use, but the ultimate property rights were retained by the ruler. But in my view, the concession of land was the result of the bargaining power of constituent groups.

The difference between despotic fiscal aims and the rural realities of Egypt is shown in one of the most celebrated documents of the Ptolemaic economy: P. Tebt. 703, a series of instructions from the *dioikêtês* to an *oikonomos* dated to the early part of the reign of Ptolemy III Euergetes. Its literary heritage from earlier Egyptian instruction (of the Pharaoh establishing the proper code of conduct for officials and a sense of “justice” between the state and its subjects) should be taken seriously, and the mention of difficult times suggests that the text was an attempt to restore order after a period of civil unrest linked to a war and, perhaps, bad Nile flooding. The allusion to soldiers who have abandoned their duties reinforces this view. The long text covers many aspects of the royal economy from the maintenance of canals, to sowing, to the registration and care of cattle. The shipment of grain to the capital and the production of fruit trees are also given prominence. The text gives us a (static) picture of the bureaucracy and the central state's expectations of compliance and reporting. But the social and political dynamics involved in the execution of the ideal political and economic order requires us to think about state power and its limits, and for that, we must bring the state back into the analysis.

⁸ Cf. Rathbone (1994).

⁹ On social caging, see Mann (1986). Furobotn and Richter (2000):415 on theoretical implications.

The Ptolemaic state was certainly involved in capital investment in new areas: principally in the Fayyum, to a lesser extent (probably) in the Delta, and the eastern desert. The reclamation of the Fayyum in the early Ptolemaic period, was among the most impressive accomplishments of an ancient state, perhaps initially trebling the amount of arable land under production. The state was directly involved in the building of the main canal network, in the supplying of tools and other equipment, and, most importantly, in establishing new fiscal institutions (coinage, banks, royal granaries). The higher percentage of royal land here is surely the result of such investment by the state. The Fayyum project and the Zenon archive documenting the large estate of a high official of Ptolemy II was evidence, particularly for Rostovtzeff, of very strong state control, and even central planning and direction, of the entire economy. We should, however, as so often when using the papyri, narrow the context to the specific time and place of the Fayyum project and of the Zenon archive.

The archive documents a large gift estate given by the king to his *dioiketes* Apollonios. The estate consisted of 10,000 *arouras* (about 6700 acres, or just over 2711 hectares) around the new Ptolemaic village of Philadelphia in the eastern Fayyum depression. Philadelphia itself was laid out on a grid plan, and there were many military settlers in and around the town. The new town was given a “dynastic” name, as, for example, with the new village of Theadelphia, or Arsinoe near Edfu. The king personally visited the area in 253 BC to inaugurate the settlement of soldiers near the village. The land was a temporary grant by the king, and was called a “gift estate” in the papyri, and could not be transferred privately. The ephemeral nature of tenure on this class of land shows that these estates were essentially royal land created as a means of providing revenue for the king and his circle. There was a direct connection between the founding of this new Ptolemaic town and the agricultural development of the land in the area. The estate financed an entire territory. The management of the estate, from irrigation, to seed loans and transportation was carefully watched as a result of its economic importance. The king clearly showed an interest in such large estates. But here royal interest intersected with the private interests of Apollonios, and indeed his manager Zenon, for a part of the land was under the direct management decisions of Apollonios and even more directly to those on the ground. It was a “model estate,” or an “experimental farm” 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. The emphasis on cash crops, on the market and the command economies, is also suggestive of the atypical status of these estates. The “gift” of land was in fact a creation of a potential revenue stream for Apollonios; it was up to his own initiative and ambition to take advantage of this potential.

One famous event on the estate that has received much comment involved Panakestor, the predecessor of Zenon, and a group of Egyptian tenant farmers.¹⁰ In 256 BC, an agreement between the estate manager and a group of Egyptian tenant farmers to cultivate land with wheat, was concluded. The transaction was probably common on the large estates. The two parties agreed to a split of the harvest of one third to the landowner and two thirds to the tenants. Such a share cropping agreement was typical in Egypt. The landowner, Apollonios, attempted to change the terms of the agreement in the middle of

¹⁰ PSI 5 502. Rostovtzeff (1922):75-80. See the analysis of Bingen (1970), with the comments of Turner (1984):156-57 and Bagnall (1995):106-08; Ibid. (1997):237-38; McGing (1997):277.

the agricultural year by demanding that the farmers agree to a division of the crop on the basis of an estimation from a survey of the standing crop. We do not know exactly why this change in terms, which is called a “concession” (*philanthropa*). This new estimation, also, it seems, required a rent payment in cash rather than in kind at the time of harvest. But what to the landowner was a “concession” to his tenants was no doubt a bad deal for them, and against standard practice seen in Egyptian leases. The farmers responded initially by saying that they would think about the change. Four days later they sought asylum in a local temple, a firm answer in the negative, and the crop went unharvested. The disagreement may have resulted because the landowner saw that it was going to be a good year for the harvest and he thought he could get more out of the land. This flight from work, often documented in the Zenon papyri, portrayed in Bingen’s analysis as an “archaic” response by the Egyptian farmers, was a traditional response—the use of an old local institution (the temple) in the face of fiscal pressure from the state.

The affair illustrates one important aspect of the new economy, namely that the farming of royal land involved contract and negotiation. It is not unique in demonstrating the dissonance between the economic aims of the regime—maximization of rent and taxes, minimizing risk—and the realities of dealing with tenant farmers who had their own, ancient, traditions of farming and expectations of landlord-tenant relationships.

Unlike the Persians and the Romans, the Ptolemies controlled Egypt as an independent state rather than as a province, and, within Egyptian institutional arrangements, they ruled Egypt as legitimate divine pharaohs. State development followed two paths, one using Greek fiscal institutions to tax both agricultural production and transactions, a second path linking this Greco-Egyptian state to ancient institutions and organizations. As a result, the process of state formation must be considered a crucial element in Ptolemaic economic performance over time. It was not the command of the pharaoh that mobilized labor, although coercion no doubt played a role at times, it was contract and negotiation with local elites who exchanged loyalty for access to rents (i.e. income). There were no doubt incentives to take on leases of royal land, incentives to move to new areas, and incentives to develop new land.¹¹ But the new incentives in the royal economy can only partially explain economic development. The pattern of land exploitation throughout Egypt was regionally different, a reflection of historical institutions and historical events established long before the Ptolemies arrived. It is in part this historic regional difference which explains, for example, why the Ptolemies established a political center at Ptolemais at the north end of the Thebaid, and why fiscal institutions took time to establish in the Fayyum as well as in the south, and why the Fayyum was a significantly different area than the Thebaid.

The reach of the state, state formation, and economic integration

The formation of the Ptolemaic state has, to my knowledge, never been fully analyzed as a political process in and of itself. It is important to do so, and I can only give a preliminary account here. For my part, I believe that the process of gaining a hold of Egyptian institutions-- what I have called the "Ptolemaicizing" of Egypt-- should be understood in the context of change and adjustment to an ancient system. The "reach" of the Ptolemaic state was impressive, attributable, of course, in the first instance to royal

¹¹ See Rowlandson (1985) on the incentives associated with the status of those who took on leases of royal land.

control of the river as the main mode of communication. But while royal control often seems impressive, the institutional structure of the state, and the focus on local production centered on basin irrigation, effectively reduced royal economic power. In terms of institutional structure, I draw a distinction between "state" rules, the enforceable rules and expectations of the bureaucratic structure, and "individual" rules, or social norms, involving, inter alia, landholding and inheritance patterns, the organization of production, contracting and organizational structures such as temples.

It is in understanding the difference between the bureaucratic rules and expectations, and the local, ancient, social norms (what Sociologists refer to as the "decoupling" of bureaucratic structure from actual human behavior) where we can begin to understand Ptolemaic development. An analysis of social relations, and what Sociologists call "interests," are equally as important as analyzing state structure. Ptolemaic state formation was a dynamic political process, time should be a factor in the analysis, and it was only partially completed. Greek and Egyptian (as well as other ethnic groups) social networks, the important role of agency and the flow of information are key. Here we run up immediately with the source problem - we have very few Greek documents dated to the reign of Ptolemy I, and with the enormous documentary material for the reign of Ptolemy II, it is usually, and easily, assumed that it was the second king who formed what we think of as the Ptolemaic economy. An important first step, and a sign I think of a plan to govern Egypt, was taken by Ptolemy I in founding the southern Greek city of Ptolemais (modern el-Manshah) just above modern Sohag. The founding of a Greek polis in this part of Egypt is, to my mind, a little mysterious (what was its relationship to the neighboring Akhmim?), but it is at least a recognition by Ptolemy of the importance of Upper Egypt and also a recognition that the Thebaid required some kind of administrative presence of the new regime in the region itself. The Thebaid, historically centered on the temple of the god Amun in Thebes during the first millennium BC, was used to semi-independence from the north, and it was an area prone to political disturbance under the Ptolemies (below).

A "centralising principal" linking villages to nome centers and the capital, the new fiscal institutions and the administrative language of the documents gives the appearance, at least, that the Ptolemaic system was in place in the Thebaid by the end of the third century BC. Greeks were certainly settled in the Thebaid up to Aswan in the early third century BC. But the bureaucratic uniformity was never complete. Once again, we are at the mercy of scattered evidence, but it is clear that local legal traditions continued, there were parallel court system for Greek and demotic Egyptian contracts and that Upper Egypt always to some extent stood in contrast to the stronger state institutional structure established *de novo* in the Fayyum.

An overview of the Ptolemaic economy

The documentary evidence for the Ptolemaic economy, as is well known, is excellent, although profound problems remain in interpretation. 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. Population movement, particularly of Greek immigrants, certainly had a profound effect on institutional arrangements in Egypt. Military demand also played an important role in economic 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, and one must where possible strike the balance between *direction* and *reaction* by the state. The promotion of "Hellenic" status in the taxation system 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. Entrepreneurs, soldiers, and others, played a key role. But on the whole, Rostovtzeff's view 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.¹² For the latter, "systematic organization," one must ask "when?" and "where?" In many ways, indeed, it was a continuation of earlier pharaonic development of irrigation and agriculture, and Persian fiscal policy. But there were also changes with long-term consequences.¹³ Among these are the state's promotion of the circulation of coinage, the cultivation of wheat, and the formation of an urban "Hellenic" class. Modest gains in efficiency in scribal practice, the control of interest rates, the use of tax receipts (probably widespread but only documented on ostraca from the Thebaid) was offset by inefficiencies in legal institutions, principal-agent problems in the farming of taxes, and ethnic divisions that were reinforced by taxation policy.

Change came in economic intensification- increased urbanization, intensified agrarian production, increased long-distance trade, and increased monetization, and in structure- monetization of the taxation system, royal banks, and royal granaries. Along with this change came rural unrest that, on one occasion (207-186 BC), led to the secession of most of the Thebaid from the Ptolemaic state.¹⁴ The proximate causes of the revolt are unclear, but it seems to me reasonable to suppose that social tension caused by a tighter fiscal control of Upper Egypt is one reason for the unrest. It is significant that there are no recorded major uprisings in the Fayyum, i.e. loyalty to the regime followed economic incentives. The increased presence of Greeks and their role in the bureaucratic hierarchy, in military service and in other economic activity, altered the structure of social power in terms of language (the increased use of Greek in the villages) and in terms of access to rents (i.e. income).

Structure of the economy

The Ptolemaic dynasty built on Egyptian social organization and Persian fiscal institutions. The interaction between Egyptian and Greek social networks should be stressed, rather than the cultural isolation of the two. For if anything, herein lies the basis of Ptolemaic economic development and constraint. In the analysis of the relationship between the state and economic performance, one must begin with a discussion of the more general historical relationship between two sources of social power: economic and political. Here I rely on the historical sociology of Michael Mann and his analysis of

¹² (1941):1197.

¹³ Bagnall (1993):310-25.

¹⁴ On the revolts of the period, see the summaries in McGing (1997), Manning (2003):164-71, and the forthcoming study by Vélisse.

societies as organized power networks.¹⁵ Without question there had been a "centralizing principal" in the Egyptian state, and indeed Egypt came closest to being a unitary state long before the Ptolemies. A hierarchical bureaucratic structure began to be established by the end of the Old Kingdom, and was further articulated during the Middle Kingdom, when the Fayyum was first developed. The Saite rulers reconsolidated political power throughout Egypt, and Persian control of Egypt brought more centralization. Moses Finley, of course, never analyzed, nor did he recognize, such a thing as a "Hellenistic" economy.¹⁶ For him, hellenistic economies were configured as a new institutional layer ("ancient," or "Greek") placed on top of an "oriental."¹⁷ The model ignores important institutional developments in Egypt during the first millennium BC (e.g. the introduction of demotic Egyptian as a language of contract), and implicitly builds on assumptions of cultural isolation and colonialism.¹⁸

But the Ptolemaic takeover of Egypt was more than replacing one group of elites (Persians) with another (Greeks), and more than a case of oriental despotism redux. It was the formation of a new state, as I have already suggested, that took Egypt down a new historical path. What were the goals (I dare not say economic policy) of the Ptolemaic regime? In short, capturing revenue, maintaining political stability, and establishing the military on the land. Ptolemaic success in these areas was remarkable, although it is a mixed story. The bureaucratic "cage," to paraphrase Weber, was not yet made of iron.

Let us begin with the most fundamental aspects of the rural economy: agricultural production. The important feature of land tenure, and a very traditional one in Asia, tying land holding through state service to finances of the ruler, was certainly maintained.¹⁹ In Egypt, the agricultural system was organized around the annual rhythm of the Nile. Land was generally exploited in irrigation basins of land, with canals monitored by local officials. The temples were important local managers of land. It was the temple that had the scribes who kept the records of land in their archives. Temples that leased out land to tenant farmers, and temple employees probably received land as part of the payment for serving the estate. Temples were also the location of grain storage. We may presume that temples, *mutatis mutandis*, served similar economic and administrative functions throughout Egypt, but we are best informed about temples in southern Upper Egypt. Connecting agricultural production to taxation was the famous Egyptian bureaucracy, centered on the administrative division of the country into nomes which to some extent was an idealized order of a messier reality -the image of order is one of the most consistent features of Egyptian kingship.

Without doubt the most important aspect of Ptolemaic economic development was the reclamation of the Fayyum depression. The Fayyum had been developed before, by the kings of Dynasty 12, whose capital city was nearby. But it was the first two Ptolemaic kings, perhaps with the Macedonian reclamation project at Lake Kopais in their minds, who developed the Fayyum most extensively. We must keep in mind, however, that the Fayyum was not entirely a wasteland before the Ptolemies. Some

¹⁵ Mann (1986).

¹⁶ Davies (2001):11-12.

¹⁷ Finley (1999):183.

¹⁸ See briefly Lloyd (1983) for developments.

¹⁹ Cf. Chaudhuri (1990):254.

villages must have been there, and the Persian requirement of fish from Lake Moeris is suggestive again of continuity.

Despite incomplete centralization, the whole of Egypt was, eventually at least, integrated into one royal system through scribal practice, Greek banks and royal granaries. The increasing monetization of the economy also played an important role here, as did the placement of monitoring officials at temples, law courts etc. The use of Greek as the administrative language, as I have argued elsewhere, placed pressure on the demotic tradition, not for cultural reasons, but for reasons of efficiency.²⁰

The Egyptian elite (i.e. the priests) also played an important and active part in the formation and integration of the Ptolemaic state. The well known Karnak Ostrakon, for example, a demotic text dating to 258 BC, shows that a royal order to survey land, reached the south of the country and the important temple of Amun at Thebes.²¹ Such an order emanated from the king himself, probably originally in the form of a *prostagma*, and was sent down the chain of the bureaucracy, and translated into demotic so that local priesthoods (or agents of the State) as well as farmers could be informed what was expected by the Ptolemaic authorities who were responsible for generating a budget for the king. The findspot of the text, near the sacred lake at Karnak, might suggest that the orders were intended to go through the temple bureaucracy, not through a separate bureaucracy, another indication that temples were a vital part of early Ptolemaic exploitation of the south. The also order reminds us that central fiscal aims relied on the accurate flow of information from local state agents. This is especially true in the domain of agricultural production.

The land tenure regime

The taxation of agricultural production was a principal source of wealth of the Ptolemies, as it was with the Seleucids. Land was also the important endowment of Egypt, allowing the Ptolemies to settle soldiers and establish a Greek presence throughout Egypt. The major question, and one for which I do not yet have a ready answer, is what was the ratio of available land to population? No figures survive on pre-Ptolemaic population, although most scholars assume population growth under the Ptolemies largely due to immigration into new urban centers. The usually accepted estimate for the "Greco-Roman" Egypt, 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 m²; the total is 24, 793 KM²), roughly comparable to Egypt at the beginning of the nineteenth century AD.²² Greeks comprised roughly 10% of the population.

²⁰ Manning (2003):173-77.

²¹ For the text, see Manning (2003):148-49, with literature cited in n. 82.

²² 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 ca. 225 BC. The estimate is derived from data that might not allow us to posit a reliable population figure given the bias toward certain groups being mummified, and with Clarysse's assumption that Edfu was a "typical" nome. But see Butzer (1976):76-80 on regional population densities, showing much higher densities historically in the Thebaid than in Middle Egypt. Nevertheless, the figures of Clarysse (2.8 million) and Rathbone (3.5-4.5 million) are not necessarily incompatible, with allowance for some positive growth between 225 BC and the first century BC. 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

The categorization of land was complex and variable, but the general organizational scheme is well known, and I need only summarize here.²³ From the point of view of the state, there were two types of land, land that yielded a rent to the ruler, and land on which rent was foregone. This latter category included temple estate land and land on which soldiers were settled (kleruchic land). It is important to note that these categories were not rigid, and there was considerable movement of land into and out of these categories. Much of the land had institutional and well as private claims attached to it. The tradition of holding land privately that was held nominally bound to temple estates continued, as did private working of fruit trees and garden land.

A key to royal revenues was the tenancy on royal land leased by persons called "royal farmers" in the administrative papyri. This class of land is most in evidence in the Fayyum and the neighboring Herakleopolite and Oxyrhynchite nomes, but it certainly existed in the Thebaid, if as a smaller percentage of the total land. The state intervened directly here, since the farmers borrowed seed from state granaries.

Outside of tenancy on royal land, other categories of land were tied to service, either to a temple estate or to the military. Temples also leased their land to tenants. Free, small-scale farming was the historic norm in Egypt, despite the rhetoric of forced tenancy or bound peasants that occasionally appears in the texts. Property rights were traditionally held within temple estates in the south, and this appears to continue. Indeed, in the famous demotic archive now in the British Museum from Asyut (Lykopolis) in Middle Egypt (further below), the interaction of state officials at the local and regional level strongly attests to the fact that the Ptolemaic state enforced traditional Egyptian property rights in land within temple estates. Ptolemaic temples still maintained regional connections to other temples through cult ritual and inter-locking land holding patterns. The phenomenon is seen very well in the Edfu Donation Text, which records a kind of cadastre of land in the three southernmost nomes of Egypt dating to the fourth century BC.²⁴

The settling of soldiers on land, particularly cavalry, was a very important aspect of Ptolemaic political and economic power, but I find it for the moment difficult to fully comprehend in the context of economic development. There was, at first, as far as we can tell from the evidence, a regional difference between the north and the south of the country with respect to military settlement on land. After the Theban revolt (207-186 BC) was put down, military settlement in the south increased.²⁵ The recently published Boethos archive shows the continued importance of military to the foundation of new towns (and presumably the exploitation of land) in the late second century BC.²⁶

Economic performance and the limits of centralization

One of the implicit assumptions in the analysis of the Ptolemaic economy has been that the royal economy functioned without what economists call transaction costs (the costs of running an economic system, including enforcement costs, and also "the costs of

considerably less than this maximum. The figure comes from a temple (Edfu) text, but it should not be dismissed outright.

²³ Manning (2003).

²⁴ Manning (2003):74-79 with literature.

²⁵ On the revolt and its aftermath, see Vandorpe (1995).

²⁶ Heinen (1997)

establishing, maintaining or changing a system's basic institutional framework").²⁷ Nothing could be further from the truth, as one might already conclude from the sketch above. Indeed the Ptolemaic bureaucracy and the enforcement of rules must have added considerable costs to the state. The Ptolemies built on ancient centralizing principals, and extended them by a new bureaucratic structure run in Greek. But there were limits to centralization, and there was also resistance to Ptolemaic rule, whatever the exact motivations were. The flow of information and the enforcement of rules are the keys to understanding the degree of compliance and therefore the strength of the regime. The Karnak Ostrakon evokes (the expectation of) the ancient ideology of perfect information flow, but the realities of Egypt were not always as neat. There are indeed many papyri that suggest that orders could be slow in reaching their destination, and local compliance with these orders were not always so effectively carried out. Parallel civil and military bureaucracies, and the integration of Egyptian to the Greek administrative structure, would have added to the compliance problem.

I give two brief examples. The first comes from the well known archives of the religious recluse Ptolemy son of Glaukias who lived in the Serapeum at Saqqara in the middle of the second century BC. It is "one of the most complete illustrations to survive of the Ptolemaic bureaucracy at work."²⁸ The document (UPZ I 14) records the initial petition to get his brother enrolled in the army, and the subsequent fate of the request. We can follow the flow of requests through two bureaucracies, civil and military, that generated several dozen further documents, and took almost five months, and thirty-two separate trips by the petitioner, to obtain the request.²⁹ So much for efficiency. The illustration, of course, reveals the problems of a bureaucracy from an individual's point of view. But what from an individual's point of view caused frustration, was a source of cost for the ruler. Arthur Verhoogt's recent study of the important Menches archive, an archive that gives us a good view of the village level Ptolemaic bureaucracy at the end of the second century BC, shows the practical problems for the Ptolemaic state in establishing a loyal bureaucracy with well-defined functions.³⁰

The second illustration comes from the records of a probate dispute in Asyut in the middle of the second century BC.³¹ A dispute between two half brothers over the inheritance of two small plots of land arose. In 173 BC the younger brother made a petition to obtain a real division of his inheritance to the Greek *strategos* of the Thebaid. That petition was in turn sent to the *strategos* of the Asyut district for a hearing. The older brother was unable (or did not want to) go to the registration office to reassign part of the family, and so the dispute was resolved at the local temple in which they held office. Three years later, the dispute still raged, the younger brother again making a petition, this time to a local Egyptian official. More petitions followed, by him and by the wife of the older brother to the *strategos* of the Thebaid to prevent a division of the family property. The dispute was again referred to the local priestly tribunal in the temple, where a trial was finally held. A decision was made by the priests, but the family dispute apparently continued afterward. The affair illustrates quite well that the Ptolemies

²⁷ Furubotn and Richter (2000):42-43.

²⁸ Thompson (1988):248.

²⁹ Thompson (1988):248-50.

³⁰ Verhoogt (1998). Cf. Manning (2003):119-22.

³¹ Thompson (1934).

maintained the ancient legal system, placing a state agent in the court (the *eisagogeus*). This is a clear case showing that the Ptolemies bargained with temples, allowing an ancient institution of property rights to continue in exchange, presumably, for loyalty.

The Asyut affair illustrates that the Ptolemies maintained the old structures, acting as the monopolist in assigning tenures and maintaining the old system for the benefit of the priestly constituency. This was counterproductive to efficiency and real economic growth. Applying labor to the land, and a lack of investment, was the big long-term problem effecting economic performance and degradation. There was no intensification of land development after the initial surge under the early kings, and no market mechanism for the distribution of land, although the institutional structure (public auction) existed.

Conclusions

In this paper I have argued that an institutional approach to the Ptolemaic economy is useful in understanding Ptolemaic developments, and Ptolemaic economic expansion and new settlement was all the more remarkable in this light. The early success of the regime was driven by Greek immigration and the expansion of land as a result of it. But I have also suggested that there were probably significant costs involved in establishing the new fiscal regime on the one hand, and in maintaining the ancient structure of land tenure in some areas of Egypt. The story of land tenure and political power in Ptolemaic Egypt as it relates to the royal economy is important, and in some respects very well documented. Because agricultural production was the major source of state finance, the history of the power relationship on the land is, I believe, of central importance. What did not happen, importantly, was the development of internal markets, i.e. land did not become market alienable, and consequently there was little investment, despite the Greek institution of public auction, used occasionally to sell land that came in with Ptolemaic rule. And here I differ slightly from Dominic Rathbone's conclusions on the differences between Ptolemaic and Roman Egyptian land tenure. Rathbone, in summing up the different trends on the land in Egypt and Republican Rome, argued that the Ptolemies "did not allow the emergence of large private agglomerations of land." In my view, it was not a matter of permission, it was the *institutional limitations* of the state that *prevented* private investment. The Ptolemaic state, by propping up an ancient system of linking landholding to state service did not encourage investment in the land, and it was only after Roman annexation that sustained economic growth was possible.

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