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The Muziris Papyrus and the Eastern Maritime Trade in High Roman Empire Economy

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Abstract

It can be inferred from the Muziris Papyrus that the goods in Eastern maritime trade were not always luxuries. The practitioners, such as the debtors and the creditors, were quite rich. With the advent of *Pax Romana*, the increase of consumption, the boost of political electoral campaigns, and the prevalence of extravagant lifestyles, the Eastern maritime trade became more important in the Roman economy. Every year as much as 2 billion cargoes were shipped to Roman Empire and the imperial fiscal revenue benefited greatly. In short, the Eastern maritime trade in the early period of the Roman Empire was more complex and greater in scale than it used to be imagined.

Key Words: Eastern maritime trade; early empire economy; *Muziris Papyrus*

This paper concentrates on the operation and role of the Eastern maritime trade in the heyday of the economy of the Roman Empire. Since the eighteenth century, most scholars insisted that the exchanges between the Roman Empire and the Eastern World, which concerned mostly luxurious goods, played a marginal role in the Empire's economy, and the amount was limited.[1] However, during the last decade, with the rapid increase of new historical data (especially papyri, inscriptions, land and underwater archaeological materials) (Tomber 16-17, 39) and the employment of new approaches (the most influential of which is Purcell and Horden's micro-ecology), some of the stereotypes put forward by earlier scholars mainly based on literature from Western perspectives and focusing on goods, have been adjusted and corrected.[2] However, most of the conclusions are drawn mainly from descriptive materials. In this paper, based on the Muziris

[1] For a discussion of the academic history of this topic, see Federico De Romanis and Marco Maiuro, editors, *Across the Ocean: Nine Essays on Indo-Mediterranean Trade*, Brill, 2015, pp.1-5.

[2] The works on Indo-Roman maritime trade are plentiful. The followings are some of the much-quoted ones: V. Begley and R. De Puma, editors, *Rome and India: The Ancient Sea Trade,* U of Wisconsin P, 1991; Roberta Tomber, *Indo-Roman Trade: From Pots to Pepper*, Bristol Classical Press, 2008; G. Parker, *The Making of Roman India*, Cambridge UP, 2008; R. McLaughlin, *The Roman Empire and the Indian Ocean: The Ancient World Economy and the Kingdoms of Africa, Arabia and India,* Pen and Sword Military, 2014; and M.A. Cobb, *Rome and the Indian Ocean Trade from Augustus to the Early Third Century CE.*, Brill, 2018.

Papyrus in addition to other literary, epigraphic, archaeological evidence, I am trying to demonstrate two aspects in more detail with the help of approaches of quantification and comparison: firstly, to answer specific questions closely related to operation as the goods were brought in and out, the scale of trade, and ways of financing; secondly, to focus on the contributions of the Eastern maritime trade to the heyday of Empire economy.

The Muziris Papyrus

Before the Roman conquest of Egypt, maritime contacts existed to some extent between the Indian subcontinent and Egypt.[3] Nevertheless, even in the late Ptolemaic Dynasty, the contacts were still indirect and infrequent. With the 'discovery' of the Indian monsoon, the spread of Mediterranean ship building technology, the development of infrastructures such as the roads connecting the ports both on the Red Sea and the Nile, and the expansion of the consumer market of eastern goods, the period from Augustus up to the early 3rd century CE witnessed the boom of the Eastern maritime trade,[4] and two relatively fixed maritime routes came into being between the Indian subcontinent and the Mediterranean Basin by the beginning of the Christian era.[5] Since the era of Augustus, long distance maritime route played a greater role compared with the coastal shipping. But it is necessary to point out that although long distance maritime route had such advantages as greater speed, larger capacity and less political troubles, it could not take the place of overland or coastal trade completely. D. Rathbone estimated that the value of maritime trade across the Red Sea or that of the coastal trade passing Palmyra is roughly equal (47).

Maritime routes are just the starting point. We have to investigate their operation and impact with the help of literary works written by Strabo and Pliny and the archaeological materials unearthed in recent years. However, as is well known, although literary texts are indispensable, as far as ancient economic history is concerned, their reliability and representativeness are always much questioned; even the archaeological materials are influenced by their limits, bias and particularity.[6]

In recent years, papyrological evidence has attracted much attention. This is because what is recorded in the documentary papyri is more reliable than other literary sources. One virtue of the non-literary or documentary papyri is "their unconscious and ephemeral character." Without any purpose of personal reputation or to warn later generations, their reliability is greater than inscriptions

[3] See Schneider, "Fauces Rubri Maris" 206-11, Begley and De Puma, *Rome and India* 113-124; amphora, pp. 134-150; pottery, 157-196; bronze vessel, 82-112. For coins see W. Ball, *Rome in the East* 127.

[4] See Cobb, *Rome and the Indian Ocean Trade* 287-302 and Thorley, "The Development of Trade" 209-223.

[5] See Pollard, "The Mediterranean" 458. The two routes are called by Frank and Gills *nexus corridor* in the pre-modern world system. The other one is from the Aegean Sea and the Black Sea to Central Asia. See Frank and Gills, *The World System* 88-90.

[6] About the limitations of literary and archaeological materials, see Chen Siwei, "Trees and Forest" 191-194.

"which were designed for public view and for posterity, and whose candor is not always over suspicion;" moreover, papyri illustrated "the common life of the time, popular culture, religious ideas, habits and amusements, and they are to be seen following their ordinary daily pursuits, with a refreshing absence of pose and advertisement." It can be said that the materials in papyri are more representative than those "in the pages of the ancient historians, where the limelight is commonly focused upon outstanding personalities" (Hunt and Edgar, *Select Papyri,* x-xi). Roger Bagnall points out the importance papyri played in the research into ancient social and economic history. He tells us that

> within the world of the ancient Mediterranean, no society offers the array of evidences for the workings of cultural interaction in the lives of a wide spectrum of individuals that the Egypt of the papyri does; and to the extent that we come to be able to understand other parts of the ancient world as we can Egypt, it will be by discoveries of papyrus-like texts. (100)

He also points out that if we do "close analysis, the language [of papyri], information from other sources about the cultural context, and common-sense rejection of some possibilities on the basis of underlying assumptions about human behavior" is not far from the truth (28).

The papyrus discussed here was bought by the National Library of Austria in 1980. Because the recto recorded a transcript of a maritime loan between Muziris (the most important port in South India) and Alexandria, it is called Muziris Papyrus. The provenance of the papyrus is unknown, but as it was not cartonnage, most scholars infer it might come from a Fayyum village or from Oxyrhynchus. The two original ends of the papyrus were torn off in antiquity in order to use the blank ends remaining on the recto and verso for other texts; this left the central part with writing on both sides, which survived, because it was then thrown away (Rathbone, "The Muziris Papyrus" 39; Harrauer and Sijpesteijn, "Ein neues Dokument" 129). The origin and use of the papyrus verify the fact that to some extent the eastern trade was in the hands of individual traders.[7] Thus, we may safely conclude that the Muziris Papyrus was probably a normal typical loan contract in the 2nd century. Since its first translation and annotation by H. Harrauer and P.J. Sijpesteijn in 1985, the papyrus was much valued and became an indispensable document for research into the maritime trade between Egypt and India in the early Roman Empire.[8] Cascio lays special stress on the document: "The exceptional Muziris Papyrus is the indisputable cornerstone ... because it provides us with a seemingly

[7] Rostovtzeff, *Social and Economic History* 2: 576-577;Warmington, *Commerce* 310-311. Archaeological facts indicate that the infrastructures of the Red Sea ports were fairly simple and crude from the first century BCE to the third century CE. We can infer what the Empire cared for was not trade but transit taxes; the maritime trade was controlled by individual merchants (Tomber, *Indo-Roman Trade* 154.

[8] See Harrauer and Sijpesteijn, "Ein neues Dokument;" Casson, "P. Vindob G 40822" and "New Light;" G. Thür, "Zum Seedarlehen;" and Rathbone, "The Muziris Papyrus."

reliable assessment of the qualitative and, more importantly, quantitative dimension of the maritime trade that tied the Roman Empire to the Indian subcontinent"(Cascio 165)

The recto of the papyrus is about the operation of the maritime trad[9] Scholars dispute much about whether the recto is a normal maritime loan contract, a supplement to a separate contract, or a contract dealing with the loan pledge. Even the place where the papyrus was written is disputed.[10] But these disputes are not what the paper focuses on. Although the heading had been discarded, the operation and the routes of the maritime trade are quite clear. The debtor and merchant got quite a large amount of money from the creditor for the goods he would buy in India as pledge. When the monsoon blew southeastward, he shipped the goods to some port (maybe Myos Hormos) on Egyptian Red Sea coast. When reaching the port, with the help of the ἐπιτροπαῖ or φροντισταῖ of the creditor, the goods were carried across the eastern desert of Egypt by camels. After six or seven days of travel, they arrived at the port in Koptos, midstream on the Nile.[11] Then the ship sailed down to Alexandria and the goods were taxed one quarter in kind there. All the taxes, the freight of the camels and the ship were undertaken by the creditor. After arriving in Alexandria, the goods could be sold by the debtor, but he must pay off the loan and interest at the given time;[12] in order to assure a quicker return of the money, the debtor could resell the cargo "at the price current at the time" to the creditor. According to the routine of maritime loans, if the subject cargoes were completely or partially lost because of all the irresistible damages incurred from storms or pirates during the voyage, the liability of the debtor could be discharged (Chen Siwei, "An Attempted Analysis" 29).

The verso of the papyrus--parts of whose lines were the next to the column and the whole of what appeared to the final column of the cargoes carried by the ship *Hermapollon*—illustrate the scale of the maritime trade between Roman Egypt and India and indicate the role of eastern trade in the Roman social economy in some respects.[13] It is generally acknowledged (Rathbone, "The Muziris Papyrus" 43; Casson, "New Light"198) that there were four columns on the verso, recording the kinds, weight and value of the cargoes, but now only the last column was relatively intact (the next to the last was badly damaged, only some of the weight and value units were left[14]). Even so, the implication of the last column indicate that only very rich people in Egypt could invest such an enormous capital. Because all the goods had been taxed at the custom office in Alexandria (the rate

[9] For the translation of the recto, refer to D. Rathbone, "The Muziris Papyrus" 40.

[10] For further discussion, see Rathbone, "The Muziris Papyrus" 39-40.

[11] See Strabo, *Geographica*, 17. 815. If the goods were unloaded in Berenice, it would take 11 or 12 days according to Pliny, *Naturalis Historia,* 6.103.

[12] In the 4th century BCE, maritime loans must be paid off within 20 days after the goods reached their destination in Athens. But Rathbone assumed that the loan here was too great, it might have to be paid off within a year. See Rathbone, "The Muziris Papyrus" 42.

[13] For the translation of the verso, consult D. Rathbone, "The Muziris Papyrus" 43-45; L. Casson, "New Light"200-202.

[14] For the goods of the next to the last column. see L. Casson, "New Light" 197-198.

was 25% in kind), the amount listed on the verso was only three-fourth of the cargo shipped from India. There were 60 boxes of Gangetic nard (each box valued at 4500 dr.) worth 45 t. of silver; 78 talents of 54.75 mina ivory in good condition (each mina valued at 100 dr.) worth 76 t. 4500 dr. of silver;[15] 12 talents 27 mina fragment ivory (each mina valued at 75 dr.) worth 8 t. 5582.5 dr. of silver[16]; the total value of ivory worth 85 t. 5557.5 dr. of silver.[17] With four other items, the cargo that the merchant bought in India this time was only 7190 pounds (about 3.3 tons), but its total value was 1154 t. 2852 dr.! It is possible that because of taxation, the change of units of weight and currency, our calculations may have some errors. But the errors are still acceptable and do not affect our overall evaluation of the scale of the maritime trade and the economic status of the participants.

The point we should pay much attention to is that the value recorded in the papyrus had discounted the taxes. Before the taxes were paid, the cargoes in *Hermapollon* would rise to more than 9 million (9,215,803) dr. Furthermore, although the papyrus does not make clear whether it was the price paid by the merchant when buying the goods in India or the sale price in Alexandria, from the context the value might be the sale price in Alexandria. Then, what was the money he paid for the merchandise in India? Pliny the Elder recorded the sale prices of some eastern goods in Rome, and alleged that the merchants sold these goods to Romans for more than 100 times of their original value (Pliny, *Naturalis Historia,* 12.14, 28; 6.101) but his record expresses a moral tendency and is little help for the discovery of the cost prices of the goods in the merchant ship. As the common view[18] assumes that the goods in *Hermapollon* were mainly pepper produced in the area around Muziris, Braudel's calculation of the profit rate of pepper in the late Medieval period may have certain reference. He estimates that 1 kg pepper (because of different species and quality) valued about 1-2 g of silver in India, when shipped to Alexandria, was worth about 10-14 g of silver; to Venice, about 14-18 g; to the area on North Sea, about 20-30 g (Braudel, *Wheel* 405). In other words, when the pepper from Muziris was shipped to Alexandria, it could be sold 5-14 times of its original value. To make it simpler, the average profit rate is set here as 9. If it was so, the merchant had to pay about 1 million dr. for the cargoes (mainly pepper) in Muziris.

Operation of Eastern Maritime Trade

Besides the routes, the kinds of goods, the financing of the maritime trade, the scale and level, and the economic status of the participants are the issues we

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[15] Talent, mina and drachma were used by the people around the Eastern Mediterranean both as weight and monetary value. To distinguish these, the complete word refers to weight, and abbreviations such as t. and dr. refer to monetary value. Moreover, because of the taxation and transition of unit of weight, the calculation becomes very complex. In Casson's paper the value is 76 t. 5675 dr. but in the version Rathbone copied for me 78 t. 5245 dr.

[16] Casson thinks this was textile given no definite amount, but his explanation seems vague. See Casson, "New Light" 201. I prefer Rathbone's interpretation at Rathbone, "The Muziris Papyrus," 44.

[17] On the paper copied for me Rathbone's newly calculation is 85 t. 5157.5 dr.

[18] See De Romanis, "Comparative Perspectives" 135-139; Morelli, "Dal Mar Rosso" 199-234

should deal with further. What the Muziris Papyrus records is of some significance for us to make clear in this regard.

Items of Goods

The goods of maritime trade between India and Egypt attracted much attention from the very early time on. Most of the scholars insisted that because the eastern goods were mainly luxuries to satisfy the conspicuous consumption of the elites, the consumers were strictly confined as elites and, hence, limited. Thus, they supposed that the eastern trade was of little importance for the economy of the Roman Empire. It is hard for most of the researchers of ancient Greco-Roman economic history to imagine that the scale of luxurious goods would surpass that of the trade of essential items such as corn, oil and wine, which were the staples in the Mediterranean trade. "To emphasize the trade in these commodities (eastern goods), at the expense of staples, is to give ancient trade a modern aspect" (Parker, *Making* 185).

The items which can be found on the verso include ivory, Gangetic nard and the unknown σχίδαι. Lionel Casson attempted to prove the other three items in the final column are valuable textiles from India and China (201). De Romanis and Morelli inferred the three should be pepper, turtle and cinnamon according to the *Periplus Maris Erythraei* and products cultivated in the area of Muziris.[19] However, given the different calculations of the price of pepper (Morelli 24 dr. per mina, de Romanis 4 dr. per mina), there is vast divergence about the weight of the pepper. Morelli thinks the volume of pepper in the ship was less than 140 tons, while de Romanis calculates 544 tons.

Some literary and archaeological materials make it possible for us to know more about the eastern items during the period of high Roman Empire. In the last quarter of the second century CE, the Roman jurist Aelius Marcianus compiled a legal document containing 54 'articles subject to duty' upon their entry into Alexandria:

> Cinnamon, long pepper, white pepper, folium pentasphaerum, barbary leaf, putchuk, spikenard, Turian cassia, cassia bark, myrrh, amomum, ginger, cinnamon, cinnamon leaf, aroma Indicum, galbanum, asafetida, aloe-wood, barberry, astragalus, Arabian onyx, cardamom, cinnamon bark, fine linen, Babylonian furs, Parthian furs, ivory, Indian iron, raw cotton, lapis universus, pearls, sardonyx, bloodstones, hyacinthus, emeralds, diamonds, lapis lazuli, turquoise, beryls, tortoise-stone, Indian or Assyrian drugs, raw

[19] See De Romanis, "Comparative" 135-139; Morelli, "Dal Mar Rosso" 199-234.

> silk, garments made completely or partly from silk, painted hangings, fine linen fabrics, silk yarn, Indian eunuchs, lions and lionesses, leopards, panthers, purple cloth, cloth woven from sheep's wool, orchil, Indian hair. (Justinian, *Digesta,* 39. 4. 16. 7)

The passage was included in Emperor Justinian's *Digest* issued in 533 CE, thus this important document about ancient maritime trade between the East and the West was preserved up to now. Though some of the items in the so-called '*Directory of Alexandrian Tariff*' were from the Eastern Mediterranean, the Nile valley and Arabian Peninsula, most of them came from Asia, including spices, gems, textile, servants from India and raw silk, silk manufactures and silk yarn from China. Other literary and archaeological materials indicate that the goods from Egypt to India were mainly gold or silver coins, wines, glass, animal, slaves and handworks.[20]

When talking about the trade items in classical times, scholars are always ready to divide them into luxuries and daily necessities, and they try to judge the nature of classical economy based on this division. Recently, L. Foxhall seeks to amend this dichotomy. She proposes that besides the dichotomous labels between luxuries and necessities, many items are semi-luxurious and are helpful for the improvement of living standards (240). Obviously, rice and rough cotton in the '*Directory of Alexandrian Tariff'* and *The Periplus Maris Erythraei* were imported mainly as daily necessities; net, broomcorn, Job's tears, bamboos, teaks, beads and other oriental trinkets unearthed from Berenice are things of little value, and they should be necessities. Spices, oversea manual products and gems could be used by some as semi-luxuries to improve the living quality and for others as ordinary things; frankincense and other agricultural products were necessary religious and pharmaceutical substances.[21] They could be never equal to luxurious items corrupting the citizens but were necessities for everyday life. For example, the price of black pepper was as high as 4 dinarii per pound in Rome, but for the populace it was never beyond reach, because they would not always buy it in pounds but in grams. *Tabulae Vindolandenses* shows that even in the remote frontier the lowest in social scale could buy some pepper for daily use (Bowman and Thomas, *Vindolanda* 135-141).

To sum up, the records indicated in the *Muziris Papyrus* and the literary and archaeological material show that luxurious goods were not exclusively all the things transported from the East. Everyday necessities, religious or pharmaceutical items, and semi-luxuries for the sake of improving the living standard occupied a higher proportion. The consumers of the cheaper goods were more, and the amount of their sale was higher than luxuries. The above discussion

[20] See Sidebotham, *Red Land* 179-180. For a more detail description of imports and exports, see Cobb, *Rome* 180-271.

[21] See Sidebotham, *Berenike* 249-251 and Young, *Rome* 13-16.

indicates that the view that eastern items are luxuries and that the trade is of no significance might not be correct.

The Financing of the Maritime Trade

Generally speaking, just like other periods of time from the fifth century BCE to the eighteenth century CE, in the eastern Mediterranean, the traders in the Roman Empire used maritime loans to finance the trade between India and Egypt. The reason is that the traders were often not only lacking ready cash and looking for ways to reduce risks, but also were in search of the scale effect to make more profit (Chen Siwei, "Some Problems" 47). Just like the Gangetic nard and ivory recorded in the Muziris Papyrus, the traders provided the goods they bought or their ships as the pledges for the loans. As a generally accepted rule, if the subject materials of the loan were lost during the course of the shipping because of unwarranted reasons, the debtor might be exempted of the obligation to repay the loan, and all the losses were assumed by the creditor. The rate of the loan, though not explicitly written down in the Papyrus, must be quite high as the creditor made every possible effort to monitor it. We may conclude that the maritime loan in the Muziris Papyrus was ordinary in classical Eastern Mediterranean world. However, compared with the maritime trade and maritime loans in Athens in the fourth century BCE, the one recorded in the Papyrus had some different characteristics: both the creditors and the debtors applied more specific measures to mitigate risks and to pursue the maximum profit.

Firstly, the capital of the creditor was more abundant, and the management was more rational. In maritime loans in fourth-century Athens, there were always more than two creditors, and sometimes they invested with the help of the banks as their agents.[22] This investment model implied that the capital of every single creditor in the fourth century BCE might be smaller and that the creditor was more apt to investment with less concern. As far as the maritime loan in Muziris Papyrus is concerned, the financier was extremely wealthy, which will be discussed in the following section. He could not only contribute the loans for a long period of time, but had ἐπιτροπαῖ or φροντισταῖ[23] who watched and supervised every loan for him (recto ll. 1, 5, 15, 24). Inferred from the Papyrus, it is clear that the financier had agents in Alexandria, Koptos, Muziris and the Red Sea port. Furthermore, he had his own camel caravans used to carry goods from the Red Sea port to Koptos (recto ll. 2-4), by which he might keep the pledge across the desert safely against fraud of the debtor during the travel. From all these we may

[22] Chen Siwei, "Private Banks in Athens and the Financing of the Maritime Trade in Classical Antiquity", *World History*, 2015 (4), pp. 114-125.

[23] About the two terms, see *A Greek-English Lexicon*, pp. 641, 1957. Rathbone thinks they were often used of managers on large private estates ("Muziris" 42).

safely infer that the participants were unlikely citizens from the lower classes or aliens whom scholars such as M. I. Finley stressed; the following analysis indicates that they were probably the wealthiest inhabitants on the top of the social pyramid.

Secondly, the interests of the debtor were carefully protected. Just as for the loan contracts in other ancient societies, the maritime loan contracts in Athens in the fourth century BCE showed more concern for the creditor's interests in every respect. For example, if there was a violation of what the contract regulated, the debtor would not only be divested of the right of the goods, but other property of his might be taken away by the creditor; moreover, if the merchant could not sail to the stated port within the agreed time, the financer might raise the interest rate (Demosthenes 10-13). Quite different from other agreements, the one kept in the Muziris Papyrus talked much about the debtor's interest. On the one hand, though registering the goods in the financier's name (recto ll. 10-14) prevented the debtor from stealing them, this also meant that the creditor could not take the goods away and had to be liable for the unpaid quarter-tax. In other words, the debtor acquired some economic profits. On the other hand, if the debtor failed to repay the loan on time, the procedure of seizure could protect both sides. If the cargoes were of little value, the financier could deduct the interest due first (recto ll. 22-23), then demand the debtor of all the arrearage, because suing for unpaid interest was harder. However, if it was of higher value, the financier could "buy them for himself at the price current at the time" (recto ll.21-22), and then had to hand over the surplus to the merchant after deduction of the interest and the capital (recto ll. 25-26). There is no doubt that the resale of the goods could profit the creditor a lot, but from the debtor's point of view, as long as he could ship enough cargoes safely to Alexandria, he would surely make a considerable profit without the worry of the sale and the market. For this reason, Rathbone assumes that in consideration of the profit, the turnover of capital, the high value of cargoes and the marketing difficulties, most of the merchants would sell most or all of the shipment to the financier at a mutually agreed price as soon as they arrived (42). This might be the normal practice!

Thirdly, although the terms of the contract were almost the same as those of classical Athens, the actual operation varied greatly. In a maritime loan in fourth-century BCE Athens, if a merchant had the plan for oversea trade, he had to seek the capital himself in most cases.[24] But in Egypt in the second century CE, it was the creditor with the willingness of investment who employed the merchant as his debtor. As for the above mentioned Muziris Papyrus, the creditor had to invest parts of the capital needed for the trade; furthermore, he might arrange the route, send his ἐπιτροπαῖ or φροντισταῖ to watch (recto ll. 1, 5, 15, 24) and help to avoid or lower the possible risks. There was no doubt that the creditor had more than enough money to handle the maritime trade, but he lent it to a merchant. The reason for what he did was economic rationality. On the one hand, during the high

[24] For a most detailed loan, refer to Demosthenes, *Against Lacritus*, 1-2.

sea voyage, the merchant might encounter storms, pirates, even death; moreover, even as a debtor, he had to provide half of the money. In other words, the merchant assumed parts of the risks and capital. On the other hand, if the money was entrusted to professional merchants, the creditor could guarantee the expertise needed for the purchasing of the goods and during the course of shipping and transport. With more effective management conducted by the professional merchant, his profit was greater. If operated by the creditor or his agents, the maritime trade would be of lower efficiency. Compared with the creditor's servants, the professional merchants were more familiar with the rules of maritime trade; they knew well the Indian markets and where to get the items the "Romans" favored; and they could make contact with the Indians with high proficiency.[25] Most important of all, driven by the risks and profits of the loans, the merchants would have devoted all their time and energy to the maritime trade. We cannot imagine that the ἐπιτροπαῖ or φροντισταῖ affiliated with the creditor had the same expertise and zeal as the professional merchants did.

An overall consideration of the terms in the Muziris Papyrus demonstrate that the maritime trade financing in the high Roman Empire was much developed. The creditor would send his servants for help and supervision; he would pay the tolls that should have been assumed by the traders; he would even promise to buy all or part of the goods if the trader could not sell them. The reason why the creditors voluntarily found professional traders and lent them money was to seek for lower risks and higher profits. An economic rationality advocated by classical economics was expressed somewhat fully in the course of the maritime trade and financing mentioned above.

Economic Status of the Participants

The prevalent view insists that most of the practitioners of ancient trade were at the bottom of society. For example, A. H. M. Jones thinks that the merchants were "precarious poor men who at the most owned a ship and all the capital needed depended on maritime loans" (Jones 138, note 46). Based on Roman social stratification, M. I. Finley further analyzes the underlying causes why the well-off kept themselves away from maritime trade and maritime loans. As far as Finley is concerned, the occupation of the people invariably matched with their social standing (especially citizenship); agriculture, political life and war were proper occupations of a citizen in the ancient world; trade was much looked down upon and did not match well with one's position in society. Generally speaking, citizens would seldom engage in businesses such as lending, leasing, or trading to exploit the other citizens. According to Finley, "Not a single prominent equestrian can be identified who was primarily a merchant or any equites who were themselves active in the grain trade or engaged personally in sea-borne commerce – let alone senators" (58). He further states "The evidence shows with sufficient certainty that a very large part of that activity was in the hands either of men of low status

[25] Some merchants and their servants lived quite long time in the merchant diasporas around the Indian Ocean. See Cobb 155-170.

or of men like the wealthy metics of Athens" (60).

However, to a great extent, what is recorded in the Muziris Papyrus and the *Periplus Maris Erythraei* provides a different picture and might be useful to reappraise the comments of Finley and Jones.[26] In the early Roman Empire, 1154 t. 2852 dr. was approximately 7 million sesterces (before taxes more than 9 million).[27] What did 9 million or 7 million sesterces mean? Nowadays, the wage or the amount of corn to buy are used to evaluate the purchasing power of ancient coins.[28] In the High Roman Empire, the stonecutters working in the quarry in Mons Claudianus in the eastern desert could get 47 dr. every month; in the second half of the second century CE, a solider in Roman Egypt could earn about 100 dr. monthly (Sidelbotham et al. 201, 188). If so, the value of the cargo in the Muziris Papyrus equated 40 thousand years of working without rest of a skilled stonecutter or one month pay of 70 thousand soldiers! At that time, the average price of wheat in Egypt was 9 dr. every artaba (Rathbone "Earnings" 304); then the goods were equal to 769,650 artabae wheat, or about 23,200 tons.[29] According to wheat yield in Egypt at that time, more than 200 km^2 fertile farmlands, which occupied 1% of Egyptian arable land, would have been needed (Rathbone, "Roman Egypt" 711). Figures cannot reveal everything, but the fact is more than clear, that the investors and merchants practicing the Egypt-India maritime trade were unlikely to be "precarious poor men" at the bottom of the society.

However, the fact often ignored is that 7 million was not the purchase price in India but the sale price in Alexandria. If Braudel's estimation is used here, the merchants, according to the rules of maritime loans, might have to pay at least half of the money (that is 1 million sesterces) when they bought these goods. If this is the case, due to the singular form used in the Muziris Papyrus to refer the debtor and creditor, the economic status of the investors and merchants can be demonstrated more objectively.

Colin Adams implies that the annual living cost of an Egyptian farmer was about 150 dr. in the second century CE (187); Raymond Goldsmith's research shows that in the early Empire, property per capita was about 400 sesterces. At that time, the gap between the rich and the poor was great: 600 senatorial families, with average property of 2,500,000 sesterces, had 0.004% of the national population, but aggregated 0.6% of the total fortune; equites, average property 500,000 sesterces, had 0.3% of the population, but occupied 6% of the wealth; the 3% richest inhabitants, average property 12,000 sesterces, possessed 20-25% of the national wealth (274, 277-278).

As a reference, if the investor recorded in the Muziris Papyrus was indeed a

[26] At one time, the advantage of papyri in the research of ancient history was neglected by some scholars. They thought that Egypt was a distinctive world and its economy was beyond their realm. For example, see M. I. Finley, *The Ancient Economy* 28. Recently, this viewpoint has been sharply criticized. See Bagnall 13-14; Rathbone, "Ancient Economy" 157-158.

[27] More exactly it was 692,6852 sesterces; Rathbone, "Muziris" 48.

[28] For example, Scheidel, "Real Wages" 437-442; Rathbone, "Earnings" 307-317.

[29] One artaba was roughly 1.3 mdeimnos. See *A Greek-English Lexicon*, p.248.

Roman citizen living in Egypt, as some scholars assume;[30] he must have been rich enough to be bracketed with other rich equites. It must not be ignored that according to the conventions of maritime loans in the ancient Mediterranean, the investor could only offer half the money needed at the most, and the rest should be raised by the merchant himself (Demosthenes, *Against Phormio,* 6-7, 40; 35. 18). If the norm was still effective when the debtor in the Muziris Papyrus got the loan, he should have had at least the same amount of money which he borrowed. Moreover, he had to pay the freight and the salary of the sailors, which was about 1% of the value of the cargo(Sidelbotham et al.187). Only the freight and the salary were nearly 10,000 sesterces, which was approximately what 3% of the richest citizens might possess. In other words, the merchant occupied in the maritime trade was probably not a "precarious poor" man but an eminent figure with a solid economic foundation. Even the ship owner who freighted the cargo was never a "precarious poor" man. Lionel Casson's research shows the capacity of the ships between Egypt and India was generally no less than 500 tons (*Ships* 183-190). If such was the case, the merchant ship *Hermapollon* with a full load could carry goods for 150 merchants; if other merchants paid 1% of the value for the freight and the salary of the sailors as Sidebotham insists, only with this single voyage, the income of the ship owner could amount to over 10,000,000 sesterces; the ship owner and his sailors could acquire a handsomely large amount of money after the voyage.[31] Accordingly, Sidebotham insists that the ship owner and the sailors got the lion part of the profit because they assumed most of the risks (Sidebotham, *Berenike* 249).

It should be pointed out that, besides the maritime trade to India, the Alexandrian merchants had contacts with Adulis and Ptolemais Theron on Red Sea, Zaila, Berbera, Heis, Ras Hafun, Rhpta in Eastern Africa and the ports on Persian Gulf. These areas were important supplying places for myrrh, incense and pearls. But quite different from the maritime trade to and from India, the above trades were mainly coastal sailing without many stormy waves, and the merchants could have the chances to purchase and sell the goods during the travelling. Thus, the merchants sailing on the Red Sea, eastern Africa and Arabian Peninsula might own or loan much less money. Because their ships were smaller and their cargoes were less in value, the merchants and their sailors might earn less (Casson, "Rome's Trade"35.

[30] The merchants participating the eastern trade, besides Italians, included Graeco-Egyptians, Jewish Egyptians, and people from the Eastern Mediterranean and Levant. Some scholars insist that Italian merchants and financiers (including the families Caii Norbani, Peticii, Auli Gabinii, Calpurnii, Anni, and Vestorii) played a prominent role in the conduct and expansion of Roman trade in the Indian Ocean. See Schörle 49. For more detailed information about the families engaged in trade in the Indian Ocean, see Cobb 73-77. Furthermore, after Augustus, especially during the reign of Claudius (Suetonius, *Divus Claudius*, 19, 25.3, 42), citizenship was granted widely in the east part of the Empire. Epigraphical evidence suggests more and more Greek speaking merchants or agents received Roman citizenship. See Cobb 71-73.

[31] In a Roman merchant ship, the personal allocation included a magister navis,, a gubernator, a proreus, a toicharchos, a perineos, some assistants besides the nauchlerus. There were some aurigae, faber, nauphylakes, boatmen on board of a large seagoing vessel. See Casson, *Ships* 314-320.

It is generally believed, however, that the majority of the rich in the ancient world were "were quite ready to give up the efforts to make money", and they "resemble more closely the class of people called rentiers, content to draw an income from their assets, with the proviso that these were such as to guarantee (or at least not compromise) social respectability, while maintaining an appropriate lifestyle" (Millett 171). But the above analysis indicates that the practitioners during the High Roman Empire never kept themselves away from maritime trade and maritime loans just because these were degrading occupations. On the contrary, maritime trade and maritime loans were probably short-cuts to accumulate wealth.[32] During the course of maritime ventures, the rich seemed never to be "quite ready to give up the effort to make money as soon as they could afford a comfortable rentier existence" (Humphreys 153). The purpose of the people who invested or carried out the maritime trade was nothing more than the increase of their wealth by which they could maintain a luxurious life consistent with their social status.

Eastern Maritime Trade and High Roman Empire Economy

Ever since Warmington's *The Commerce between the Roman Empire and India*, the debate on the position of the Eastern trade in the ancient economy has lasted about 100 years. The orthodoxy following A. M. H. Jones and M. I. Finley insisted that "the ancient economy was primarily agricultural", "trade and manufacture played a very minor part in the economy of the Roman Empire" (Hopkins xi-xii). For them, the first reason is the similarity of the climate and the products in different regions on the Mediterranean basin; the second is the poverty of the city inhabitants and peasants. P. Cartledge even assumes that in the ancient economy more than 98% of the industry was agriculture to sustain self-sufficiency, and non-agriculture work including trade and manufacture was less than 2% (Cartledge 6). But the above discussion on the Muziris Papyrus presents a different picture.

Scale and Percentage

We have to admit that the cargo recorded in the Muziris Papyrus is a great part of the little evidence we have about the maritime trade in the Early Roman Empire, and it does not exclude the possibility that it was an unusual case. Sidebotham (*Roman Economic* 46) warned us not to expect too much to estimate the reasonable scale of the oriental trade, and his warning is still worthy of our attention. But facing such detailed empirical material, historians will continue to flutter fatally around these figures, like moths drawn to a candle, to reach an educated guess (Rathbone, "Muziris" 46). However, if the ship *Hermapollon* was not a particular but a typical case,[33] we can judge the scale of the maritime trade, and have a

[32] The Italian Peticius family and the Annii family of Puteoli took part in the eastern trade directly. See Tomber, 152. For more evidence, see J.H.D'Arms, late Republic 39-47; early Empire 152-153. See also Pleket 130-144, esp. 137.

[33] As is discussed on p.3 of this article.

glimpse of the status of the eastern trade in the Roman social economic structure.

As to the scale of the trade, two data references given by Pliny the Elder[34] are much quoted:

> And it will not be amiss to set out the whole of the voyage from Egypt, now that reliable knowledge of it is for the first time accessible. It is an important subject, in view of the fact that in no year does India absorb less than fifty million sesterces of our empire's wealth, sending back merchandise to be sold with us at a hundred times its prime cost.
>
> But the title 'happy' belongs still more to the Arabian Sea, for from it come the pearls which that country sends us. And by the lowest reckoning India, China and the Arabian peninsula take from our empire 100 million sesterces every year – that is the sum which our luxuries and our women cost us; for what fraction of these imports, I ask you, now goes to the gods or to the powers of the lower world?

But many scholars suspect this data, and criticize it as the result of Pliny's exaggeration for the purpose of moral admonition. M. I. Finley pointed out, "The famous passages in the elder Pliny, giving dubious figures of the drain of Roman gold and silver to India and other eastern countries in payment for luxuries, are moral in their implication" (Finley 132).[35]

Nevertheless, it is unfair to regard Pliny's data just as useless. At least, he definitely emphasized the quoted data was not his subjective fabrication but "reliable knowledge." On the one hand, although not so many Roman silver or gold coins have been found in subcontinental archaeology, we cannot deny the fact that Roman coins flowed to India in large quantity. The archaeological materials from the twentieth century demonstrate that considerable Roman coins of different ages were buried under the earth of India, especially in south part of the subcontinent.[36] On the other hand, as some scholars stress, Roman coins might be melted down and re-minted as Kushan coins in the more economically developed northern area (Liu 146; Parker 185). Surely there are still more coins buried there waiting to be discovered. From the aspect of literary documents, Roman coins were beyond doubt one of the most important items for Egyptian merchants to exchange with for those from the subcontinent. The *Periplus Maris Erythraei* reports that at Barygaza in Gujarat, "Roman money, gold and silver, commands an exchange at some profit against the local currency" (49); at Bakare in the south there was a distribution center for pepper and cinnamon, but even there "they offer a market for mainly a great amount of money" (56). What we cannot neglect is that all kinds of glassware, wine, garum, oil, pottery and metal

[34] Pliny, *Naturalis Historia*, 6.101; 12.84. This is the Loeb version of H. Rackham's translation.
[35] Cf. Sidebotham, *Roman Economic* 36-39.
[36] Turner, in *Roman Coins from India*, found more than 6000 Roman silver coins and 300 gold coins from the first to the third century at about 75 archaeological sites. In recent years, the number increases greatly. See Tomber 31.

vessels produced in the Mediterranean basin have been discovered in the subcontinent; besides the above extant materials, the *Periplus Maris Erythraei* states that there was great need for Roman clothing, colorful textiles, chemical substances such as realgar, coral, and corn; Roman merchants brought frankincense, ivory, and wine to be bartered in India; moreover, many Indian potteries have been discovered at the Red Sea ports, which indicates that the participating merchants might barter their cargoes without using money as the intermediate.[37] So the volume of coins discovered cannot reveal entirely the scale of the maritime trade. In short, all the evidence implies that the scale of maritime trade between Roman Egypt and the subcontinent might have been much greater than what some scholars thought.

What the Muziris Papyrus records can also be of some help for us to deduce the scale of the maritime trade between India and Egypt in the High Roman Empire. Strabo tells us that by the beginning of the Christian era, ships departing from Myos Hormos on the Red Sea to India rose to as many as 120 annually (Strabo 2.5.12; 17.1.13).[38] By the end of the second century CE, besides Myos Hormos and Berenice, Nechesia, Clysma, Cleopatis and other ports played a certain role in the maritime trade between Egypt and India.[39] Even calculating the number most conservatively,[40] we may conclude that the merchant ships that sailed back safely would never be less than 100 annually; and if we accept De Romanis computation, we can assume that the average cargo was over 500 tons, and the value of every cargo was about 9 million sesterces as recorded in Muziris Papyrus (134-139), the annual total value of eastern goods would reach no less than 1 billion in Rome if Braudel's conclusion has some reference value (405). In short, the elder Pliny's estimate of 50 million sesterces is much less, and even his estimate of 100 million of all the cargoes from China, India and Arabia is far from enough.

Undoubtedly, without considering moral admonition and just investigating from the aspect of quantity, we can find the data given by Pliny the Elder should be liable to raise some suspicions. Firstly, he does not explain the source of the data, which he might have borrowed from his predecessors, or even from gossip or rumors. Secondly, as is stated above, some of the eastern goods sold in Rome were carried by way of the Persian Gulf, Palmyra, and the Levant. The value of these goods, according to Rathbone, might be equal to those brought via the Red Sea (Muziris 47). Thirdly, there were other consumer-metropoleis such as Alexandria,

[37] For archaeological materials see Begley and Puma V. Begley and R. Puma 46-81; 134-150; 157-196; bronze vessels 82-112；glassware 113-124；wine 151-156; 204-215。For other items, see *Periplus*. 27, 39, 49, 56-57; for barter exchanges, see Casson, *Periplus* 29-31.

[38] Another datum given by the same Strabo should be considered here. He said that "a tribute of 2500 t. was paid annually to Auletes, the father of Cleopatra." "If, then, the man who administered the kingdom in the worst and most careless way obtained so large a revenue, what should one think of the present revenues, which are managed with so diligence, and when the commerce with the Indians and the Troglodytes has been increased to so great an extent?"

[39] See Sidebotham, "*Roman Economic"* map. 1; *Red Land* 157-168.

[40] Archaeological research indicates that the golden age of the maritime trade between Egypt and India was Strabo's age but from the middle of the first century to the beginning of second century. See Sidebotham, *Red Land* 179.

Antioch, and Carthage in the Empire besides the city of Rome, each of which had its own great demands for eastern goods. And last but not least, Pliny does not make clear whether 50 million was the cost the merchants paid in India or the sale price in Rome. Furthermore, in his narration, Pliny uses such words as *exhaurient* and *adimõ*,[41] and he stresses the merchants "sending back merchandise to be sold with us at a hundred time its prime cost." From this it could be concluded that 50 million may not be the sale price in Rome but the money paid in India, or his emphasis on the profit would be meaningless. This conclusion may be extended to the 100 million absorbed by India, China and Arabia. If that is the case, according to Braudel's rate of profit, in the middle of the 1st century CE, the Roman Empire had to pay more than 900 million sesterces for the eastern goods, half of which would be shipped from the Indian subcontinent. Considering all the above, I assume that the data given by Pliny might be his rough estimate to the eastern goods consumed in the city of Rome in the middle of the 1st century CE. By the middle of the 2nd century CE, when the Muziris Papyrus was written, the Empire was ruled by the prosperous Antonine Dynasty. At that time, because of the social stability and the affluent life, the Romans had still greater demands for goods from the East.[42] Thus, there was a deep gap between the value of eastern goods consumed by the Roman Empire in the mid-2nd century and 100 million sesterces given by Pliny in the mid-1st century. If what the ship *Hermapollon* carried was typical in the mid-2nd century maritime trade between Egypt and the East, it may safely be concluded that Eastern trade via the Red Sea, which took a proportion of more than 5% of its GDP,[43] carried weight in the Roman social economy.

Was it necessary for Rome to import such great an amount? For people in our modern society, they might think that the Romans living about 2000 years ago could hardly consume eastern goods worth hundreds, or even thousands, of sesterces. However, if we think more over the reality of Roman society at that time, we may give a different response. Firstly, from the Late Republic, the city of Rome had been the greatest consumer city in the Mediterranean Basin. With the expansion of the Empire, most of the treasures and wealth was concentrated in the city, and most of the richest and most eminent ruling class lived in the city. By the beginning of the Christian era, the population of the city was over 800,000 (Scheidel, "Creating" 6). Its consumption surpassed that of any other city in the Mediterranean Basin. With *Pax Augusta* and the augmentation of wealth, luxurious items such as diamonds, gems, turtles, corals, perfume, balsam, and expensive fine textiles were not the privilege of the rich anymore; these items could be bought more often by Romans with moderate means or occasionally by the people living in countryside (Young 200-201). Moreover, with the increase of population and the frequent religious activities, the demands for such items as frankincense, myrrh, pepper, cinnamon, cassia, and nard, which used to be thought

[41] About these two words, see *Oxford Latin Dictionary* 641, 43.
[42] See Edwards, *Politics* 186-187 and Sidebotham, *Roman Economic* 39-40.
[43] Goldsmith thinks that, in the early Roman Empire, its GDP was about 20 billion sesterces (263). If the trade via Persian Gulf was taken into consideration, the value of the eastern trade was more than 10% of the Roman GDP.

as luxuries by scholars, increased greatly (Young 14-16). Secondly, during the age of the Empire, the emperors and the elites enlarged the scale and the cost of games and feasts to cater to the plebeians. To propagate their might and prestige, the elites frequently devoted themselves to the promotion of their personal reputation. In the eyes of Romans, "all such favors (bread and circus) are duties required of friends, the benefits that are owed to the poor, and the obligations expected of candidates" (Cicero 73). Many ordinary or exotic beasts were imported for the gladiatorial shows. As a result, lions, leopards, and panthers were listed in the *Directory of Alexandrian Tariff*. Similarly, a great amount of food and spices were needed for the lavish feasts. Thirdly, the ambiance of waste and extravagance was more and more fervent, though sumptuary laws were issued several times. Seneca the Junior said in aphoristic fashion that "people eat to vomit and vomit to eat. Their dishes are brought from every corner of the earth, but they do not even bother to digest them" (Seneca 10.3)" To show their wealth, some people would spend the price of three cooks on an individual fish (Pliny 9.67); and a mullet cost 6,000 sesterces (Juvenal 4); Caesonia, the wife of Emperor Caligula, owned a garment with jewelry valued 40 million sesterces! (Sidebotham, *Red Land* 178). Under this social background, annually, billions of sesterces of the eastern goods, half of which came via the Red Sea and Alexandria, could of course find a vast market in the cities of Rome, Alexandria, Antioch and Carthage.

Contribution to Public Finance

Pliny the Elder declares that the eastern trade not only corrupted the morality of the Romans, but corroded the economy of the Empire. In Pliny's view, with more than 100 million sesterces of silver flowing out to the eastern countries, the Roman financial deficit became troubling. Obviously, Pliny paid little attention to the fact that products from the Mediterranean Basin, such as wine, olive oil, slaves, glass and bronze vessels, were shipped to the Indian subcontinent together with gold and silver coins, which may have kept the imports and exports in balance to some extent. Still more important, he rarely pays any attention to the fact that the taxes levied on the eastern items could increase the fiscal revenue greatly.

The recto and verso of the Muziris Papyrus stresses more than once (recto lines 8 and 16, verso lines 3, 5, 10, 12, 17, 20) that when a merchant ship arrived in Alexandria, several kinds of taxes should be paid, the most important of which was the quarter custom due. Thus, the merchant ship *Hermapollon* should pay 2.3 million sesterces. If we use the information given by Strabo and assume 100 ships like the *Hermapollon* arrived annually, the Roman government might earn 230 million from the merchandise shipped to Red Sea ports, which was one-third of Roman military expense every year according to Ducan-Jones.[44] It should not be forgotten that this was only the taxes imposed on the goods imported from India. Moreover, the Roman merchants would export coins, wine, and fish products to

[44] Annual military expenditure of the 2nd century Roman Empire was 643-704 million. See Duncan-Jones 36.

Arabia, eastern Africa, the Indian subcontinent and the area on the Persian Gulf. As a rule, all these goods would be taxed at 25% of their value when leaving the Red Sea ports. This one-quarter tax was not just imposed to the merchant ships at the Red Sea ports. The evidences from Strabo and the inscriptions from Palmyra and *Periplus* show that before the 3rd century CE, all the goods entering or leaving the Empire, at least the eastern frontier, must pay this kind of tax.[45] Besides the one-quarter tax, the Muziris Papyrus (recto line 3, verso lines 12, 22) tells that the goods imported would be imposed a tax of import (τέλη εισαγωγικά, the rate is unknown) and a tax of road toll (πλείω υπέρ της τεταρτολογίας, the rate is 2.5-2.6%).[46] As all the taxes were levied in kind, warehouses (παραλημπτική αποθήκη, recto lines 4, 8) were built in Koptos and Alexandria. Because of all these taxes, the Roman government inevitably became the greatest owners of the eastern goods in the Mediterranean world. Some of the eastern goods would satisfy the needs of the government, but most of them would be sold to the individual merchants. Thus, it can be found in Pliny that "every sextarirus bought at a sale for 300 denarii when it is sold again makes 1000 denarii" (12.123).

The above calculations indicate that the public finance of the Roman Empire profited much from the eastern maritime trade. Because of the great profit, the Empire started a war against Arabia, Kush and Adulis, sent a navy to the Farasan Islands near Bab el-Mandeb, dredged the canal between the Nile and the Red Sea, built the highway (*Via Hadriana*) to link all the ports on the Red Sea in Egypt, and constructed, maintained and manned the forts in the Eastern Desert.[47] To protect or boost the eastern trade might not have been the prime or sole aim, but the fact of being 10% of the GDP and one of the most significant sources of the imperial finance urged the Empire to increase further endeavors to boost the eastern maritime trade.

Conclusion

It cannot be denied that scholars of the ancient economy should not repudiate the important role agriculture played. Even so, were the maritime trade and merchants not worth mentioning just as Finley emphasized? Or did the eastern trade concentrate only on luxurious items? Or was the scale of the maritime trade so limited? Or was it only marginal in the Empire economy? In recent years, the primitive model to weaken the non-agricultural economy proposed by Finley and his advocates is questioned by more and more scholars.[48] The above discussion based on Muzirus Papyrus can amend some extreme points of view on the purchasing power, the trade scale, and the status of merchants in high Empire economy.

[45] See Strabo 17. 1.13; *Periplus*, 19. Also see Duncan-Jones, "Roman" 4; De Romanis, "Commercioy" 14-15.
[46] More detailed discussion see De Romanis, "Commercio" 23-27.
[47] For more discussion about government intervention to the eastern trade, see Cobb, 92-126.
[48] Some scholars try to analyze the economy of Roman Empire using the theory of classical economy from the aspects of price, markets, growth, and GDP. For example, Peter Temin, in *The Roman Market Economy*, attempts to demonstrate its scale, diversity and complexity. More scholars, using the theory of New Institutional Economy, analyze such things as law and transaction costs. For example, Dennis Kehoe et al., *Law* and Harris, *Imperial*.

First, the Roman inhabitants had a strong purchasing power for the eastern goods. The above discussion shows that the eastern merchandise was not always luxuries. Semi-luxuries for daily life or for improving life quality were important. Even those goods used to be frequently called luxuries might have a broader market, partly due to their religious or medical functions and partly due to the political or daily needs and the prevailing extravagant social mood. It may be safely advocated that the purchasing power of the Romans for eastern merchandise in the high Empire reached as much as 2 billion sesterces, which went beyond what Finley imagined.

Second, the scale and the contribution of the eastern maritime trade were much greater than it used to be thought. From the record of the Muziris Papyrus, archaeological materials, the *Periplus Maris Erythraei* and other classical authors, we may deduce that the annual sale price of the merchandise imported from the Egyptian Red Sea ports might surpass 1 billion in the Empire. Other scholars attest that the eastern goods imported via Persian Gulf and the Silk Road would be valued no less than that from the Red Sea. If that is the case, the eastern maritime trade contributed at least 10% of the Roman GDP. Moreover, the custom revenue imposed on the maritime trade was an indispensable source to the imperial public finance. If the wide-spread amphorae for shipping oil and wine, the persistent needs of Athenians and Romans for daily necessities such as corn were taken into account, and if the input and expense of building and repairing of merchant ships were considered, it would not be a far-fetched inference that even though not the foundation of the high Roman Empire economy, the maritime activities and the maritime trade must occupy a decisive position.

Finally, the economic status of the traders and merchants was not always low. As the creditor of the loan in the Muziris Papyrus invested greatly, he must have come from one of the richest families; and the wealth of the debtor could be compared to that of the equites; even the ship-owners and sailors cannot be regarded as poor. For all of them, the maritime trade should not be considered as a humble occupation harmful to people’s mental development, and the practitioners were not at the poverty level on the financial scale. The profit-orienting maritime trade guided by the market and operated by the people as the debtor and the creditor as explained in the Muziris Papyrus was an indispensable sector in the Roman economy. Agriculture was surely an important sector, but in some areas, it was less likely to be the sole or even the most important sector for some period of time. The primitive agricultural model should not exclusively be applied in any region at any period of time.

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ΔΙΠΛΟΥΝ
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