

Global Economic History (1200 BCE-900 CE)

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Introduction: Global economics in antiquity

The world in this chapter refers to the Afro-Eurasian landmass from China and the islands of the south-eastern Pacific in the east to the straits of Gibraltar in the west, the Baltic and North Sea coasts in the north and the northern parts of Africa, Egypt and down to ancient Ethiopia in the south. There were economic networks in the Americas and sub-Saharan Africa too, but they remained unaffected by the interactions in the Afro-Eurasian world and will not be discussed here.

This world during 1200 BCE and 900 CE saw the growth of large tributary empires, such as the Chinese, the Assyrian, Babylonian, Persian, Mauryan, Parthian, Muslim, Greek and Roman, the latter expanding not only into Asia, Egypt and North-Africa, but also into continental Europe.¹ This chapter explores the effects of empire-building both on local economies and global connectivity, and the consequences imperial expansion had for what one might call economic growth and complexity.

We have to be aware, however, of the narrative we give to such development. Some scholars attracted by world-systems analysis and later approaches to globalization, have looked primarily for the development of interregional trade, core-periphery hierarchies and a clearly defined economic division of labor in a world-wide trade network.² For such approaches the growth of economic connections is of prime importance, while the zones in which they developed are divided into different functional units.³ But such approaches underestimate a

¹ Tributary empires are generally defined by the accumulation and mobilization of surplus product by means of politically institutionalized coercion (rather than capitalist markets, or kin-based obligation) based on (codified) law and formally organized military power; see Chase-Dunn & Hall (1997), 30; for application to the Roman Empire, Bang (2007), 25 ff. (2008), 290 ff.

² Chase-Dunn & Hall (1997), for a useful overview of approaches and discussion. Their approach to world systems, however, is of limited use here as they conceptualize the “world” as including social and cultural “universes” of small-scale societies with no broader military or geographical outreach.

³The classic study by Curtin (1984) focuses on the institutional conditions of inter-regional trade without making further claims to their impact on local economies; Woolf (1990), with comprehensive further literature, for the importance of symbolic and political as opposed to economic power for the formation of ancient empires; in

crucial difference between pre-modern and modern world economies. In ancient societies long-distance trade responded to the desires and interests of only very small, if highly visible, social groups. Arguably, the aggregate value of their demand was massive, but never was local production, and politics, oriented towards a world market so as to lay foundations for a culturally or economically homogenous space.⁴ We do not need to argue that pre-modern economies were fully locked in local politics and social structures. But it is equally misleading to attribute to ancient imperial expansion a logic that became important in later periods only.⁵ In order to explain that very thin veneer of cross-cultural trade, we need to investigate, first of all, the structures which generated such trade. We may then proceed to its nature and directions.

Nor can we assume linear or lateral economic progress within this period. Empires were at different times conducive or disruptive to economic development, though in general the political and economic integration they fostered can be regarded as positive for their economies.⁶ In the long run, the world from 1200 BCE to 900 CE developed considerably, possibly at growth-rates of up to 0.1 per cent per year. Yet it was a world of vast inequalities. This does not refer just to inequality of wealth and standards of living, but also to the extent to which individuals and communities participated in economic and technological progress. The processes that we can identify as increasing productivity and market development took place at some levels of empire and not in others; empires formed without all regions in their territory being affected by it, or at the same pace.⁷ Social, political and economic networks could be formed by small numbers of participants and for a very limited range of consumers.⁸ Monetization, market formation and interregional exchange were never complete and socially encompassing. Here is another crucial difference between ancient and modern world economics: the structural inequality of economic opportunities that is built into agrarian societies led to deeply hybrid economies in which different economic practices not only co-existed, but were combined in surprising ways. It is better, therefore, to speak of ancient economies in the plural rather than a single economy.⁹

contrast to Cameron & Neal (1986): 20-43; Chase-Dunn & Hall (1997); esp. 149-187; and recently Fitzgerald (2009). More popular are currently comparative approaches, as exemplified by Scheidel (2007) (2009) and Bang (2009).

⁴ Temin (2013), 11 with Bang (2009), 120 for the Eurasian space; Morley (2007), 94-6, for the space of the Roman Empire; see, by contrast, Jursa (2010) for the much smaller, ecologically diverse Neo-Babylonian Empire during the 6th century BCE; Jennings (2011) for the same case in anthropological perspective; Lewis (2007) for the lack of impact of the intercontinental silk trade on Chinese agriculture.

⁵ Fitzpatrick (2011) has recently argued against Young (2001) and Woolf (1990) that Roman campaigns against the Parthians, Axumite and Arabian kingdoms as well as Syria and the Nabateans served the pecuniary interest of the Roman senatorial elite who were heavily involved in the finances of long-distance trade. But the evidence never states this explicitly, and economic interests might at best be regarded as additional motivations to a broader range of military, territorial and symbolic factors of these campaigns

⁶ Bedford (2007): 310 f.

⁷ A detailed analysis of the link between diversity and connectivity within empires can be found in Horden and Purcell (2000) for the Greco-Roman Mediterranean; Jursa (2010) for the Neo-Babylonian empire; McCormick (2001) in relation to the emerging European economy from 600 CE onwards.

⁸ Again Jursa (2010), esp. 469 f. and 500, for the use of silver in the pre-Chaldean period in Babylonia and its subsequent transformation.

⁹ Cartledge (1999)

We finally need to allow for shifting agents in the narrative of development. The Neo-Assyrian Empire of the first quarter of the 1st Millennium BCE was a different political formation than the Chinese and Roman Empires 700 years later. The Assyrian “state” was a royal family at the top of relatively strong local aristocracies and temple elites who were tied to the king by ritual and the obligation to render gifts in precious metal or in kind. The wealth and level of consumption of the royal palaces at Niniveh and Nimrud depended on the wealth and productive capacity of the regions from which gift-tribute was gathered, and on the interregional exchange networks local aristocracies maintained in order to serve the interdependent needs of themselves and the dominating kings. Both trade and taxation in the Roman Empire, by contrast, involved a broader social base, and the consumption regimes of aristocracies and kings began to play a less exclusive part in the nature of exchange. While the tastes and preferences of provincial elites and emperors remained important, a broader range of consumption groups, cities, markets, and the interests of an increasingly professional group of merchants and financiers became important engines in the commercial process. In imperial China, following a different path, bureaucratic and family networks mobilized goods for reasons other than imperial consumption. There was competition within and between such networks, and they became up to a degree quite independent from the imperial center. Looking at agents in the global economy, we thus gradually need to include bottom-up dynamics into the top-down model of economic history over 2000 years.

Our account starts from consumption. All ancient empires rested on three pillars: military power, self-representation, and taxation.¹⁰ This meant in practice control over people, their labor power, their mobility and surplus production, land and transportation routes, as well as influence on institutions and technology which allowed the effective exploitation of resources and collection of taxes. Economic development, moreover, went along with increasing social complexity, that is, the increasing attempt of elites and aristocracies to compete against each other by distinguishing themselves through differentiated consumption.¹¹ The world of Afro-Eurasian antiquity was a world dominated by agriculture and agrarian households who lived at subsistence level. The vast majority of the population was involved in growing food, providing shelter and clothing for themselves, as well as producing the paraphernalia for local social and cultic events. Up to 80 per cent of the world population, it is estimated, was actively occupied in the agrarian sector before modernization; an unknown, but certainly by far the largest proportion of that percentage spent their surplus less for their own benefit than for the purpose of paying rents, taxes or tribute to those concentrating resources for military campaigns and social distinction in towns and courts. It is highly controversial to what extent per-capita productivity increased during prosperous phases of imperial stability, but the increase of aggregate consumption measurable in the growth of armies, cities, cult,

¹⁰ Wickham (2005), Scheidel (2006), Morley (2007); Bang (2011).

¹¹The classic formulation can be found in Hopkins (1978); Morley (2007), 34-54 for the implications of this statement.

infrastructure and monetized exchange is beyond doubt.¹² How can we account for that growth?

This chapter is subdivided into four sections: Section 1 deals with agriculture and its development under imperial conditions, section 2 with monetization, section 3 asks for the impact of governance structures and taxation on ancient economies, while in the final section I shall turn to the growing connection of the world between the four centuries around the Common Era.

1. Agriculture under imperial conditions

The world outlined above encompassed several ecological zones which affected local economic behavior and performance.¹³ Sedentary agriculture dominated over nomadic and semi-nomadic cultures, but was not suitable to all soils, nor was it everywhere equally productive. In the fertile alluvial plains of the large river valleys – the Yellow River in north-eastern China, the Euphrates in southern Mesopotamia/Babylonia, and the Nile in Egypt – cereal agriculture was very productive and could reach, with adequate irrigation and flood control, yield ratios of 1:10 to 1:24. Most territories in which rain-fed cereal agriculture was practiced were less fertile, such as northern Mesopotamia, all regions around the Mediterranean except Egypt, and continental Europe. Here yield ratios between a minimum of 1:4 and maximum of 1:10 are recorded, though here, too, productivity was enhanced in time through artificial irrigation and drainage.¹⁴ In highly fertile southern China below the ecological border of the Yangtze River and in the Indian subcontinent rice was the staple crop producing much higher yields than cereals per ha, but also requiring more intensive care. In central Asia, a vast belt of grassland steppe, broken up by deserts and mountains, stretches from the Manchurian plains in the east to European Russia in the west and is fringed in the north by forests and in the south by mountain ranges and arid zones. Given the scarcity of rainfall and intense climatic variation from winter cold to summer heat, agriculture is limited here and people relied more heavily on animals than on the cultivation of plants. Some areas were endowed with particular local products of inter-regional importance. The Red Sea kingdoms flourished on the trade in frankincense and myrrh which grow naturally in southern Arabia and the region of ancient Ethiopia (modern Somalia). Fortunate, moreover, were regions with natural mining resources, such as Spain, Attica, Anatolia and the Arvalli region in north-western India for silver, or Nubia, the eastern coast of the Arabian Peninsula, Maski in Karnataki (India) and places in the Ural-Altai region, including locations bordering Northern China, for gold. Copper and tin resources had endowed some areas with centrality in the late 2nd and early 1st Millennium, such as the region of the Upper Yellow river between the loess plateau and Henan under Shang, or Cyprus in the Eastern Aegean during the Aegean

¹² See the discussions of individual entries in Morris, Scheidel & Saller (2007) for the debate; and well-reasoned argument in Jursa (2010), 783-802.

¹³ Ecology and resources in world perspective are best represented on maps; most useful, though slightly out of date, is Scarre (1988) [C. Scarre, *Past Worlds: Times Atlas of World Archaeology*. London 1988].

¹⁴ Van der Spek (2007) for Babylonia; Kron (2005), (2012) for irrigation projects in Roman Italy.

Bronze Age. Yet despite the vital importance of these resources for the power and prestige of elites in the East and West, these regions did not become centers of power themselves. Some tribal kingdoms grew rich on the trade of their much demanded resources, but individually they never translated their possession of an exclusive product into political dominance.¹⁵

Politically more powerful were agrarian states that gained control over agrarian and social resources by expanding across ecological zones. The best example is the Near Eastern region, controlled successively by the Assyrians, Babylonians, Persians and Seleucids (successor dynasty of Alexander III “the Great”) between the 8th and the middle of the 2nd century BCE.¹⁶ The Neo-Assyrian Empire comprised the territory of southern and northern Mesopotamia, northern Syria, the Levant and the south-Syrian desert and Steppe region, while under the Persians Asia Minor and Egypt were included. During the Neo-Assyrian Period significant numbers of people were shifted into Northern Mesopotamia. A sizeable proportion of urban residents of Syria-Palestine, urban Babylonians, Arameans and Chaldeans were deported from their homeland, settled in new cities and put to agricultural work in underdeveloped areas. Resettlement was not an economic scheme, but aimed at punishing recalcitrant vassals and pacifying their territories, as the Assyrian royal annals have it.¹⁷ Yet by the time of the Persian period there was a clear economic outcome of the policy of deportation: a marked increase in the amount of land under cultivation in Northern Mesopotamia with the result of an increase of agricultural production in that region.¹⁸ Partly because of the highly productive irrigated landscapes in Southern Mesopotamia and Egypt, the Near Eastern Empires created wealth in an order of magnitude unknown to the Western world. Another asset was their power to administratively and socially reorganize and pacify a vast ecological space.

Agrarian organization

Both peasant and intensive agriculture were based on mixed farming. Different staples were grown in different ecological zones: millet in Northern China, rice in Southern China and India; barley in Mesopotamia; emmer in Egypt, durum wheat in the Mediterranean and bread wheat in the Black Sea region. They were combined with secondary cereals, oil and fodder crops, legumes, dates, vines, and indeed any other cultivated plant that the area had to offer. Animal husbandry supplemented agriculture for milk-products and, to a lesser extent, meat, while manure was essential for fertilizing.¹⁹ Mixed cultivation not only served a mixed diet and a sustainable agricultural base, but was also an economic strategy of risk aversion. Cereal crops need an absolute minimum of 250 to 300 mm of annual precipitation and no frost during the growing season; conditions that are impaired at regular intervals, though often just locally, in many of the climatic regions where cereal agriculture was practiced. Equally adverse were insufficient inundation or flooding in river zones, which in more centralized régimes like

¹⁵ Even in the case of the rise of Islamic power, which is frequently quoted in this context, a direct link with trade has been disclaimed; see Crone (1987), 3-51 contra Chase-Dunn and Hall(2011), 168-173

¹⁶ Jursa (2010); Bedford (2007); van der Spek (2007)

¹⁷ Bedford (2007).

¹⁸ Bedford (2007), 308; and van der Spek (2007).

¹⁹ Kron (2012).

China, Babylonia and Egypt could lead to catastrophic consequences for local agriculture, and political instability.²⁰ Monoculture was no option anywhere in the ancient world. This does not mean that market-oriented production did not lead to specialization in certain cash-crops. But none of even the most commercially minded agrarian manuals of the Roman and Chinese imperial periods recommends putting everything on one card.²¹

Agriculture was organized within three broad categories of property relationship. The most widespread one was tenancy and share-cropping. In such labor relationships cultivators work either individually or collectively land held by agrarian aristocracies or institutions (temples, kings, and high royal officials). Tenancy is usually the term for contractual relationships where fixed rental periods and obligations are specified. Whereas share-cropping refers to dependent labor relationships where landlord and cultivator share the harvest in (unequal) parts, and the cultivator's freedom is encumbered to a greater or lesser extent.²² These types of "feudal", clan-based, or semi-free relationships were typical of many African, Asian and European societies at different periods of time. But they must be regarded as a wide spectrum of dependent or semi-dependent agrarian labor relationships, rather than a timeless institution.

The second category was peasant agriculture where landowners cultivate their property together with their nuclear families and possibly one or two slaves. This type of land holding is most typically found in the core regions of the Greco-Roman Mediterranean. Another type of this category developed in empires with predominantly institutional landownership. Here, too, peasant land-holding developed, as smaller and greater landholders - *de iure* tenants of institutional land - gained broader property rights as a result of hereditary bequest, gift or purchase.²³ In this type of free-holding, rents became synonymous with taxes. This form of private property developed in some regions of China, Babylonia and Egypt at different times between 600 BCE and the first century CE.²⁴

The third mode of production, equally diverse in its social manifestation over time and space, was slave labor which is attested in all societies considered here. Affluent to average peasant households in Northern China and India, Egypt, North Africa and Europe held one or two slaves to help with agrarian labor and/or household tasks. Gangs of slaves were rather employed in high-risk occupations such as quarrying, mining and building work. They frequently worked side-by-side *corvée* laborers and prisoners, while household slaves rubbed shoulders with seasonal employees, and could be hired out for a wage as well. Slavery was built into the socio-economic system of ancient agrarian states. But only under the Roman

²⁰ Manning (2000).

²¹ Sadao (1986); Ebrey (1986); Kron (2012); see also Osborne (1986); Gallant (1992); Bedford (2007); van der Spek (2007) for the general argument of mixed agriculture and risk-aversion.

²² Eggertson (1990) for discussion of the principles; Frier and Kehoe (2007) for the Greco-Roman Mediterranean; and Kehoe (1992) for Roman Egypt. In principle rents could be specified as a share of rent, they may be regarded as forms of transitional forms of agreement, see my discussion in von Reden (2007), 118-129.

²³ Vandorpe (2000); Manning (2002); Monson (2011) for such forms of transition in Greco-Roman Egypt. The emperor Wang Mang in 9 CE established or re-established royal landownership, but it is uncertain whether this was the assertion of a traditional claim or a new departure, see Sadao (1986), 556.

²⁴ Sadao (1986); Hughs (1952 Saïte contracts); Eyre (1994); Renger (1995) [in Jursa]; van der Spek (2007), Jursa (2010), 184-206; all emphasizing regional diversity within this pattern.

Empire, and concentrated mostly in its Italian core, did slave employment turn into a strategy of market-oriented agrarian enterprise. Roman villa estates were typically both run by a qualified slave manager (*vilicus*) and cultivated by large numbers of chattel slaves.²⁵

Agrarian development

Stable empires created favorable conditions for the development of agriculture, despite the agricultural and demographic destruction they caused locally through military invasion, raiding and mass enslavement. Some development was the result of direct interference into social and geographic landscapes, such as settlement politics, development of agricultural and hydrological infrastructure, and the promotion of technological knowledge. Others were more indirect: peace and protection, transformation of exchange networks, or investment opportunities through imperial conquest and exploitation. Conquest, moreover, provided new settlement space, gave opportunity for tax reforms, and mobilized local knowledge. In the limited space of this chapter, I confine myself to two of these aspects.

Sadao identifies two crucial economic processes in the making of imperial China: the breaking up of clan-based agriculture in Northern China under the Warring states and their replaced by family farms organized in small hierarchical communities (*li*) supervised by powerful patriarchs (the predecessors of Han bureaucratic administrators); and the investment by these local patriarchs into new techniques of water control and thus the development of new agrarian space. The interrelated process of opening up new land and formation of new communities continued under Qin. One example is the Ch'eng-tu basin carried out by Li Peng, governor of Shu. Another is the Cheng Kuo Canal, promoted by the king of Qin and named after his engineer, Cheng Kuo of the state of Hann. This canal irrigated the plain north of the Wei River in Shensi and opened up some 40,000 *ch'ing* or 1821 km². Han continued to promote flood control and irrigation works in many other regions, some project extending again to as much as 10,000 *ch'ing* (c. 457 km²). By financing flood control and irrigation, and maintaining the bureaucracy to implement the projects, the dynasty benefitted through taxation and power, but it also fostered agrarian development and social prosperity. Agrarian development continued throughout Former Han and greatly increased under Later Han.²⁶

Similar projects of water control and resettlement are attested in other imperial contexts. Jursa describes the period of intensive canal building attested in northern Babylonia around Sippar in the early 6th century BCE. This gave rise to the rapid transformation of the agrarian base of Northern Babylonia under Chaldean rule during which rural properties underwent fundamental change, leading to an increase in productivity, economic growth, and the

²⁵ Hopkins (1978) established quantitative links between mass enslavement in the course of Roman conquest and the expansion of the slave market in Italy from the mid-second century BCE onwards. Scheidel (2012) for a discussion of the stability of the Roman slavery, which he finds in the incentives of the manumission system, and the fact that slaves were employed in a broad spectrum of both effort-intensive and care-intensive occupation.

²⁶ Sadao (1986), 553-555.

development of a more thoroughly monetized economy in Babylonia.²⁷ Of perhaps lesser impact but noteworthy, too, was the development of the Fayyum oasis south-east of Memphis under the Ptolemies during the early 3rd century BCE. By lowering the water level of lake Moeris they trebled the cultivable area from 450 to around 1200 km².²⁸ The development of the Fayyum served to settle Greek military and civil immigrants, was a project of prestige and cultural competition, while at the same time creating a fertile hinterland for the new capital of Alexandria.²⁹

Of broader economic consequence was the policy of the Roman government to settle veterans and found colonies on newly-conquered Roman territory. Geoffrey Kron has emphasized the significance of centuriation, irrigation and water control in this context. Centuriation was a system of marking out the land in squares and rectangles by means of boundaries or drainage ditches. During the early period of Roman conquest it transformed the face of Roman Italy, Gaul, North Africa and Spain where traces are still visible today. The state's organization and mobilization of the collective labor force of the rural population for these projects were immense. Drainage was particularly important in low-laying clay soils, or in rich river valleys, such as the Pomptine marshes in central Italy or the Po valley, the latter transforming into Italy's richest agricultural regions, in large parts through the land reclamation initiative of a single Roman senator.³⁰ It might not be accidental, that the same senator was also responsible for the grain supply of the city of Rome in 109 BCE.

Land and investment

The Han and Roman Empires represent very different agro-political regimes, the one centered on some form of institutional ownership of land, a strong state and bureaucracy, the other on more extensive private property rights over land, a relatively weak state, and decentralized forms of administration.³¹ But in both cases the narrative of land concentration and agrarian production for markets at the height of economic power converge.

Land concentration was probably well under way in pre-imperial China but took off under Han in connection with a series of floods and drought combined with a fierce taxation regime.³² Poorer peasants were forced to sell their land, houses and even children as a consequence of poverty and debt. So-called drifting peasants were employed as landless tenants in share-cropping arrangements. Despite repeated attempts of the state to forestall land concentration, large networks of landholding became accepted as a matter of course. Towards

²⁷ Jursa (2010), 322-360; 786 f.

²⁸ Rathbone (1990), 110-114 with discussion of the economic and demographic implications of the project; van der Spek (2000 [in von Reden in Weber (2007) n. 56]) for similar, though less extensive, initiatives in Seleucid Uruk under Antiochos III.

²⁹ Manning (2005).

³⁰ Kron (2012), 166-7.

³¹ For comparative perspectives on Qin/Han and Roman imperial administration and social control, Scheidel (2009 a); the most up-to-date discussion of Roman and Qin/Han bureaucracies can be found in Eich, P. (forthcoming); for China in particular, Lewis (2007), 18 ff.; and (1999) 13-53; for comparable developments in Babylonian agriculture during the Chaldean period, Jursa (2010), 437-62; for the late antique and early Medieval period, Sarris (2006), and Wickham (2005) [in Scheidel (2009)].

³² Lewis (2007), 66.

the end of the reign of Wu-ti (140-87 BCE) a new and improved system of cultivation greatly increased agricultural productivity.³³ It can best be understood as a form of integrated fallow: straight furrows were sown with seeds alternating with ridges that lay fallow on the same field and were reversed the next year. The accompanying invention of an improved plow with two shares and drawn by a pair of oxen led to more efficient sowing and could lead to double yields in case of good management. The system was introduced on state-owned land and soon adopted on large private estates; but it met with problems among poorer peasants as it required more elaborate equipment, more animals and above all more intensive care that could not be performed on family farms. Wealthy farmers also profited from improved irrigation through brick-lined wells which could be dug more deeply. Irrigation in the North China Plain relied on water from such wells, so better wells compensated better for insufficient rainfall, and thus were conducive to increased productivity.

The new cultivation system led to an upsurge of agricultural literature, which in combination with improved irrigation techniques further increased agricultural output. A variety of grains and vegetables were grown, each planted and harvested at distinct times of the year. Year-round cultivation created another advantage of large estate owners over individual peasant families who lacked the labor force for intensive farming.³⁴ By the time of later Han we hear of great families who combined social power with landowning and trade. The network of holdings these families dominated were vast. Fan Chung (c. 20 BCE – 20 CE) held 300 *ch'ing* (c. 1375 ha); Yin Shih in the beginning of the first century CE owned 700 *ch'ing* (c. 3237 ha), and was able to mobilize 1000 men to fight in the civil war. Average individual holdings may have had the size of 2.8 to 3.2 ha, and someone who owned ten times the average could be regarded as affluent.³⁵ It is important to note, however, that the reason for land concentration was influenced by an ideology of patronage, social control and local power, rather than economic intensification.³⁶

Key to Roman land concentration was imperial conquest, the boom in demand for agrarian produce to supply the long-serving armies, the availability of slave labor, and the spread of wine consumption in the Roman Empire.³⁷ The conquest and administration of provinces, above all Sicily, Spain and the economically developed regions of the Eastern Mediterranean, created unprecedented monetary revenue for the Roman senatorial elite and familiarized them with the sophisticated monetary economy of the eastern Mediterranean Hellenistic world. In addition, they came into contact with Hellenistic agricultural knowledge laid down in an extensive agronomic literature travelling to Rome via Athens, Alexandria and Carthage. Land concentration of agrarian property in Italy is attested both archaeologically and in Late Republican political discourses when the call for land-distribution schemes due to the

³³ Sadao (1986), 561-65; Lewis (2007), 103-105, also for the following.

³⁴ Ebrey (1986), 617.

³⁵ Ebrey (1986), 624 f.

³⁶ Lewis (2007), 115 ff.

³⁷ The problem of wealth concentration and the commercialization of agriculture have been widely discussed among Roman historians. In place of a much larger bibliography, see Hopkins (1978); Greene (1986); Mattingly (1988); Wilson (1990); Woolf (1998); and the summarizing accounts of Harris (2007) and Kehoe (2007) with some amplification by Kron (2012).

impoverishment of the peasantry played an important role in the debates of the declining state. Archaeologically, the well-organized agrarian *villa* system seems to have begun to transform the Italian landscape from the second century BCE onwards. Settefenestre near Cosa is the best known example, but there were many others, concentrating mostly in Campania in south-western Italy, and the Po Valley. Roman senators expanded their holdings not only in Italy but acquired land in the provinces as well. By the end of the Republic the senator Marcus Licinius Crassus was said to have 200 million sesterces in land, which may be calculated into the value of roughly 500 km².³⁸ *Villae* of 25 to 75 ha seem to have been medium sized, while average peasant farmstead measured just one tenth of that. So-called *latifundia* developed in Italy and Sicily in the course of the first 1st century CE, and were an amalgamation of such mid-sized estates. These could grow to a size of 1000-2000 ha.³⁹

But more than individual size did management principles matter for the nature of the *villa* system. Typical were slave employment, intensive, year-round cultivation, technological and agricultural experimentation, including fertilization and irrigation, and the systematic production of cash-crops, above all oil and wine, for local and inter-regional markets. The agronomist Columella, a contemporary of Pliny the Elder, offered expert advice on the running of such estates and provides an idea of the sophistication of agricultural practice. The *villa* system spread to Africa, Gaul and Germany where large estates with much equipment for oil and wine production sufficient to supply interregional markets are attested.⁴⁰ Also the proprietors of estates gradually became a more diverse social group. By the late first century BCE, a Roman freedman C. Caecilius Isidorus owned a fortune that could easily rival those of more long-standing social background.⁴¹ We are unable to quantify the output of these large estates, but they provide the backdrop for understanding the scale of commodity circulation in the Roman Empire.

2. Monetization

Money

Monetization refers to the spread of monetary media into an increasing range of transactions and relationships. In order to define a substance as money it must fulfill partly or simultaneously four functions: it must be a medium of exchange (sale and purchase), a means of payment (tax, tribute or penalty payment), a unit of account (for the quantification and comparison of value), and a store of wealth. Coinage was only one, albeit consequential form of money. Monetization was a long-term and gradual economic process in all ancient states and empires, whereas coinage was invented independently in three places only – Western

³⁸ Harris (2007), 524

³⁹ Thus the figure for Crassus' agrarian wealth implies that he had assembled 250 to 500 estates of that size, which reaches the dimension of what we called institutional landholdings above; for the development of *latifundia*, see esp. Pliny the Elder, *Natural History* 18, 35.

⁴⁰ Kehoe (2007), 556, with further literature.

⁴¹ This, however, might have been partly or wholly based on the inheritance of his former patron family, the Caecilii Metelli; Harris (2007), 524.

Asia Minor in the late 7th century BCE, the Ganges region in the 6th, and the Central Great Plain of China in the 4th century BCE.

Monetization and the spread of monetary media, including coinage, must always be seen in connection with other goods and objects which filled more limited monetary functions at the same time. Economic anthropologists have used the concept of spheres of exchange which has helped to understand monetary development.⁴² Spheres of exchange refer to bounded spheres of transactions between similar social groups for specific purposes, such as the exchange of gifts between aristocrats and kings, or market exchange between household agents and professional merchants or traders. Asymmetrical exchanges between landlords, tenants or seasonal workers may also form a specific sphere of exchange, and so do taxation, dotal payments between spouses, their families, and so on. Particular kinds of money (so-called limited-purpose money) could circulate in one sphere of exchange and not in another, while the spread of one particular money into a wide spectrum of exchanges tends to dissolve distinct spheres of exchange.⁴³

The use of limited-purpose money in some spheres of exchange preceded all monetary systems of the Afro-Eurasian world of the mid-1st Millennium and helps to explain monetization as a path-dependent process.⁴⁴ Cowries dominated the Far Eastern aristocratic exchange network between China, the South-Eastern Pacific and India; precious metal bullion was a typical means of payment and exchange in Western Eurasia and Egypt. Local currencies with which rents were paid, tribute collected, diplomacy conducted and sacred obligations fulfilled included grain, silk and other textiles, jade discs, bronze bars, precious metal objects and base metal utensils, pearls, and glass ware.⁴⁵ An important step in the history of monetization is the exchange of objects according to fixed units, which requires a degree of central authority over exchange. The first systems in which such centralized control over monetary units is attested are Mesopotamia and Egypt in the 3rd Millennium BCE.⁴⁶ From the second quarter of the 1st Millennium, however, we find many more such cases increasing in tandem with state formation in Asia, Egypt and the city states of Greece and Italy. While state formation was a vital precondition for monetary exchange, imperial expansion was not. Imperial states did not, or could not, enforce their currency across political boundaries, though monetary systems consolidated under imperial conditions due to tribute payments, paid military service, and the symbolic benefits which accrue from using a powerful currency. Precious metal proved the most accepted monetary medium in the long term, because of its durability, portability, divisibility and relatively stable value within and across political boundaries.

⁴² Bohannan (1959) for the concept of spheres of exchange [Bohannan, Paul (1959). "The Impact of money on an African subsistence economy". *The Journal of Economic History* 19 (4): 491–503]; Parry & Bloch (1989) for transactional orders.

⁴³ Seaford (2000) for the former; von Reden (1995) for the latter.

⁴⁴ A particularly good case has been made by Jursa (2010), 469 ff. with summary p. 750 ;also Scheidel (2008)(2009) for Han China and the Roman Empire; von Reden (2007) for Egypt.

⁴⁵ Scheidel (2009), 139 for China; Burnett (1987), 1-17 for Rome; Kroll (2008) for Greece; von Reden (2007) with Müller-Wollermann (1989) for Egypt. Schaps (2007) in comparative perspective.

⁴⁶ Williams (1997), 16-24; Schaps (2008), 34-56

Coinage

We have to distinguish between two cash traditions: one based on coinage, which is represented by China, India and the Greek world; and one based on bullion, which is represented by the Near Eastern empires and Egypt. The trend towards greater monetization resulting in greater financial sophistication - including financial intermediation and credit finance - can be observed in both traditions, and there is no intrinsic economic advantage in either of them.

Coinage developed in imperial China in the fourth century BCE and came to be used in all Chinese states according to local weight standards, except the southern state of Chou where cowry shells and inscribed gold plates formed an isolated monetary development.⁴⁷ Characteristic of the Chinese coin tradition is the use of base metal, a punch-whole in the centre of the coin, and frequently an inscription of value or issuing authority. Gold remained uncoined but became part of a bimetallic monetary system. A further important idiosyncrasy of Chinese coinage was the lack, or incapacity, of state control over private coining.

The beginnings of coinage in India lie much in the dark, but the assumption that it developed in contact with Alexander the Great rests on no more than cultural prejudice.⁴⁸ The first Indian coins originate in the Indo-Gangic plain during the 6th century BCE, long before Indian contacts with Greeks. They were minted, punch-marked silver pieces cut to weight, which neither coincides with Chinese nor Greek technology. Punch marked coins are found throughout India, but most types were more or less restricted geographically. It has been argued that they were a means of exchange among tribal states that had formed in India in the 5th and 4th centuries BCE. Other issues were distributed more widely, which may either represent the new coinage of the Nanda and Maurya dynasties which united most of India in the late 4th and early 3rd centuries BCE; or, they represent local issues that circulated across political borders from that time onwards.⁴⁹

The Greek coin tradition is the oldest and best documented of the three. It was preceded for at least one century by silver bullion used according to fixed units of weight.⁵⁰ The first coins were minted in Greco-Lyidian cities on the coast of Asia Minor during the late 7th century BCE. They were struck in a local alloy of gold and silver, called *electron*, that occurs naturally on Mount Tmolos and the river Paktolos in Lydia.⁵¹ The idea to coin precious metal spread into major cities of the Aegean, such as Aegina, Corinth, Athens and some Ionian and Cycladic communities. Greek coins outside Lydia were struck in silver according to local weight systems and bearing local emblems of civic identity. Very rapidly coinage was adopted by many cities in the the Black Sea region, Cyrene, Sicily, Spain, Southern France

⁴⁷ For the Chinese coin tradition in comparative perspective, Schaps (2007), Scheidel (2008), Scheidel (2009 b); for useful illustrations Williams (1997).

⁴⁸ Schaps (2007), 290-292, with further bibliography.

⁴⁹ Goyal (1995) *contra* Gupta & Hardacker (1985), discussed by Schaps (2007), 290.

⁵⁰ Kroll (2001) (2008) *contra* Schaps (2004), 34-56.

⁵¹ Balmuth (1974-75); Schaps (2004), 93-111 with further bibliography. Kroll (2001) (2008) for the development of coinage out of a bullion money economy in Greece.

and Italy where Greeks had settled and maintained intense ties with mainland Greece. Bronze and gold coins do not appear before the 4th century BCE.⁵²

The coinage of the city of Athens became dominant in the 5th century BCE due to the financial demands of the Athenian naval confederacy. It spread far beyond the boundaries of the Greek-speaking world in the late 5th and 4th centuries BCE as a result of being the most accepted currency by mercenaries and traders everywhere. Imitations of Athenian coins are found in Egypt, Syria, and Arabia where the local use of “Athenian” coinage filled different purposes.⁵³ On the Arabian Peninsula the influx of Greek coins through the spice trade spurred local monetization from the fourth century BCE onwards, particularly in the corridor running from Gaza to the South Arabian kingdoms.⁵⁴ Coinages of other Greek cities were adopted outside their boundaries, too.⁵⁵ Carthage in Northern Africa adopted coinage via Sicily in the fourth century BCE; Rome via Neapolis in southern Italy during the third; the Celts were introduced to coinage via Macedonia and the Greek towns on the Franco-Iberian coast in the late 4th centuries BCE. Coin use was stimulated by the expansion of Greek culture under Alexander the Great and the ensuing Greek administration of the formerly Persian empire. Full monetary consolidation, that is, a single imperial currency, supplemented by subsidiary local issues, developed in the Mediterranean under the Roman empire from the 2nd century BCE onwards.⁵⁶

The use of metal money was dependent on local metal resources.⁵⁷ Many monetary societies, however, had to rely on conquest or exchange.⁵⁸ Highly monetized empires, most notably Babylonia, did not have access to local mines, but their monetary economies flourished as long as silver or coin supply was guaranteed by sufficient accumulation. The enormous silver wealth of Babylonia in and after the Achaemenid period is supposed to have been made possible first through gifts, tribute and predation, but increasingly through commercial trade.⁵⁹ Economies with a high agrarian resource endowment potentially could benefit from a positive balance of trade, especially when local agricultural productivity was increased by efficient

⁵² Von Reden (2010), 30-33.

⁵³ Von Reden (2010), 72-79, for Athenian monetary dominance; Van Aalfen (2011) for Athenian coin imitations and their uses outside the Greek-speaking world.

⁵⁴ Van Aalfen (2011), 79-83.

⁵⁵ Von Reden (2010), 35-64.

⁵⁶ Burnett (1987), 37 ff.; for comparable forms of consolidation in China under Han, see the succinct overview by Scheidel (2008), 271 ff.

⁵⁷ An excellent discussion of the interdependence of metal supply and Eurasian coin traditions can be found in Scheidel (2008), 276-284.

⁵⁸ This has been brought forward as an explanation for the Chinese practice of minting bronze rather than precious metal coinage (Scheidel (2008)), but the argument is not entirely convincing in light of numerous societies that coined precious metal without mining resources (see next note).

⁵⁹ Jursa (2004). The Greek city state of Aegina during the 6th to 4th centuries BCE, too, must have accumulated all its silver in trade, as Aegina produced one of the strongest coinages of the Aegean without the opportunity of conquest, and despite a lack of local mining resources. Egypt, rather, resorted to cruder coin policies by enforcing a closed currency system in which full-weight external coinages had to be exchanged for lighter local ones on payment of an additional fee; von Reden (2010) for the former, (2007) for the latter case. The most widespread method of extending coin supply in face of limited metal was debasement of coins, which proved fatal to their acceptance in the long-term; for a comparative analysis of a much-debated issue, Scheidel (2009).

agrarian management.⁶⁰ But, arguably, the ideological emphasis on agriculture as the only source of real wealth, and the symbolic benefits attributed to spending, rather than receiving money, prohibited ancient societies to develop export to its full mercantile potential.⁶¹ Complaints about the drainage of money surfaced only when it was linked to expenditure on luxuries, but a more serious challenge to imperial stability was the loss of money through military overspending.⁶² This raises the question of the role of states and imperial governance in ancient economies.

3. Governance, taxation, and urban development

Governance

In order to channel the productive capacity of land and people into an imperial center, a social apparatus and institutions are needed to mediate that flow. If we take this apparatus and institutions – often referred to as bureaucracies or administrations – as an essential part of ancient states, we can ask what economic policies were pursued by states, and how did they interfere with private economic activity. Yet these questions are not easy to answer, as the distinction between state and private economies was rather fuzzy. States were kings or emperors, their families, entourages and agents, all tied to the courts by social bonds and obligation. Civic communities elected their magistrates and governing bodies, but shared a strong sense of collective representation so that governments were part of, rather than distinct from, the citizens they governed. Other organizations, such as temples, clan-based families or aristocratic estate holders, could exert local social power in forms that were not distinguished much from the power of a state. There was always – though to different degrees - competition between central and local hierarchies of power.⁶³ Although it is reasonable to talk about states in the ancient world, the relationship between state and competing organizations was fluid so as to erode any clear distinction between their respective economies.

Ancient states, moreover, did not staff their administrations with their own functionaries only. To a greater or lesser extent they relied on the power and influence of subordinate or local magnates, often themselves controlling economies of scale.⁶⁴ Many administrative functions, furthermore, such as tax- and customs collection, the administration of mines, monopolies, and public construction work were contracted out to various types of private entrepreneurs who combined their own with fiscal interests: the *murashûs* in the Persian Near East, the

⁶⁰ Good examples are Babylonia in the 6th century BCE, for which Jursa (2010), and Egypt in the 3rd century BCE and 1st century CE; for which von Reden (2007) and Monson (2011) respectively.

⁶¹ For alternative modes of accumulation, see Bang (2008), esp. 131-202.

⁶² Veyne (1979) for discussion of the drainage of money through luxury trade [P. Veyne, Rome devant la prétendue fuite de l'or: merkantilisme ou politique disciplinaire? *Annales E.S.C.* 34 (1979), 211-244.];

⁶³ Hierarchy was obviously more strongly articulated in the bureaucratic autocracy of imperial China than in the Mediterranean under Greco-Roman influence; but see for aspects of competition even there, Lewis (2007), 51 ff.; Bang (2009), 104-117, in comparative perspective; Manning (2010), 55-77 for Hellenistic Egypt.

⁶⁴ Again, Bang (2009).

telônai and *ergolaboi* in Ptolemaic Egypt, or the *publicani* in the Roman Republic.⁶⁵ Private and public economy also interfered when kings and emperors used private transportation systems to ship taxes and rents in kind, when they entered market and finance through agents just like other agrarian magnates, or when state agents managed imperial property just as the estates and domains of other absentee landlords were managed through agents. Attempts to create more cohesive administrations were made, as for example when Roman or Han emperors tried to forestall the greed of private contractors by replacing them with their own personnel.⁶⁶ Yet kings and emperors themselves distinguished only loosely between the administration of their personal and fiscal property so as to prevent any clear demarcation between public and private financial regimes.

Some scholars use the distinction between state and market in order to differentiate economic interests and sectors.⁶⁷ But for comparative purposes, this is even more problematic. Markets were very different institutions across cultural borders, and not everywhere were markets sites of primarily private commercial exchange.⁶⁸ Ancient texts tend to conceive of governments as people: kings, high officials, priests, or lords. Although this underestimates the extent to which states were more than their personnel, it helps us to understand governance structures as a combination of social and financial strategies and cost-calculations. Scholars have pointed out that ancient administrations were comparatively cheap. An administrative apparatus with a large amount of enforcement costs would have been impossible to maintain. Thus political centers used the active collaboration of people whom they could control socially: imperial families, courtiers, or institutions that were tied into the religious cosmos of the state. For the sake of the taxation of subjects, moreover, they sought the cooperation of social groups who exercised influence in their own communities and societies: local landowning aristocracies, temple elites, or the wealthiest members of the peasantry. Yet their cooperation only appeared to be cheap, as the money that was spent to keep them loyal was part of the broader exercise of creating an imperial space through military coercion, self-representation and ritual. Economic governance was deeply entangled with broader imperial concerns.

Taxation

Taxation was one of the most important means of asserting and maintaining empire both financially and symbolically.⁶⁹ City states, even if they were bound into larger imperial structures, refrained from taxing their citizens but asserted their sovereignty by taxing

⁶⁵Bedford (2007); 319 f. von Reden (2007), 106-108; Harris (2007), 520; Sodao (1986), 601 for alternative solutions in China; and below.

⁶⁶Lewis (2007), 63 f. with discussion of the debate over steel and iron monopolies; Bang (2009), 113; Lo Cascio (2007), 631 and *passim*; Eich (forthcoming), [26 f.].

⁶⁷ Lo Cascio e.g. (2007); Scheidel (2009), 203-206 for comparing Chinese and Roman coin use in the respective sectors; see Bedford (2007), 324 f. for cautionary remarks.

⁶⁸ Lewis (2007) 81-88 for a convincing picture of Chinese markets not conforming to the modern market model; Bang (2008), esp. 197 ff. for alternative models for Roman markets, also not conforming to the European model.

⁶⁹ Sodao (1986), 595 ff. for the general principles of Chinese taxation; also Lewis (2007), 59 f. ; Lo Cascio (2007) for Roman taxation; Bang (2009) for helpful comparison between China and Rome; Jursa (2004), for the Neo-Babylonian system; von Reden (2007), 84 ff. for Egypt.

foreigners, merchants and imports instead. Kingdoms and empires taxed their subjects, but tended to exempt privileged communities and classes of subjects. Most typical of ancient taxation was a combination of capitation, land or harvest taxes supplemented by property taxes and a large number of indirect imposts on manufacturing, marketing, sale and purchase of land, transport, animal husbandry, fishing, use of public services, and so on. It was normally the sum of small amounts rather than the volume of an individual tax that made up the balance of a tax district. Taxes were used for local purposes (infrastructure and military installments) as much as they were sent to the centre. It is uncontroversial that they were the most important means of maintaining the costs of campaigns and armies. Any other costs were secondary to this expenditure in the imperial budget.

It should be noted, moreover, that the income generated was only one of the functions of imperial taxation; another was exercise of social control. For the assessment of poll and land taxes, tax subjects, land, or yields had to be registered; age groups, gender, ethnic origin, citizen status and faith were demarcated by differential assessment. Privileged groups and communities could be favored by reduced taxes, and unwanted professions, such as merchants under Han, imposed a double rate. Tax incentives could be created for special purposes, such as the introduction of a new crop, or the increase of children. There was also a close connection between taxation and the physical control of people. Both in China and in Egypt there was an extensive system of forced labour to which in principle everyone was liable. Yet *corvée* could be avoided against payment of tax, showing the convertibility of the state's control over surplus and bodies.⁷⁰ Given such additional functions of taxation, it is doubtful that tax levies were calculated strictly on budgetary needs.

Fiscal politics, however, had the most profound impact on ancient economies. Given the agrarian base of most tax subjects, rents and land taxes were most naturally levied in kind. The Roman emperors since the time of Augustus used that fact to supply 200,000 citizens in the city of Rome regularly with free grain, most of which they collected from the single province of Egypt.⁷¹ Under the Ptolemies, Egyptian grain taxes and rents were used for state marketing as well as for luring merchants into the country in order to make a profit on their currency exchange. The late Roman government increased its requisitioning system in kind to other foods, such as wine, oil and meat. A large variety of other goods for practical purposes were collected as tax in kind, such as wood for ship building, ox hides for shoes, hemp for oil and silk for clothing. Yet cash taxation came to be preferred for its flexible use, cheaper transport and imperial meaning, but also required a lot of enforcement costs. Both Han and the Roman Empire are assumed to have collected the majority of their taxes in cash, which must be regarded as a politically unique rather predictable development.⁷²

⁷⁰ Lewis (2007), 60.

⁷¹ See above, [n. 59].

⁷² Thus Sodao (1986), 600. A major argument for the exceptionality of cash taxation is its immediate decline in periods of political disintegration.

Already under Persian administration, parts of Asia were taxed in cash.⁷³ But rather than responding to commercial development, it forced tax subjects into commercial transactions. It mobilized cash resources insofar as they had been treasured and hoarded so far. For satraps, temples and other institutional landholders, rather than the peasants on the fields, were made liable for the conversion of agrarian surplus into cash. This surfaces when we look at subsequent periods. The Hellenistic kings took over from the Persians a mixed system of taxation in cash and kind, for the collection of which local administrations and temples seem to have been fully liable at first.⁷⁴ Taxation in kind continued to operate within the traditional institutions of collection and storage, but for cash-taxes they gradually introduced tax-farmers who came to be responsible for tax-collection from the population itself. Tax-farmers purchased the right of collecting a monetary tax at a fixed rate, and guaranteed its volume and correct delivery on security of landed property. But peasants also were introduced to cash by being paid small wages for labor service and employment in the state monopolies.⁷⁵ In China, comparable structures emerge. Cash taxes were boosted from the time of the Warring states by a gradual reduction of land-taxation in kind and by increasing capitation and property taxes, levied in cash, instead. Number and volume of cash taxation was greatly increased during the early years of Han. There is no direct evidence of how peasants got hold of cash to pay their taxes, but scholars assume it was through a combination of marketing, wage labor and intermediation by landlords and merchants. Both peasant marketing and intermediation must have mobilized large quantities of commodities and cash.⁷⁶

Urban markets played an increasingly crucial role in mobilizing agrarian surplus and converting it into cash, either because of the tax-farming system or by the agency of large landowners who collected both rents and taxes from their tenants in kind and sold them in urban markets as part of their large-scale economies.⁷⁷ By the first century CE many cities had become nodal points of larger systems of exploitation and transfers, converting local taxes and rents into exportable items of trade and cash. Without the extraction of resources that was caused and facilitated by imperial taxation, elongated lines of trade and the resultant network of inter-regional exchange that was ultimately centered on a few large capitals would not have emerged in the same ways.⁷⁸

4. Interregional trade and global exchange

Extensive networks of exchange predicated on taxation, elite consumption, and military expansion predate our period and generated technology and structures for interregional exchange to develop further in the 1st millennium. Most advanced had been the networks centered in Mesopotamia, reaching across the Persian gulf into the Arabian Peninsula in the south, and Persia in the north. Another such network had spanned between Egypt via Cyprus and the Levant to Anatolia, and between Egypt, Nubia and the African Red-Sea kingdoms

⁷³ Jursa (2004), 124-127.

⁷⁴ Von Reden (2007), 34.

⁷⁵ Von Reden (2007), 136.

⁷⁶ Sodao (1986), 596-601.

⁷⁷ Bang (2009), 104.

⁷⁸ Von Reden (2012).

further south. The North-Eastern region of China up to the age of Zou, by contrast, was as yet a rather isolated region, stretching no further into the East Chinese Sea than modern Taiwan.

In the early first millennium, after a period of political fragmentation, the highly competitive city states of the Phoenician coast, most notably Tyre, developed new commercial directions which in the West reached via Cyprus, North Africa and Sicily to the Spanish coast. Towards the east, and possibly in cooperation with the new kingdom of Israel, Phoenicians secured access to the Euphrates region, Mesopotamia and northern Arabia, while their navigational skills led them into the gold-producing countries along the Red Sea coast, possibly as far as the Indian Ocean.⁷⁹ Typical of the Phoenician trade network was that it worked through specialized trading settlements abroad (*emporía*), and that it does not seem to have been based on private enterprise. Though the evidence is inconclusive, Phoenician trade is likely to have been organized by the aristocracies of the city states rather than by independent professional merchants.⁸⁰ This raises the important issue to what extent long-distance exchange in the early 1st millennium can be regarded as trade.

Most Bronze Age exchange networks have been identified only by shared metallurgical practices and an exchange of material culture visible in elite burial. Thus we find an early interregional exchange network in south East Asia from the beginning of Eastern Zou (7th c. BCE).⁸¹ Exchange and common metallurgical practice are also found in the Northern Chinese zone from the Late Western Zou and Early Spring and Autumn period (9th-7th century BCE).⁸² At the other end of the world, the semi-sedentary continental European populations developed gradually a common material culture through migration and exchange.⁸³ In the second quarter of the first Millennium, two developments took place which in the long-term profoundly affected the nature of exchange in the Afro-Eurasian region: the conquest of large parts of Asia by the Achaemenid dynasty of Persia, and the expansion of Greek exchange in the Mediterranean.

The Persians, in contrast to their Assyrian predecessors, reduced the Phoenician aristocracies to a tributary class who engaged in trade mostly to satisfy the imperial needs of their Persian overlords. More importantly, perhaps, the Persians created a network of roads throughout their imperial territory, which laid the foundations for the movement of goods through formerly inaccessible territory.⁸⁴ The Persian king Darius was also remembered for having built canals and *emporía* on the Egyptian Red-Sea coast linking the Nile with the Arabian Peninsula.⁸⁵ We have extremely little evidence for trade along these roads and routes under Persian domination, but this has been attributed to the nature of the evidence rather than an

⁷⁹ Aubet (1993) with much reliance on the biblical tradition; more carefully, Bedford (2007), 323 f.

⁸⁰ Bedford (2007) and Aubet (1993).

⁸¹ Higham (1996).

⁸² Di Cosmo (2002), 44-92.

⁸³ Wells (1995), 230-243.

⁸⁴ Briant (2002), 357-376.

⁸⁵ Curtin (1984), 97 emphasizes the difficult sailing conditions in the Red Sea which made harbors around Cape Horn and the East African coast (Adulis in the Axumite kingdom, and Berenike and Myos Hormos in Egypt) of vital importance for the Egyptian trade with Arabia and India. From these harbors, goods were shifted via the desert to the Nile from where it could be distributed throughout Egypt.

absence in trade.⁸⁶ Nevertheless, there is still much to suggest that the larger part of goods that were moved along Persian roads down to the middle of the Millennium were forms of tribute rather than items of commercial trade.⁸⁷

The second development was the growth of Greek power in the Mediterranean. The Greeks during the first half of the first Millennium had not been aggressive conquerors, nor did they develop into serious competitors of the Carthaginian-Phoenician trade network in the Western Mediterranean. They had established Phoenician-type *emporía* at the Levant and Western Italian coast as early as the 8th century BCE. They had also been granted a trading post in Saïte Egypt in the late 7th century BCE.⁸⁸ But rather than competing for trade, they established a new form of urban culture based increasingly on collective political participation and consumption. This differed both from the *emporía* that had been established for trading purposes in harbors and frontier zones, and from the capitals that were dominated by palaces and courts in the various African and Asian empires including China.⁸⁹ The contrast should not be constructed as one between merchant, civic or royal cities, nor should their respective exchange mechanisms be separated in terms of freedom and administration, as was done in the influential work of Karl Polanyi.⁹⁰ The difference of the Greek form of city state should rather be sought in the degree to which wider social groups participated in the exchange system of their cities and gained access to urban markets as consumers through an ideology of political participation and equality. Greek aristocrats and civic governments within this exchange system aimed at opening markets by interfering with trade and prices of staples.⁹¹ This also affected in the long run forms of credit and financial intermediation in trade.⁹² Under Athenian democracy, any economic patronage of citizens was ideologically rejected, fostering contractual forms of credit between traders, landowners, and banks.

Democracy was not long-lasting, but with the Macedonian conquest of the Persian Empire including Egypt at the end of the 4th century BCE, Greek urban culture, centered on civic interaction however dominated by royal interference, spread towards central Asia and Egypt.⁹³ And while large parts of that empire were soon lost to local kingdoms and stronger imperial networks in central Asia, Greek urban culture, in many intercultural varieties, remained strong. When in the first century CE the Chinese expanded into the Tarim Basin of Xingjiang which bordered on the emerging Kushan Empire, hybrid coins were adopted with

⁸⁶ Ibid. 377-387.

⁸⁷ Bedford (2007), 325 f.

⁸⁸ Möller (2000).

⁸⁹ The nature of different urban forms is highly disputed; some scholars argue that Phoenician towns were very similar to Greek poleis; but the evidence is inconclusive and the question needs further research in comparative perspective; in the meantime, see discussion in Kuhrt and Sherwin White (1987); Ameling (1993), esp. 238 ff; Billows (2006); Weber (2007); Lewis (2006), 135-188, and Lewis (2007), 75-102.

⁹⁰ Polanyi, Ahrensberg and Pearson (1957).

⁹¹ Eich, A. (2006), 218-238.

⁹² The complexities of this point cannot be elaborated in this brief chapter without oversimplifying the issues; but see for some possible directions of a comparative argument, Schaps (2004) and Seaford (2004), 68-88; for the development of contractual, in contrast to social forms of credit, see some comments in von Reden (1995), 105-130; von Reden (2007), 151 ff.

⁹³ Kuhrt and Sherwin-White (1987); Billows (2006).

Greco-Indian motifs on one side and Chinese symbols or weight marks on the other.⁹⁴ Greek language remained one of the dominant means of communication in Egyptian, Western and Central Asian and trading communities down to the Muslim conquest.⁹⁵

On the Indian subcontinent greater degrees of cultural cohesion emerged in the 5th century BCE. Buddhism, a new religion building on older Brahman traditions was one of the articulating elements in this new cultural cohesion. The Mauryan dynasty reaching its height of power under the king Ashoka in the 3rd century BCE unified most of the South Asian world and created a broad, if short-lived victory of Buddhism. More importantly, it created a political framework for a shared culture of consumption which began to be recognizably Indian despite of regional variation.⁹⁶ Chin and Han dynasties united China for the first time and fostered economic development in the ways described in previous sections. They helped to integrate and synthesize local cultures to similar degrees as the Mauryans and Hellenistic Greeks had done further west.

The east-western trade along the silk-route and the Indian Ocean from the 3rd century BCE onwards is treated in much detail in chapter 18 of this volume. It is worth noting, however, that the importance of what in global perspective may be called regional networks of exchange continued to exceed the role of intercontinental trade along those routes. It is almost certain, although it cannot be proved, that the aggregate value of the goods that went on the long journey from Eastern and Central Asia to the Mediterranean and on to Rome was only a fraction of the aggregate value of the same range of goods that was exchanged within a much smaller geographical radius.⁹⁷ The most significant fact of intercontinental trade was that the value of individual journeys was huge, and that the wealth and production regimes that it generated was built on the consumptive capacities of rather narrow social elites.

By the beginning of the Common Era, both the East African coastline and Arabia and India were settled with harbor towns connected to the inland by river and caravan roads.⁹⁸ Some show archaeological traces of permanent foreign trading communities, which confirms that the intercontinental trade to the East and the West was regular and in the hands of professional traders. According to the Roman geographer Strabo, up to 120 ships per year set sail from Myos Hormos on the Red Sea to India (Strab. 2, 5, 12). A business letter accounting for a maritime loan related to a trade journey from Egypt to Muziris on the West-Indian coast, gives us an idea of the importance of India and Egypt for the movement of goods between Asia and the Mediterranean in the first century CE.⁹⁹ On the single journey attested in that papyrus c135 tons of tusks, pearls and spices were shipped with a total value of almost seven

⁹⁴ Scheidel (2008), 282; Williams (1997),

⁹⁵ Bowersock (2013), 26-27, 30-31, 45

⁹⁶ Curtin (1984), 90.

⁹⁷ Selbitchka (2012), di Cosmo (2002), 131-134; 248; Liu (1988).

⁹⁸ Some of the harbor towns on the African coast of the Red Sea had been vital for the Hellenistic trade in elephants supplying the Alexandrian and Macedonian courts; Sidebotham (2011); and Bowersock (2013); for the spread of harbors generally, Young (2003).

⁹⁹ For the so-called Muziris Papyrus, see Rathbone (2000); for the latter, a treatise with the Greek title *Periplus Maris Erythraei*, Cassons (1989).

Million Egyptian drachms after subtraction of 25 per cent worth of tolls. This was equal to the price of roughly 1765 ha of moderately productive arable land in Italy.¹⁰⁰

Of interest is not just the value of that cargo, but the financial organization of it. The merchant had drawn up a maritime loan, a form of third-party finance that had developed in Athens in the late 5th century BCE. Typical of maritime loans was that they were backed not by landed or personal security but by the value of the cargo purchased with the loan. If the cargo was lost through *force majeure* the loan was not to be returned. Maritime loans were thus not just a form of finance but also a form of insurance, which points to a tradition of shared responsibility in long-distance trade. While merchant and financier were in principle socially independent, their business relationships were built on strong social obligations and trust. This might explain why banks as financial institutions were relatively rarely, if at all, involved in maritime finance in the Greek world.

The financing of the trip to Muziris represents a curious mixture of Greek and Egyptian traditions where direct relationships of contractual employment remained strong both in the commercial and agrarian sector. The financier of the trip, to whom the letter is addressed, seems regularly to have lent money for trips to India as the procedures mentioned are quite standardized. But other than in the cases known from Athens, he was not just involved in the financial side of the journeys. He had his agents spread around the Red Sea ports, in Koptos and Alexandria, and may have had his own camel-drivers who moved the cargo overland from the ports. It is not known whether he was a land-owner himself, organizing trade through his agents, or whether he mainly dealt in trade. If the former was the case, the financial organization of the Muziris trip may have shared some features with what is known as the *commenda* system so typical for Islamic and early European commercial finance. *Commenda* were not constructed as contractual credit relationships, but as partnerships between lender and merchant-borrower. Profits were shared according to agreed proportions. Although the relationship between merchant and financier in the Muziris papyrus were based on contract, and although lender a borrower did not share the profits of the journey, there was greater collective responsibility for the success of the journey than in attested Athenian maritime loans.¹⁰¹

The most important connections were for the Egyptian trader those between Egypt and Southern India, but Arabian and African destinations, then under Arabian control, were by no means negligible. The *Periplus maris Erythraei*, a treatise on trade opportunities in the Red Sea and Indian ocean provide evidence not just of long-distance trade, but also of much internal trade between Arabian and Indian cities, which Egyptian merchants seem to have shipped during their long-term journeys. Goods, moreover, came either from local places, or from farther away. China supplied silks to the cities on the East Indian coast while Italian and Phrygian wine, as well as olive oil, coins, tin, saffron, or coral from other parts of the Roman

¹⁰⁰ Rathbone (2000) for discussion of the papyrus and of transactions involved. The calculation of the value of the loan in land is based on the price of 1000 sesterces per *iugerum*, for which Harris (2007), 524.

¹⁰¹ Bang (2008), 270-278 for further discussion; Sodao (1986) Liu (below chapter 18) for *commenda* as response to Muslim prohibition of lending at interest.

empire passed through Egypt into the Indian ocean. The *Periplus*, finally, provides ample evidence that even at the high-days of cross-cultural exchange, trade was not an homogenous concept: some goods were freely exchanged in markets according to supply and demand; others were labeled as destined directly to some Indian court: statues, expensive copper, gold and silver ware, horses, mules and slaves. This suggests that free trade was not separated in practice from politically directed trade to particular destinations.¹⁰² Similarly, we find both monetized trade and barter along the Indian coast.¹⁰³

There was no clear distinction between “engines” and “passageways” of trade, so convincingly identified by Smith for the economy from 1000 CE onwards.¹⁰⁴ Regions with a precarious agrarian base grew wealthy through their geo-economic location, such as Adulis in the Axumite kingdom in East Africa, Petra in the Nabatean kingdom of the northern Arabian peninsula, Palmyra in Syria, or the city states of Sogdiana along the central Asian route from China.¹⁰⁵ But once we focus more narrowly on the local histories of these cities, we find that they were more than posts on passage ways. They thrived on the money from passing trade, but their aristocracies profited above all from the access to established goods and symbols of social distinction. Some of these aristocracies rose to political and military power, and became vital for the spread of faiths in Asia after 400 CE.¹⁰⁶ So, neither did the trade of late antique Mecca provide an explanation for the rise of Islamic power, as is claimed in Islam religious historiography, and in numerous popular accounts.¹⁰⁷ The city did not lie on one of the major cross-roads of South- and East-Arabian trade which rather favored the sea routes. Meccan trade, as Crone has shown, was purely local and dominated by ordinary local products, rather than luxuries. The Arabian Peninsula remained socially and tribally fragmented, as it had always been in the last centuries. Mecca was not a center of pilgrimage and market exchange, and the alleged mercantile economy did not disrupt a united social order that had existed before. Arguably, the great attraction of Muhammad’s teaching resided in its combination of monotheism built on ancestral religious tradition, and a new form of tribal harmony, which had never existed before. Behind the meteoric rise of Muslim power towards a world empire may be discovered the well-known connection between state-formation and military expansion, now spurred by a religious mission.

Religion became an important factor for consumption, conquest and trade from the 5th century CE onwards. Liu in chapter 18 shows how silk decorations in the royal representation of the Byzantine emperors in Constantinople had an important impact on silk consumption from the time of Justinian I (emperor between 527-565 CE) onwards. In China silk came to be used by the court to endow Buddhist monasteries with silks in the hope for being reborn into a better life. After the increasing disintegration of the Roman Empire in the Mediterranean, and of China in Eastern Asia the geo-economic space of the Afro-Eurasian landmass was gradually

¹⁰² Casson (1989), 41.

¹⁰³ Casson (1989), 29-31.

¹⁰⁴ Below, vol. V, chapter 16.

¹⁰⁵ For Adulis, Bowersock (2013), for Petra and Palmyra, Young (2001), for Sogdiana Liu, below.

¹⁰⁶ Liu (below chapter 18); Curtin (1984); Young (2002); Bowersock (2013).

¹⁰⁷ For a comprehensive refutation of the dominant consensus and alternative suggestions, Crone (1987).

reordered.¹⁰⁸ China did not reunite before the Sui and Tang (589 CE onwards), while in Western Europe the centres of political and economic power shifted from the Mediterranean to the inner continent and the Baltic from the 6th century onwards. During the prosperous period of the Byzantine Empire (6th and 7th c. CE) the wine trade between Constantinople, Gaza and the Negev in inner Palestine flourished and most likely expanded, with a concomitant stimulus to ceramics production in harbor towns and production centers.¹⁰⁹ But alongside growing prosperity in the Byzantine Empire, there were also structural change. Both texts and archaeological remains of sunken ships point to merchant's effort to move away from state-regulated and highly taxed markets in the cities to more informal market places in smaller settlements and waterside landings, perhaps in response to the state's loosening grip on social and economic interaction.¹¹⁰ With the Muslim conquest of Syria in the early 7th century followed by Egypt, North Africa, Morocco, Spain as well as Sassanid Persia, the Arabs dominated the southern part of the Mediterranean and Asia as far as the Caucasus in the North and the Indus towards the east. This separated a Mediterranean unity which had been characteristic of Afro-Eurasian history since the Phoenician and Greek colonization period, and created a new economic space centered on the Islamic heartland, while India and China reemerged as its most important competitors.¹¹¹

Bibliography

Ahrensberg, C. M., H. Pearson, and K. Polany, (eds.), *Trade and Market in the Early Empires*, Glencoe, IL: Free Press, 1957.

Ameling, W. *Karthago. Studien zu Militär, Staat und Gesellschaft*. Munich: Beck Verlag, 1993.

Andreau, J., *Banking and Business in the Roman World*, Cambridge: Cambridge University Press, 1999.

Aubet, M. E., *The Phoenicians and the West: Politics, Colonies, and Trade*, Cambridge: Cambridge University Press, 1993.

Bang, P., 'Commanding and Consuming the World: Empire, Tribute, and Trade in Roman and Chinese History', in W. Scheidel, *Rome and China: Comparative Perspectives on Ancient World Empires*, Oxford: Oxford University Press, 2009.

-----, *The Roman Bazaar*, Cambridge: Cambridge University Press, 2008.

¹⁰⁸ See for greater detail part 3, vol. V in this series.

¹⁰⁹ McCormick, Movements and Markets in the first millennium: information , containers and shipwrecks. http://www.history.upenn.edu/economichistoryforum/docs/mccormick_09.pdf (accessed 21 March 2013); more generally on the Byzantine economy of the 6th century CE, Laiou & Morrison (2007).

¹¹⁰ Ibid.

¹¹¹ Curtin (1984); Smith (Volume V, chapter 16).

-----, 'Trade and Empire – in Search of Organizing Concepts for the Roman Economy', *Past and Present* 195 (2007), 3-54.

Bedford, P. R., 'The Persian Near East', in W. Scheidel, I. Morris, and R. Saller, (eds.), *The Cambridge Economic History of the Greco-Roman World*, Cambridge: Cambridge University Press, 2007, pp. 302-33.

Billows, R., 'Cities', in A. Erskine, (ed.), *A Companion to the Hellenistic World*, Oxford: Blackwell, 2006.

Bingen, J. 'Greek Economy and Egyptian Society in the 3rd Century BC' [1978], in id. *Hellenistic Egypt* (ed. R. Bagnall). Edinburgh, Edinburgh University Press 2007, pp. 215-228.

Bowersock, G. W., *The Throne of Adulis: The Red Sea Wars on the Eve of Islam*, Oxford: Oxford University Press, 2013.

Briant, P., *From Cyrus to Alexander: A History of the Persian Empire*, Winona Lake, IN: Eisenbrauns, 2002.

Burnett, A., *Coinage in the Roman World*, London: Seaby, 1987.

Cameron, R., and L. Neal, *A Concise Economic History of the World*, Oxford: Oxford University Press, 1986.

Cartledge, P., 'The economy (economies) of ancient Greece', in W. Scheidel and S. von Reden, *The Ancient Economy*, Edinburgh: Edinburgh University Press, 2002, pp. 11-32.

Casson, L., *The Periplus Maris Erythraei: Text with Introduction, Translation and Commentary*, Princeton, NJ: Princeton University Press, 1989.

Chase-Dunn, C., and T. D. Hall, *Rise and Demise: Comparing World Systems*, Bolder, CO: Westview, 1997.

Cohen, E. E., *Athenian Economy and Society: A Banking Perspective*, Princeton: Princeton University Press, 1992.

Crone, P., *Meccan Trade and the Rise of Islam*, Oxford: Basil Blackwell, 1987.

Curtin, P. D., *Cross Cultural Trade in World History*, Cambridge: Cambridge University Press, 1984.

Di Cosmo, N., *Ancient China and its Enemies: The Rise of Nomadic Power in East Asian History*, Cambridge: Cambridge University Press, 2002.

Ebrey, P., 'The Economic and Social History of Later Han', in M. Loewe and D. Twitchett, (eds.), *The Cambridge History of China*, Cambridge: Cambridge University Press, 1986, pp. 608-48.

- Edens, C., 'Dynamics of Trade in the Mesopotamian "World System"', *American Anthropologist* 94 (1992), 118-39.
- Eggertson, T., *Economic Behaviour and Institutions*, Cambridge: Cambridge University Press, 1990.
- Eich, A., *Die Politische Ökonomie des antiken Griechenland (6.-3. Jahrhundert v. Chr.)*, Köln: Böhlau, 1986.
- Eich, P., 'The Common Denominator: Late Roman Imperial Bureaucracy from a Comparative Viewpoint', in W. Scheidel, (Hg.), *State Power and Social Control in Ancient China and Rome*, Oxford 2015, pp. 90-149.
- Eyre, C., 'Feudal tenure and absentee landlords', in S. Allam, (ed.), *Grund und Boden in Altägypten. Akten des internationalen Symposiums in Tübingen 18-20. Juni 1990*, Tübingen: Selbstverlag, 1994, pp. 107-33.
- Fitzpatrick, M. P., 'Provincializing Rome: The Indian Ocean Trade Network and Roman Imperialism', *Journal of World History* 22 (2011), 27-54.
- Frier, B., and D. Kehoe, 'Law and Institutions', in W. Scheidel, I. Morris, and R. Saller, (eds.), *The Cambridge Economic History of the Greco-Roman World*, Cambridge: Cambridge University Press, 2007, pp. 113-43.
- Gallant, T., *Risk and Survival in Ancient Greece*, Stanford, CA: Stanford University Press, 1992.
- Geraghty, R. M., 'The Impact of Globalization in the Roman Empire, 200 BC –AD 100', *Journal of Economic History* 67 (2007), 1036-61.
- Goyal, S. R., *The Coinage of Ancient India*, Jodhpur: Kusumanjali Prakashan, 1995.
- Greene, K., *The Archaeology of the Roman Economy*, Berkeley: University of California Press, 1992.
- Gupta, P. L., and T. R. Hardacker, *Indian Silver and Punchmarked Coins*, Nashik: Indian Institute of Research in Numismatic Studies, 1985.
- Harris, W.V., 'The Late Republic', in W. Scheidel, I. Morris, and R. Saller, (eds.), *The Cambridge Economic History of the Greco-Roman World*, Cambridge: Cambridge University Press, 2007, pp. 511-42.
- , 'The Nature of Roman Money', in W.V. Harris, (ed.), *The Monetary Systems of the Greeks and Romans*, Oxford: Oxford University Press, 2008, pp. 174-207.
- Higham, C., *The Bronze Age of South-East China*, Cambridge: Cambridge University Press, 1996.
- Hodges, R., *Dark Age Economics: A New Audit*, Bristol: Bristol Classical Press, 2012.

- Hopkins, K., *Conquerors and Slaves*, Cambridge: Cambridge University Press, 1978.
- , 'Economic Growth and Towns in Classical Antiquity', in P. Abrams and E. A. Wrigley, (eds.), *Towns in Societies: essays in Economic History and Historical Sociology*, Cambridge: Cambridge University Press, 1978, pp. 35-77.
- , 'Taxes and Trade in the Roman Empire (200 BC – AD 400)', *Journal of Roman Studies* 70 (1980), 101-25.
- Horden, P., and N. Purcell, *The Corrupting Sea*, Oxford: Blackwell, 2000.
- Hughes, G. R., *Demotic Land Leases*, Chicago: The Oriental Institute, 1952.
- Jursa, M., *Aspects of the Economic History of Babylonia in the First Millennium: Economic Geography, Economic Mentalities, Agriculture, the Use of Money and the Problem of Economic Growth*, Münster: Ugarit Verlag, 2010.
- , 'Grundzüge der Wirtschaftsform Babyloniens im ersten Jahrtausend v. Chr.', in R. Rollinger and C. Ulf, (eds.), *Commerce and Monetary Systems in the Ancient World: Means of Transmission and Cultural Interaction*, Wiesbaden: Franz Steiner, 2004, pp. 115-36.
- Kehoe, D., 'The Early Roman Empire: Production', in W. Scheidel, I. Morris, and R. Saller, (eds.), *The Cambridge Economic History of the Greco-Roman World*, Cambridge: Cambridge University Press, 2007, pp. 543-69.
- , *Management and Investment on Estates in Roman Egypt during the Early Empire*, Bonn: Habelt, 1992.
- Kroll, J., 'The Monetary Use of Weighed Bullion in Archaic Greece', in W. V. Harris, (ed.), *The Monetary System of the Greeks and Romans*, Oxford: Oxford University Press, 2008, pp. 12-37.
- , 'Observations on Monetary Instruments in Pre-Coinage Greece', in M. S. Balmuth, (ed.), *hacksilver to Coinage: New Insights into the Monetary History of the Near East and Greece*, New York: American Numismatic Society, 2001, pp. 77-92.
- Kron G., 'Food production', in W. Scheidel, (ed.), *The Cambridge Companion to the Roman Economy*, Cambridge: Cambridge University Press, 2012, pp. 156-74.
- , 'Sustainable Roman Intensive Farming Methods: Water Conservation and Erosion Control', in R. Bedon and E. Hermon, (eds.), *Concepts, Pratiques et Enjeux Environnementaux dans l'Émpire Romai*, Limoges: Presses universitaires de Limoges, 2005, pp. 285-308.
- Kuhrt, A., and S. Sherwin-White, *From Samarkhand to Sardis: A New Approach to the Seleucid Empire*, Berkeley: University of California Press, 1993.

Lewis, M. E., *The Construction of Space in Early China*, New York: State University of New York Press, 2006.

-----, *The Early Chinese Empires: Qin and Han*, Cambridge: Cambridge University Press, 2007.

Liu, X., *Ancient India and Ancient China: Trade and Religious Exchanges AD 1- 600*, New Delhi: Vicas, 1988.

Lo Cascio, E., 'The Early Roman Empire: The State and the Economy', in W. Scheidel, I. Morris, and R. Saller, (eds.), *The Cambridge Economic History of the Greco-Roman World*, Cambridge: Cambridge University Press, 2007, pp. 619-50.

Manning, J. G., 'Irrigation et État en Égypte antique', *Annales Histoire, Science Sociales* 57 (2002), 611-23.

-----, *Land and Power in Ptolemaic Egypt: The Structure of Land Tenure*, Cambridge: Cambridge University Press, 2003.

-----, *The Last Pharaohs: Egypt under the Ptolemies 305-30*, Princeton, NJ: Princeton University Press, 2010.

Mattingly, D., 'Oil for Export? A Comparison of Libyan, Spanish, and Tunesian Olive Oil Production in the Roman Empire', *Journal of Roman Archaeology* 1 (1988), 33-56.

McCormick, M., *Origins of the European Economy: Communications and Commerce AD 300-900*, Cambridge: Cambridge University Press, 2001.

Millett, P. C., *Lending and Borrowing in Classical Athens*, Cambridge: Cambridge University Press, 1991.

Möller, A., *Naukratis: Trade in Archaic Greece*, Oxford: Oxford University Press, 2000.

Monson, A., *From the Ptolemies to the Romans: Political and Economic Change in Egypt*, Cambridge: Cambridge University Press, 2012.

Morley, N., *Trade in Classical Antiquity*, Cambridge: Cambridge University Press, 2007.

Müller-Wollermann, R., 'Funktionsträger von Geld im Alten Reich', in S. Schoske, (ed.), *Akten des 4. Internationalen Ägyptologenkongresses 1985*, Hamburg: Buske, 1989, pp. 160-6.

Osborne, R., *Classical Landscape with Figures: The Ancient Greek City and its Country Side*, London: George Philip, 1987.

Raschke, M. G., 'New Studies in Roman Commerce with the East', in Hildegard Temporini, (ed.), *Aufstieg und Niedergang der Römischen Welt*, München: Walter de Gruyter, 1978, vol. II, 9.2, pp. 604-1378.

Rathbone, D., 'The "Muziris" Papyrus (SB XVIII 13167): Financing Roman Trade with India', *Alexandrian Studies II in Honour of Mostafa el Abbadi, Bulletin du Archéologie d'Alexandrie* 46 (2001), 39-50.

-----, 'Villages, Land and Population in Graeco-Roman Egypt', *Proceedings of the Cambridge Philological Society* 36 (1990), 103-42.

-----, and P. Temin, 'Financial Intermediation in First-Century AD Rome and eighteenth century England', in V. Chankowski, K. Vandorpe, and K. Verboven, (eds.), *Bankers, Loans and Archives in the Ancient World*, Leuven: Peeters, 2008, pp. 371-420.

Renger, J., 'Institutional, Communal and Individual Ownership or Possession of Arable Land in Ancient Mesopotamia from the end of the fourth to the end of the first millennium BC', *Chicago-Kent Law Review* 71 (1995), 269-319.

Sadao, N., 'The Economic and Social History of Former Han', in M. Loewe and D. Twitchett, (eds.), *The Cambridge History of China*, Cambridge: Cambridge University Press, 1986, pp. 545-607.

Sarris, P., *Economy and Society in the Age of Justinian*, Cambridge: Cambridge University Press, 2006.

Scarre, C., (ed.), *Past Worlds: The Times Atlas of Archaeology*, London: Times Books, 1988.

Schaps, D. M., *The Invention of Coinage and the Monetization of Ancient Greece*, Ann Arbor: University of Michigan Press, 2004.

-----, 'The Invention of Coinage in Lydia, in India and in China', *Bulletin du Cercle d'Études Numismatiques* 44 (2007), 281-322.

Scheidel, W., 'The divergent evolution of coinage in eastern and western Eurasia', in W. V. Harris, (ed.), *The monetary systems of the Greeks and Romans*, Oxford: Oxford University Press, 2008, pp. 267-86

-----, 'From the Great Convergence to the Great Divergence: Roman and Qin-Han Stateformation and its Aftermath', in W. Scheidel, (ed.), *Rome and China: Comparative Perspectives on Ancient World Empires*, Oxford: Oxford University Press 2009, pp. 11-23.

-----, 'The Monetary Systems of the Han and Roman Empires', in W. Scheidel, (ed.), *Rome and China: Comparative Perspectives on Ancient World Empires*, Oxford: Oxford University Press, 2009, pp. 137-208.

-----, 'Slavery', in W. Scheidel, (ed.), *The Cambridge Companion to the Roman Economy*, Cambridge: Cambridge University Press, 2012, pp. 89-113.

-----, I. Morris and R. Saller, (eds.), *The Cambridge Economic History of the Greco-Roman World*, Cambridge: Cambridge University Press, 2007.

- Seaford, R., *Money and the Early Greek Mind*, Cambridge: Cambridge University Press, 2004
- Selbitchka, A., *Prestigegüter entlang der Seidenstraße? Archäologische Untersuchungen zu Chinas Beziehungen zu Kulturen des Tarimbeckens vom zweiten bis frühen fünften Jahrhundert nach Christus*, Wiesbaden: Harrassowitz, 2012, vol. 1.
- Sidebotham, S. E., *Berenike and the Ancient Mediterranean Spice Route*, Berkeley: University of California Press, 2011.
- Temin, P., *The Roman Market Economy*, Princeton, NJ: Princeton University Press, 2013.
- van Aalfen, P. G., 'Mechanisms for the Imitation of Athenian Coinage: Dekeleia and Mercenaries Reconsidered', *Review Belge de Numismatique et de Sigillographie* 157 (2011), 55-93.
- van der Spek, R. J., 'The Hellenistic Near East', in W. Scheidel, I. Morris, and R. Saller, (eds.), *The Cambridge Economic History of the Greco-Roman World*, Cambridge: Cambridge University Press, 2007, pp. 409-34.
- , 'The Seleucid State and the Economy', in E. Lo Cascio and D. Reathbone, (eds.), *Production and Public Powers in Classical Antiquity*, Cambridge: Cambridge Philological Society, 2000, pp. 27-36
- Vandorpe, K., 'Paying taxes to the *thesauroi* of the Pathyrites in a century of rebellion (186-88 BC)', in L. Mooren, (ed.), *Politics, Administration and Society in the Hellenistic and Roman Periods*, Leuven: Peeters, 2000, pp. 405-36.
- Veyne, P., 'Rome devant la prétendue fuite de l'or: merkantilisme ou politique disciplinaire?', *Annales E.S.C.* 34 (1979), 211-44.
- von Reden, S., 'Money and Finance', in W. Scheidel, (ed.), *The Cambridge Companion to the Roman Economy*, Cambridge: Cambridge University Press, 2012, pp. 266-87.
- , *Money in Classical Antiquity*, Cambridge: Cambridge University Press, 2010.
- , *Money in Ptolemaic Egypt: From the Macedonian Conquest to the End of the Third Century*, Cambridge: Cambridge University Press, 2007.
- Weber, G., 'Die neuen Zentralen, Hauptstädte, Paläste und Höfe', in G. Weber, (ed.), *Kulturgeschichte des Hellenismus*, Stuttgart: Klett-Cotta, 2007, pp. 99-117.
- Wells, P. S., *Beyond Celts, Germans and Scythians: Archaeology and Identity in Iron Age Europe*, London: Duckworth, 2001.
- Wickham, C., *Framing the Middle Ages*, Oxford: Oxford University Press, 2005.

-----, 'Rethinking the Structure of the Early Medieval Economy', in J. R. Davis and M. McCormick, (eds.), *The Long Morning of Medieval Europe*, Aldershot: Scholars Press, 2008, pp. 19-31.

Williams, J., *Money: A History*, London: The British Museum Press, 1997.

Wilson, R. J. A., *Sicily under the Roman Empire*, Warminster: Aries and Philipps, 1990.

Woolf, G., *Becoming Roman: The Origins of Provincial Organisation in Gaul*, Cambridge: Cambridge University Press, 1998.

-----, 'Rethinking the *oppida*', *Oxford Journal of Archaeology* 19 (1993), 223-34.

-----, 'World Systems Analysis and the Roman Empire', *Journal of Roman Archaeology* 3 (1990), 44-58.

Young, G. K., *Rome's Eastern Trade: International Commerce and Imperial Policy, 31 BC – AD 305*, London: Routledge, 2001.