8.C Documentary Sources

I Introduction

The use of documentary sources (papyri, coins, and inscriptions) for economic history has a long pedigree. The great German philologist and epigraphist August Boeckh (1785–1875) not only initiated the first corpus of Greek inscriptions (now *Inscriptiones Graecae* [IG]), but also applied his epigraphical knowledge to writing the first history of Athenian public finance.¹ Boeckh pioneered ancient economic history as a quantifying discipline. He also reoriented the academic interest from ancient household management to what he regarded as the national economy of Athens. The Russian-born archaeologist Michael Ivanovich Rostovtzeff (1870–1952) likewise used documentary sources to refocus the subject of ancient economic history. More than Boeckh, he demonstrated the potential of this evidence for research on economies beyond Athens and Rome.² Integrating local art, papyri, coins, and inscriptions from the Eastern Mediterranean and the Near East into his research on the Hellenistic and Roman economies, he turned historians' attention away from the centers to places like Egypt, Syria, and the Black Sea. Although his model of the ancient economies is largely obsolete, his evidence is still valuable for the economic history of the Eastern Mediterranean and the Near East. The material of the magisterial five-volume *Economic Survey of Ancient Rome* (1933–1940), edited by Tenney Frank, had an equally important impact. Moreover, these works did not only focus strongly on documentary evidence, but also argued for the so-called modernist, that is market-oriented, perspective on the Greek and Roman economies.³

This perspective fell into disregard with the anti-modernist model of A. H. M. Jones and Moses Finley.⁴ Finley not only emphasized fundamental differences between ancient and modern economies, but also derived his position largely from literary evidence. Unfortunately, Greek and Roman literature overwhelmingly expressed the ideas of Roman and Athenian elites privileging the view from the imperial centers and the rationalities of wealthy landlords. It was only with the return of modernist positions that the use of documentary sources came back in a great way.⁵ Moreover, quantifying trends in archaeological research, a greater integration

1 Boeckh (1817) 1967.

2 Rostovtzeff 1926, 1941.

3 Edmondson 2015.

4 See von Reden and Speidel, ch. 17, this volume.

5 See von Reden and Speidel, ch. 17, this volume.

Note: Many thanks to Michael Speidel for suggestions and comments on this chapter, and to Andrew Meadows for letting me see forthcoming work.

of numismatic, papyrological, and epigraphical research into ancient history, and above all the increasing possibilities of managing large corpora of data digitally spurred the quantitative turn of modern scholarship.⁶ As Weaverdyck emphasizes in the previous chapter, no serious economic historian of the Graeco-Roman world nowadays can ignore the increasing volumes of archaeological data any longer. The same applies to documentary sources. The material is constantly increasing, and new methods of interpretation increase their value as evidence for economic history. Moreover, coins, inscriptions, and papyri each in their way shed light on regions whose economic histories a few decades ago were still largely unknown.

Despite its great potential, documentary evidence bears some particular problems. This concerns, first of all, the uneven spread of coins, inscriptions, and papyri. Papyri mostly come from Egypt; the largest number of inscriptions come from Italy, North Africa, and Asia Minor; and the provenance of large quantities of coins surfacing on the art market is uncertain. This raises the question of the representativeness of individual pieces and groups of documentary evidence beyond their immediate – at times uncertain – geographical and socio-political contexts. Can papyri or local epigraphic sets be used as evidence for the economy and administration of the Hellenistic and Roman Empires in general? Evidence from coins, inscriptions, and papyri, moreover, frequently cluster in particular years, followed by decades or centuries not documented at all, or in very different ways.⁷ Furthermore, many lists and accounts preserved epigraphically or papyrologically lack the information indispensable for economic analysis. Accounts often do not give prices per unit, particular qualities of choice products that might explain higher or lower prices, seasonal, social, or climatic variables of prices and wages, or the specifics of a transaction that might have included agreements concerning the payment of tolls, transport costs, or monetary fees.⁸ If documentary sources are used for quantifying purposes, care must be taken that the specifics of the sample, the size of the sample, and any other particular circumstances of the data are discussed in detail and do not get lost in the generalizing rhetoric of graphs and pie charts.

II Coins

Coins seem to be keys to economic processes. Yet, while numismatic evidence is widely available throughout the Graeco-Roman world and often the only source available, coins are most difficult to use for economic history.⁹ Their potential for

⁶ See Weaverdyck, ch. 8.A, this volume; and Duncan-Jones 1990; 1994; Bowman and Wilson 2009; de Callataÿ 2014.

⁷ Rathbone 2014.

⁸ Reger 1994; Rathbone and von Reden 2015.

⁹ Metcalf 2012 provides the most up-to-date introductory surveys of major coinages and study aids for research on ancient coinages; for numismatic databases, see Weaverdyck, ch. 8.A, this volume.

Map 1: Spread of the Roman *denarius* coinage (after Burnett 1987, fig. 3.1). © Peter Palm.

quantitative economic research, as well as for studying the contacts, trade, and politics of states is tremendous. But several methodological problems must be kept in mind. Firstly, coins were only one monetary medium alongside many others. There were many alternatives to the use of cash, such as payment in kind (especially grain); payment in uncoined metal pieces and objects (bullion); book money (monetary units not transferred in cash); and the use of foreign coins used alongside local issues or as bullion value.¹⁰ Measuring coin volumes in circulation, therefore, does not reveal much about a monetary economy which tends to be much larger than the economy in cash.¹¹ Secondly, many questions related to the economy in cash are still quite unresolved, such as how different local coinages, and coinages based on different weight standards, were used together. How were foreign coins integrated into the local coin system, and to what extent were old coins demonetized when new coins were issued? Local governments adopted very different policies in these matters. Only under the Roman Empire was an imperial coin system, based on the *denarius*, developed that integrated all local coinages through fixed exchange rates. Over time, most local precious metal coinages disappeared (see map 1).

Thirdly, it is still controversial whether ancient governments – and the Roman government in particular – minted coins in order to supply their own needs for ar-

¹⁰ Harris 2008b for cashless exchange in the Roman world.

¹¹ Woolf 1998 for Roman Gaul; Rathbone 1996 for Roman Egypt; von Reden 2007 for Hellenistic Egypt.

mies, wages, and infrastructure, or to supply the economy with cash.¹² This question has implications for our understanding of coin circulation and monetization. Did ancient governments adopt monetary policies that self-consciously fostered monetary development? We also do not know how local coin users reacted to monetary manipulation. Did the precious metal content stipulated by the imperial mint matter to users, or did they tolerate some monetary manipulation without losing trust in the coinage?¹³ Fourthly, we have to keep in mind how coins have come down to the present time. Most ancient coins have survived in hoards, that is, from caches saved or hidden, rather than as individual coins being in use. If hoards contain small numbers of certain coins, as is the case for Augustan issues, this is very likely due to intense coin use and peacetime rather than a decline in coin production and circulation. A surge of coins from coin hoards that were not recovered in antiquity are more likely evidence for political crises, warfare, and instability when people hid what they had and never returned back to it. A smaller number of coins are known from archaeological stray finds, that is, from contexts where coins were dropped rather than buried on purpose. Yet these are biased toward base metal coins low in value, as people are more likely to pick up silver and gold than bronze pieces. An exception are the finds from Pompeii. They provide a snapshot of coin use on one particular day in the year 79 CE. 84 coin groups that were buried under the volcanic ashes of the Vesuvius revealed that two-thirds of their total value was struck in gold.¹⁴ Yet how do we interpret this result?¹⁵ Thus, when we study distribution patterns of coins, we are heavily dependent on the conditions of recovery, the preservation and composition of the sample, and the interpretability of these factors.

Given these complications, what questions can be answered with numismatic evidence? The presence of coins is usually an indicator for the presence of, or interaction with, goods and people identified with these coins.¹⁶ Thus, substantial coin finds in rural areas, for example, militate against the notion that monetized exchange was concentrated in urban centers.¹⁷ The use and imitations of Athenian and Hellenistic coins beyond the regions of direct political influence suggest interaction and monetary exchange, though the nature of the exchange and the ways the coins reached faraway places must be discussed in any particular circumstances.¹⁸ Roman coins, moreover, can well be shown to have followed Roman armies, and to have contributed to coin use in regions where armies were stationed.¹⁹ Yet

¹² Crawford 1970 *contra* Lo Cascio 1981; Howgego 1992 for discussion.

¹³ Howgego 2009.

¹⁴ Duncan-Jones 2003.

¹⁵ Andreau 2008 for discussion.

¹⁶ Finds of individual Roman coins, such as they have been made in (modern) Thailand, Vietnam, China, and Japan, obviously cannot be taken to reflect Roman presence.

¹⁷ Howgego 1992.

¹⁸ McLaughlin 2016; Nappo 2018.

¹⁹ Onken 2003.

local coin hoards and stray finds have also revealed that in frontier zones Roman coins were not merely concentrated in military settlements, but also increased in local towns that had used their own coinage before Roman armies arrived.²⁰

In ideal circumstances, coins can be used to reconstruct circulation patterns and the policies behind them. Thus, for example, the closed currency system of the Ptolemaic Empire where only Ptolemaic coins were permitted in exchange, is attested by the absence of foreign coins in Ptolemaic hoards from the third century BCE onward.²¹ Moreover, on the basis of coin hoards it has been shown that Ptolemaic coins continued to circulate in Phoenician cities after these cities had ceased to be under Ptolemaic control, while the city of Askalon in Palestine, when becoming independent of Seleukid control in 104/3 BCE left the royal type unchanged, merely altering the legend.²² These and similar examples help suggest the strong impact of markets relying on the acceptability of coinages in exchange systems that reached beyond the region. Bronze coins, moreover, generally show a rather small local radius of circulation, while silver and gold traveled greater distances and can be found in hoards far away from their area of origin. Such evidence has been used to discuss whether monetary income was generated in different provinces of the Roman Empire than it was spent.²³

Scholars have successfully calculated the coin output of mints from the evidence of extant dies. Such calculations allow us to see changing volumes of production and to discuss the motivations for and consequences of the increase.²⁴ We have, for example, calculations for coin production in Athens during the sixth and fifth centuries BCE, showing a clear increase in the first years after the foundation of the first Athenian confederacy in 479 BCE.²⁵ We also have calculations of numbers of coins produced from the Persian treasuries captured by Alexander the Great and put into circulation in the 320s BCE.²⁶ Calculations of total coin production also help us understand the scale of the increase of bronze coinages from the late fourth century BCE onward.²⁷ Conversely, increases in imperial coinages have been shown to have led to the gradual decline of local coinages.²⁸

Much more problematic than calculating coin production are calculations of volumes of coins in circulation in any particular region, polity, or empire. Keith

²⁰ Katsari 2008.

²¹ Von Reden, ch.1, this volume.

²² Meadows 2001.

²³ Duncan-Jones 1990, 106–107, 172–179; against Hopkins 1980.

²⁴ Crawford 1974; for Hellenistic coinages, de Callatay 1997.

²⁵ Meadows 2014; Meadows forthcoming.

²⁶ De Callatay 1989; 2005 for revised figures.

²⁷ De Callatay 2006, 178–179.

²⁸ Interpretations are controversial, some arguing that local minting was suppressed by force, others by currency competition, Figueira 1998.

Hopkins famously attempted to calculate such figures for the Roman Empire.²⁹ Both the methodology of calculating total coin volumes circulating in a large imperial space such as the Roman Empire from the evidence of extant coins, and the argument that increasing coin volumes must have affected prices is not tenable.³⁰ Monetization had reached high levels in the Eastern and Western Mediterranean by the second century BCE, but as we have just pointed out, there were different forms of money in circulation, as well as many local coinages that were only gradually replaced by Roman coins.³¹ An increase in Roman coins might therefore not have increased the absolute number of coins in circulation, let alone the degree of monetization, but simply the number of Roman coins in the empire. Many regions had an insufficient supply of coins for the number of transactions they expressed in monetary terms, so a better supply of coins will have affected neither their monetary economies in principle, nor price formation. Even during the third century CE, it is debatable whether the large increase in the production of coins immediately led to an increase in prices in the Roman provinces.³²

III Papyri and Ostraca

Papyrology deals with texts surviving on papyrus and some other organic writing materials, such as hides, wood, and wax.³³ Ostraca (broken potsherds used for everyday writing), though not falling into that category, are also studied by papyrologists. All organic writing materials have a particular history of survival, as their preservation is dependent on particular environmental conditions, such as hyper-arid desert zones or volcanic ashes that preserved the material over thousands of years. Thus, despite being the main writing material for formal texts throughout the Graeco-Roman world, papyri – just as hides, wooden, or wax tablets – have survived in only selected areas of the ancient world. Their discovery, moreover, is dependent on archaeological excavation, an interest of archaeologists to excavate texts rather than other material, on accidental finds, and the vagaries of the art market to which many originals were sold in the early days of papyrology during the nineteenth and early twentieth centuries.³⁴

²⁹ Hopkins 1980.

³⁰ Von Reden 2002, 161–162 for the debate, and Howgego 2009 for a summary of the numismatic problems.

³¹ Howgego 1992; Hollander 2007; Katsari 2008.

³² Rathbone 1996; for discussion Howgego 2009.

³³ For introductions to particular categories of papyri, study aids, and discussions of issues arising from papyri as historical sources, Bagnall 2009.

³⁴ Cuvigny 2009.

By far the largest number of papyri come from the dry regions of the Nile valley in Egypt (see map 2). Throughout the Graeco-Roman occupation of Egypt (332 BCE to first the Sasanian and then Arab conquests in the sixth century CE) they were written in Greek, Demotic Egyptian, or Coptic, a largely Greek script of rendering Egyptian that became popular from the third century CE onward. Many papyri recording everyday transactions or receipts, moreover, are bilingual documents in both Greek and Demotic. Some pre-Hellenistic papyri in Aramaic and later Roman texts in Latin are extant, but a standardized form of Greek (*koine* Greek) was used by the immigrants, their descendants, and those who over time adapted to the foreign regime. The habit of fixing contracts and land registers in writing had been practiced during the Pharaonic and Persian periods, but written documentation increased substantially under the Ptolemies and was used for a much wider range of purposes. From about the 260s BCE, the Ptolemaic administration began recording most administrative activities, census returns, formal legal agreements, regulations, and ordinances in writing, while estate holders and private individuals quickly followed suit.

In addition to the ca. 50,000 Egyptian papyri edited so far, some 600 papyri have been excavated in the Middle Euphrates region and the Syrian desert, especially on the site of the city of Dura Europos at the Upper Euphrates (see ch. 1, map 2). In Pompeii and Herculaneum, the eruption of the Vesuvius has preserved burnt parchment containing mostly literary texts, and wax tablets containing, among other things, the accounts of two bankers and business consortia in Pompeii and Puteoli.³⁵ The wooden tablets of (ancient) Vindolanda in Britain, sites around modern Carlisle and London, Siebenbürgen in Germany, and (ancient) Vindonissa in modern Switzerland contain official and private correspondence of Roman military camps stationed there in the first century CE.³⁶

Ostraca were used for shorter texts, but contain highly instructive notifications and letters, receipts of taxes, tolls, and rents, as well as acknowledgements of the receipt of trade consignments and ship- or donkey loads. Surprisingly, they are extant almost exclusively from Egypt.³⁷ Of particular significance for the study of trade and frontier zone processes are the ostraca from Myos Hormos and Berenike on the Red Sea coast, containing permissions for the passage of goods and people at the customs gate.³⁸

Another important collection of ostraca was found at Koptos on the Nile in Upper Egypt, relating to a family-run business of a certain Nikanor owning a caravan

³⁵ *TPomp* = *CIL* IV 3340, 1–153 (archive of L. Caecilius Iucundus in Pompeii); *Camodeca* 1999 (*TPSulp* = archive of the Sulpicii in Puteoli).

³⁶ Bowman and Thomas 1983; 2003; Speidel 1996.

³⁷ Some 140 ostraca dating to the third century CE were found in a Roman fort at Gholaia (Bu Njem) in Libya, see Marichal 1992.

³⁸ Bagnall, Helms and Verhoogt 2000.

Map 2: Major sites of Graeco-Roman Egypt. © Peter Palm.

of at least 36 camels and supplying Roman garrisons in the Eastern Desert and port towns on the Red Sea coast between the years 6 and 62 CE.³⁹ More than 10,000 ostraca were found in the Eastern Desert at the Roman forts of Xeron Pelagos and Dios, as well as the quarry of Mons Claudianus that was under the supervision of the Roman army. Adjacent to the quarry were a garrison and quarters for the workers living there with their wives and children. The ostraca from these sites are still in the process of being published.⁴⁰ They contain detailed information about the economic organization of work at the quarry and the supply of the workers with food and goods, as well as the transport of stone, supplies, and other commodities along the routes from the desert to the Nile.

³⁹ Funghi, Messeri and Römer 2012 (= *P. Petr. Mus.*).

⁴⁰ *O. Claud.* I–IV = Bingen, Cuvigny, and Bülow-Jacobson 1992–2009.

As papyri and ostraca are archaeological finds, they do not document the life of people throughout Egypt.⁴¹ Much larger numbers of papyri were excavated in Lower than in Upper Egypt, but Greek and Roman occupation was also concentrated largely in the lower Nile valley. The largest number of papyri were excavated or discovered in the Fayum Oasis, which had been an area of intense Greek settlement from the time of Ptolemy II onward and continued to be a center of Graeco-Egyptian settlement in the Roman period.⁴² Extensive excavations of papyri were conducted by the Oxford classicists Bernhard Grenfell (1869–1926) and Arthur Hunt (1871–1934) at Umm al-Baragat (ancient Tebtunis), and by the University of Michigan at Dimai (Soknoupaiou Nesos) and Mom Aushim (Karanis), all of which were thriving local towns established under Ptolemy II. The most spectacular excavation of a waste dump was conducted by Grenfell and Hunt at Oxyrhynchos in the adjacent Oxyrhynchite *nome* (district), bringing to light about 400,000 fragments, mostly of the Roman period, of which to date merely some 5,500 have been published. Accidental discoveries by Egyptian *fellahin* and excavators include the archive of Zenon near Madinat al-Fayum (Krokodilopolis/Philadelphia) in 1914 and the archive of Heroninos that was found allegedly in a wooden box, but more likely in a waste dump, near al-Harit (Theadelphia) at the beginning of the twentieth century. In Upper Egypt, significant numbers of papyri relate to second-century BCE Pathyris where a garrison was stationed during the later Ptolemaic period. These papyri in particular reveal a great degree of acculturation between Greeks and Egyptians in the course of the Ptolemaic occupation of Egypt.⁴³ Demotic papyri have been discovered in the regions of Edfu (Appolopolis Magna), Karnak/Luxor (Thebes), and also in the Fayum. Substantial numbers of bilingual documents attest to bilingualism both in daily life and in the administration of Egypt during the Ptolemaic period. Very few Romans immigrated into Egypt farther than Alexandria, so Latin never became a dominant spoken or written language in Roman Egypt. Due to the wet conditions in the delta, no papyri are extant from Alexandria, which creates an unfortunate gap, and bias, in the documentation. Chronologically, the second century CE is documented best, due to the increase in written documentation in the Roman Empire, but also because of the extensive excavations in the Oxyrhynchite and Herakleopolite *nomes*. The numbers of papyri extant from the Hellenistic period are generally smaller, but the third century BCE is better documented than the second and first, as we profit from the find of the Zenon archive, which alone contained 1,800 papyri.

Another methodological problem is posed by the disciplinary separation of ancient history and classical philology on the one hand and Egyptology on the other. Greek papyri are objects of study of Hellenists trained in Greek and Latin, while Demotic documents are often beyond their expertise. As a result, research on Graeco-

⁴¹ Habermann 1998.

⁴² Von Reden, ch. 1, this volume.

⁴³ Lewis 1985, 2001.

Roman Egypt for a long time represented merely the practices of the ruling elites and those social groups and individuals who adapted to them in the course of time. Only in the last two decades or so, the need for a disciplinary cross-over has been put into practice. Gradually, there are more scholars who combine Greek and Demotic language skills and reveal the degree to which our understanding of the multicultural society of Egypt changes under this perspective.⁴⁴

Papyri offer ample opportunities for both quantitative and qualitative research. Unsurprisingly, most official and private documents represent a local agrarian economy concerned with the use of land, animal husbandry, fishing, textile production, local marketing, and a wide range of other types of agrarian and non-agrarian business in the Nile valley. Alongside administrative documents, land registers, and census lists, a large number of legal documents, such as tenancy, rental and credit agreements, labor and sales contracts, as well as wills, marriage contracts, and divorce settlements are preserved on papyri.⁴⁵ We learn about taxes and tolls, their collection, storage and use, the construction and maintenance of private and public buildings and local infrastructure, in particular the dyke system, about banking, state monopolies (in the Hellenistic period), as well as land and river transport. Coherent sets of papyri (dossiers) allow the reconstruction of the day-to-day running of local administrative offices, temple administrations, banks, and large estates. Thanks to the high standards of editorial work and historical expertise of papyrologists, the commentaries in the printed volumes of papyri are a great source of historical information.⁴⁶ Only a small fraction of this extensive scholarship has yet been synthesized into historical monographs and papers. The groundbreaking work of early twentieth-century papyrologists who tried to make sense of the law, administration, and economy of Graeco-Roman Egypt they reconstructed from the papyri is only gradually being supplemented – without ever being fully replaced – by broader historical approaches that ask new questions, adopt new methods of analysis, and include the ever-growing number of published papyri not yet available to the first generations of papyrologists.

Research tends to focus on groups of papyri (dossiers and archives) that allow insights into particular institutions, regions, or agrarian practices. The long *Papyrus Revenue Laws* (259/8 BCE), first published by Grenfell at the end of the nineteenth century, was once used to demonstrate, in combination with other papyri, the ex-

⁴⁴ E.g., Manning 2003; Clarysse and Thompson 2009; Monson 2012; Thompson 2009 for multilingualism in Hellenistic Egypt.

⁴⁵ Keenan, Manning, and Yiftacht-Firanko 2014.

⁴⁶ Most editions are now digitized and searchable on various databases conglomerated in the platform www.papyri.info. They contain texts and digital images, but not the translations and commentaries of the print editions. Bibliographical details for the print editions are collected in *The Checklist of Editions of Greek, Latin, Demotic and Coptic Papyri, Ostraca and Tablets*, also available on papyri.info.

exploitative fiscal regime and centralized economy of the Ptolemaic state.⁴⁷ It detailed the monopolization of oil production and distribution, as well as the tight regulation of the collection of the tax on vineyards and orchards (*apomoira*) that was hired out to tax farmers. Subsequently, the same document was used by the Belgian papyrologist Jean Bingen to show that tax farming was in fact a dynamic business for Greek entrepreneurs who, in a royal economy with limited private economic opportunity, made substantial semicommercial profits from the discrepancy between the tax volume calculated by the state and the tax income that could actually be collected from the tax subjects in practice.⁴⁸

The archive of Zenon, a civil immigrant from Kaunos in Asia Minor, who between 259 and 246 BCE managed a large gift estate in Philadelphia and its branch in the Memphite *nome*, has been the basis for a host of studies on agricultural management and innovation, land development, and monetization in the early years of Ptolemaic rule.⁴⁹ The archive, now spread across several papyrus collections worldwide, contained some 1,800 papyri ranging from receipts and accounts pertaining to the management of the land, the payment of its employees and tenants, the exploitation of the flocks, and commercial affairs, as well as travel and transport to contracts of all kinds, written orders, and the private and business correspondences between Zenon and his friends, superiors, and agents in Philadelphia, Memphis, Alexandria, and locations as far away as Ptolemaic Syria and Phoenicia (fig. 1).⁵⁰ As managers of large estates filled some function in the local administration as well, the archive also reveals much about the fiscal-administrative practice in the Fayum during the early Ptolemaic period.

A smaller group of 50 papyri discovered by the British Egyptologist William Matthew Flinders Petrie (1853–1942) in the late 1880s, contains the business of a royal engineer working on the dyke system in the Arsinoite *nome* between 262 and 249 BCE.⁵¹ The papyrologists Willy Clarysse and Dorothy Thompson, moreover, have compiled a large corpus of papyri relating to the poll tax, the main personal tax of Ptolemaic Egypt.⁵² From these documents they were able not only to reconstruct the complicated system of tax assessment, the census on which the poll tax was based, and the system of collection of the tax, but also other questions of significance to the social and economic history of Hellenistic Egypt: its administrative geography, the size of Greek and Egyptian households, the composition of families, and much more.

⁴⁷ *P. Revenue Laws* (trans. Bagnall and Derow 2004, no. 114); for the centralized, planned or ‘dérégistée’ economy, Rostovtzeff 1941; Préaux 1939.

⁴⁸ Bingen (1978) 2007.

⁴⁹ Thompson 1984; 1999; von Reden 2007.

⁵⁰ Pestmann and Clarysse 1981; Orrieux 1985; Clarysse and Vandorpe 1995.

⁵¹ Lewis 2001, 37–45.

⁵² Clarysse and Thompson 2009.

Memorandum to Zenon from . . .

Will you kindly, as I requested of you in Alexandria also, give those at home 10 drachms for expenses and, if possible, ten *artabai* [i.e. ca. 400 l] of wheat for the festival or, if not, the six, and a jar of wine? And about the *himation* [coat] and *chiton* [frock], see to it that they are brought down to me in town; and you shall receive the price immediately.

May you prosper.

Fig. 1: Memorandum to Zenon, P. Mich. 1 97, mid-third century BCE, Philadelphia/Arsinoite *nome*, University of Michigan Papyrology Collection. Photo and Translation: APIS UM, Creative Commons.

Papyri from the second century BCE are mostly restored from mummy wrappings (cartonage) and are often in a poorer state of preservation than the third-century material. Yet again, Grenfell and Hunt were fortunate to discover in Tebtunis the tombs of 21 sacred crocodiles wrapped and stuffed with the wastepaper of the village office of Kerkeosiris. The papyri date from around 119 to a little after 91 BCE and contain the dealings of the Hellenized Egyptian village scribe Menches and his successor Petesouchos.⁵³ Some of the wastepaper had been reused by private people, probably a family, between 105 and 99 BCE. The core of the archive relates to the administration of the village's agricultural land, containing land registers and letters to and from the village scribes by their superiors and subordinates. They

⁵³ Vandorpe 2012; Lewis 2001, 104–123; Verhoogt 1998.

offer detailed insights not only into administrative matters, but the complex system of land management and its royal surveillance in the later Ptolemaic period.

The integration of Demotic papyri into research has made historians move even farther away from the model of a centralized state economy that dominated research on the economy of Hellenistic Egypt well into the second half of the twentieth century. In 2003, Manning published an influential study based on Greek papyri from the Fayum on the one hand, and third- to first-century BCE Demotic texts from Apollopolis Magna (Edfu) and Pathyris on the other.⁵⁴ The comparison of the two corpora of texts revealed a great degree of pre-Ptolemaic institutional continuity in the administration and land tenure regime in Egypt during the first decades of Ptolemaic rule. It showed, furthermore, that the Fayum, so far taken as typical for Ptolemaic Egypt, was an exceptional region because of the particularly effective control of the Ptolemies over the Fayum Oasis and its Greek population. And finally, the comparison of Demotic and Greek evidence helped to question the notion of a strong, centralized Ptolemaic economy. The Ptolemaic administration, rather, was quite dependent on the cooperation of the local Egyptian elites attached to the large temple estates in the Nile valley.

Egypt remained an agrarian economy in the Roman period, while the increase of private property rights and a different fiscal-administrative regime encouraged private economic initiative, as well as probably greater fortunes held in private hands.⁵⁵ This economy has been studied from several socio-economic perspectives and on the basis of different papyrological dossiers. Rowlandson investigated the agrarian economy of Oxyrhynchos and its surrounding villages on the basis of the Oxyrhynchos papyri. She observed that the Roman administration of Egypt was self-consciously responsible for fostering a class of moderately prosperous, but predominantly small-scale metropolitan landowners. This was achieved by the creation of greater quantities of privately owned land taxed at very moderate rates.⁵⁶ However, despite the substantial material she had at her disposal, it was not possible to distinguish clearly between private and public land, or to prove that there was a greater concentration of land and thus greater prosperity of fewer individuals. 15 years later, Monson elaborated on these findings by first drawing attention to diverse and flexible ‘bundles’ of property rights that Egyptians, Graeco-Egyptians, Roman citizens, and Alexandrians held in Roman Egypt, and second by correlating population growth and urban development in different regions of Egypt. More than Rowlandson, he emphasized the degree of institutional change in Egypt and the resulting increase in prosperity revealed by the demographic and urban development in Egypt under Roman rule.⁵⁷ The spectacular sums invested into a sea journey to

⁵⁴ Manning 2003, 65–129.

⁵⁵ Rathbone 2007; Monson 2012.

⁵⁶ Rowlandson 1996, 280.

⁵⁷ Monson 2012.

Fig. 2: Muziris Papyrus, SB XVIII 13167, mid-second century CE, Austrian National Library, Vienna.
© Österreichische Nationalbibliothek, Papyrussammlung.

Muziris in the second century CE, known from a contract preserved on an unprovenanced papyrus purchased by the Austrian National Library in Vienna in 1980 (fig. 2), attest to the outstanding monetary fortunes that were accumulated by some members of the Romano-Egyptian elite under the Roman Empire.⁵⁸

If we are searching for the economy of scale that might explain this monetary wealth, we have to look to the management of large estates. One important body of evidence is provided by the Heroninos archive related to the estate owned by Appianos, a Greek-speaking Egyptian with Roman citizenship rights. The archive probably comprised about 800 to 1,000 documents (many still unidentified and unpublished) and is dated to the first half of the third century CE, when Heroninos was manager of one of the estate's subunits. Roughly 400 published documents of the archive were analyzed by Rathbone in 1992, in a then pioneering study of the profit-oriented economic strategies of this large agrarian enterprise.⁵⁹ Rathbone based his

⁵⁸ Rathbone 2001 for translation and commentary of SB XVIII 13167.

⁵⁹ Rathbone 1992.

findings mainly on a detailed analysis of the accounts of the estate, which he realized formed a connected system. They allowed accurate monitoring of the production (and productivity) of the estate's individual units, as well as their marketing of produce. Close reading of the accounts also showed that great attention was paid to the social cohesion of groups of laborers who seem to have worked together in family units. Rathbone's analysis shows how the rather complicated and fragmentary papyrological evidence can be used effectively for economic history, both in quantitative and qualitative ways, and for generating results that suggest neither a market economy similar to modern ones, nor an anti-market mentality that held back large economic players in the Roman economy.

IV Inscriptions

In contrast to papyri, inscriptions are available from a large number of sites and regions of the Greek and Roman worlds.⁶⁰ Preserved on monuments, statue bases, tombstones, freestanding slabs (*stelai*), pottery, metal pieces, and glass, inscribed material is an integral part of most archaeological sites. Rarely are they still found *in situ*, that is, in the place where they were erected or placed originally, as already in antiquity stone and metal were reused for later monuments and buildings. Official inscriptions tend to be written in the official languages of either standard Latin or Greek, but we have many bilingual or trilingual inscriptions combining a Greek or Latin version with one in either another dominant language (such as Aramaic or Greek in the Roman East), or a local one, such as Lykian, Karian, or Palmyrenian. Many inscriptions, moreover, are written in vernacular Latin, Greek, or other local dialects and help us to appreciate degrees of literacy in different regions and provinces of the Hellenistic and Roman worlds. Given the wide range of inscribed materials and purposes for which they were inscribed, the use of inscriptions as evidence for economic history is as wide-ranging as the reasons for which they were written.

Inscriptions are also spread chronologically and geographically unevenly. There is a significantly larger number of Greek inscriptions extant from the Hellenistic than the Classical period. Epigraphic evidence explodes in the Roman Empire from the first century BCE onward.⁶¹ Within this period, there is a visible peak in the later second and early third centuries CE. These discrepancies are not a matter of accident, but mark changing epigraphic habits. In the Hellenistic, and even more so in the Roman imperial period, people committed a wider range of issues to stone or other permanent materials. In the Hellenistic cities of the Aegean and Asia Minor,

⁶⁰ Bruun and Edmondson 2015 for surveys and introductory essays; for Hellenistic epigraphy, McLean 2002; for methodological issues, Bodel 2001; for epigraphic databases, see Weaverdyck, ch. 8.A, this volume.

⁶¹ Bodel 2001, 7–15.

for example, there was an explosion of statues erected in public places with honorific inscriptions adorning their bases or erected next to them, a habit that yet increased under Roman rule.

Geographically, there is a great discrepancy between urban and rural epigraphy. Although we do have inscriptions from rural areas and remote places, public inscriptions are largely an urban phenomenon. Inscriptions are also found in different numbers in different parts of the Hellenistic and Roman Empires. There is a concentration of Greek inscriptions in the Greek mainland, the Aegean (including Cyprus and Crete), and Asia Minor. The epigraphic visibility of Asia Minor continues into the Roman period, but the largest number of surviving inscriptions are from Italy and Rome. North Africa, Spain, and the Lower Danube region (Dacia) have also brought to light abundant epigraphic material, while reasonable quantities are extant from Gaul and Syria. Far fewer inscriptions come from Britain, Kappadokia (central Anatolia), or Raetia (southern Germany).

Some of these discrepancies may be due to varying levels of literacy in the various parts of the Roman world, but the question of how many people and what social groups could read is still controversial. While scholars in the past tended to be pessimistic about levels of literacy in the ancient world (in the order of 10 percent), research over the past 30 years has differentiated the concept of literacy, emphasizing varying levels of reading and writing proficiency, and the interdependence of written and symbolic messages on inscribed monuments.⁶² The archaeological spread of writing utensils in combination with papyrological evidence for primary education in Hellenistic and Roman Egypt suggests that the pessimistic figures of levels of literacy should be corrected upward.⁶³

Yet despite the abundance of extant inscriptions, usually published in regional corpora, one must never forget that even at best only a small fraction of the former wealth of inscribed material is extant. Scholars concentrate on certain groups of inscriptions, such as official decrees, edicts, or statutes (called *acta* by epigraphists) and public or private accounts (also included in the category of *acta*); or they look at building inscriptions, votive inscriptions, funerary inscriptions, or honorary decrees (so-called *tituli*). A special category is formed by small inscriptions and stamps on pottery or other items of domestic or everyday use, and by inscribed mile- and boundary stones.

Apart from empirical details regarding place names, occupations, commodity prices, interest rates, taxes, titles to ownership, or water regulations, epigraphic evidence has helped to reconstruct how particular institutions – industrial workshops, mines, customs halls, or road stations – worked in the Hellenistic and Roman Empires. Individual inscriptions or groups of inscriptions have shed light on procedures and regulations that would otherwise be unknown. Many have wider

⁶² Bodel 2001, 15–19.

⁶³ Morgan 1998; Speidel 2018, 183–184 with further literature.

than local significance, as similar regulations are often known from several places. The Roman imperial administration in particular developed procedures for the regulation of provincial affairs in a well-organized system of local enquiries and responses from the emperor. Some individual epigraphical texts illuminate the regulations of taxation at imperial borders or instances of price regulation in the Roman Empire.⁶⁴ Edicts preserved in Asia Minor show the imperial concern for transport for military or other purposes. Seemingly insignificant inscriptions that can be studied in bulk, such as stamps on bricks, tiles, storage vessels, or bread (for which the stamping devices have survived) help to reconstruct ceramic production, agrarian practices and landownership, or long-distance trade across the Mediterranean.⁶⁵ The producers' stamps on *terra sigillata* pottery and oil lamps have allowed historians to understand how the pottery industry was organized in the Roman Empire. A particularly interesting set of bi- and trilingual inscriptions in either Greek and Palmyrenian, or combining these with Latin, are found in Palmyra. The financing and military protection of caravan transport between Palmyra and Spasinou Charax on the lower Euphrates close to the Persian Gulf play a great role in the inscriptions, many of them honoring caravan leaders as benefactors of the city.⁶⁶

Much economic information is owed to the Greek and Roman predilection for fixing on stone accounts and financial aspects of their public and private affairs. The democratic requirement of civic governments and temples to publish their income and expenditure has left us with numerous epigraphic accounts of public or temple income and expenditure, returns of investment in land and credit, expenditure for ritual and temple personnel, as well as the costs of material, labor, and food supply in the course of construction work.⁶⁷ The habit of the Romans to include the status and professions of their deceased family members in funerary inscriptions has provided us with a wide range of occupations of free citizens, foreigners, freedmen, and slaves. Equally revealing are inscriptions surviving on statue bases with which urban populations honored their benefactors, stating in detail the benefactions in money, financial services, public monuments, or buildings for which the honors were due.⁶⁸ Democratic governments published their temple inventories as well as all their laws and regulations on stone, while Roman emperors and local governors made public legal and administrative regulations, including maps and land surveys.⁶⁹

The most valuable epigraphic studies are those that analyze inscriptions in their immediate and wider archaeological contexts, and give details of their physical

⁶⁴ Cottier et al. 2008; Boatwright 2000, and for the famous price edict of Diocletian, Corcoran 1996.

⁶⁵ Edmondson 2015.

⁶⁶ Al As'ad and Gawlikowski 1997; Fox, Lieu, and Ricklefs 2005.

⁶⁷ Reger 1994.

⁶⁸ McLean 2002.

⁶⁹ Edmondson 2015.

Fig. 3: Altar to *Ge Meter Olybris*, second century CE, Areni/Armenia, Yeghegnadzor Regional Museum, inv. 133-1. Photo: M. Speidel.

appearance, general purpose, the ways the inscription under consideration was looked at, who could read them, and for whom they were written. A full or fragmentary epigraphic account erected in either a sacred precinct or a public market provides different kinds of information than sums scribbled on the corner of a private room. Good epigraphical research, moreover, is based on either individual texts put into wider and comparative contexts, or bulk material whose chronological and geographical distribution is made transparent.

The importance of contextualization can well be illustrated by the rather inconspicuous inscription shown in fig. 3. This little monument of porous limestone was found in 1978 when a road was built near the modern village of Areni in eastern Armenia.⁷⁰ The village is located at what was also in ancient times a crossroad leading from western Anatolia to Albania or Atropatene. The shape of the monument and a cup-like hole for pouring libations on the top of the flat upper surface identify it as a little altar quite typical for the Roman period. On its front, six lines of Greek are engraved along previously marked lines. The script quite recognizably comes from an amateur's hand and is comparable to those of rural inscriptions known from inner Anatolia. It is an everyday engraving very different in purpose

⁷⁰ Vinogradov 1992, and Speidel personal communication.

and function from the professional inscriptions that were erected in urban centers. The text itself gives no hint of its date, but some peculiarities of the letter shapes, also found in other Armenian inscriptions might suggest, though by no means conclusively, that it was engraved sometime in the second century CE. The three lines read:⁷¹

Ἐμίλιος	Emilios
Οὐάλης	Ouales
Γῆ Μητρ[ι]	to Mother Earth
Ὀλυβρι θεᾶ δεσπο-	Olybris, goddess and mis-
ίνης	tress

The altar was thus a dedication to a goddess, possibly intended by Emilios to be worshipped by passersby like himself. A mother goddess with the *epiklesis* Olybris is not known from any other source, but she might have been the consort of Zeus Olybris who appears more frequently in inscriptions from Kilikia (southern Anatolia), Kappadokia, Syria, and Rome where Zeus Olybris was called a Kilikian god. But who was Emilios Ouales? His mother tongue seems to have been Greek, his religious sentiments affiliate him with Anatolia, and he called himself by a Roman name (Aemilius Valens). The presence of a small, inconspicuous altar on a busy road through Armenia dedicated to an Anatolian goddess by a Greek with a Roman name shows the great mobility and truly global connectedness of people in some areas of the Roman Empire. Some scholars assume that Aemilius Valens was a soldier serving in a legion passing through Armenia at the time of the Roman-Parthian war in 161–167 CE.⁷² But there is no conclusive evidence for this connection other than the general assumption that it was usually soldiers who were mobile, and that it was Roman legionaries who adopted Roman names. But Aemilius might quite as well have been a traveler, a migrant, a trader, a trader accompanying Roman troops, or a veteran using his expert knowledge of the region for some personal business. As it often happens, it is only once a monument is properly contextualized that we can begin asking questions.

V Conclusion

Documentary sources are one of the most important types of sources for economic history. Not only do coins, papyri, and inscriptions lead us into ancient economic practices in far more detail than transmitted texts, but also allow us to investigate places that did not catch the attention of ancient authors. Furthermore, under cer-

⁷¹ *Supplementum Epigraphicum Graecum* (SEG) 42, 1322.

⁷² Vinogradov 1992.

tain circumstances they are available in sufficient quantities to make possible quantitative or serial analyses, which are the only ways of assessing economic performance and outcomes.

The last 200 years have seen a vast amount of scholarship devoted to collecting, reading, editing, analyzing, and categorizing Greek and Roman coins, papyri, and inscriptions. Thanks to the continuous effort of numismatists, papyrologists, and epigraphists whose major aim it is to publish the finds that fill national libraries, museums, and university collections worldwide, we are fortunate to have a large number of corpora that present this ever-growing body of material regionally, chronologically, or by collection. To be able to study these corpora, and to understand the language and conventions of documentary sources, remains one of the most important tasks for students of ancient economic history. In recent years, many corpora of documentary sources have been digitized, allowing data searches and serial analyses in quantities that a few years ago would have taken a lifetime. Yet despite these opportunities, one still needs to keep in mind that the raw data provided by documentary sources are but the tiniest fraction of what once was produced. They are extremely selective, circumstantial, and often undated or unprovenanced.

Although documentary sources are best studied as dossiers or series, there is always the chance of squeezing surprising details out of a single find. This holds true as much for exceptional documents such as the Muziris papyrus as it does for fairly ordinary remains such as the small altar in rural Armenia. Most importantly, although coins, papyri, and inscriptions have been presented in this chapter separately, and are usually studied separately by highly trained specialists, they were part of the same ancient world and are best understood, wherever possible, in combination, as well as in conjunction with transmitted texts and archaeological material.

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