

Expenditures and Revenue of Alexander the Great's Expedition

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Abstract: *The philosophy (science) of Oeconomics and economic policy were developed by Xenophon in Ancient Greece. Alexander the Great was living a little later in the 4th century B.C. and he is known globally as a great Greek (Hellen) general and civilizer; but, he was also, an excellent economist by managing the economy of his wars, his enormous campaign from North Greece to India, and exercising an efficient and effective public policy for his Empire. He had shown management capabilities, with rates of salaries, health and welfare, building projects, supplies, transports, reforms of the tax system, indirect taxes and donations, loans, minting of coins (currency), even controlling financial scandals and other information useful for our policy makers, today. The purpose of the paper is to measure his expenditures, revenues, and budgets by using the weights of gold and silver coins and determine and compare prices with today dollar prices of precious metals by taking these information from different historians of his time. Alexander economic policy with its surpluses is very useful for our current leaders and scholars. Also, the history and the role of this extraordinary man and of the Greek language in a divine plan, for a revolted and deluded creation and humanity to be in a position to understand and accept the revelation, which Greeks were expecting since 5th century B.C. (the Golden Century of Athens), is discussed extensively.*

Key Words: *Role of Economics: Role of Economists, History of Economic Thought, Monetary Policy, Fiscal Policy, General: Economic History, Development of the Discipline: Historiographical and Sources and Methods.*

I. Introduction

A disciple of Socrates, Xenophon (Ξενοφῶν; 430-354 B.C.), developed a new philosophy (science) that he gave the name *Oeconomics* (Οἰκονομικός, Οἰκονομία),² which was misspelled in 18th century A.D. in West Europe and was written as *Economics*; but its creator was Xenophon and for this reason, he is the “Father of Economics”. The meaning of this discipline is “the management of household” (noun: οἶκος, *oecos*=household and verb: νέμω, *nemo*=manage or distribute).³ Xenophon wrote 14 volumes on the management of the different sectors of the economy. One of the volumes was *Ways and Means* (Πόροι ἢ περὶ Προσόδων)⁴ and a second one, the Management of the Army (Ὁ Οἰκονομικός τοῦ Στρατοῦ), which

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² The *Oeconomicus* (Οἰκονομικός) can actually be seen as a treatise on success in leading both an army and a state. Scholars lean towards a relatively late date in Xenophon's life for the composition of the *Oeconomicus*, perhaps after 362 B.C. Cicero translated the *Oeconomicus* into Latin, and the work gained popularity during the Renaissance in a number of translations. Adam Smith has taken many ideas from *Oeconomicus*, but he “forgot” to give reference to Xenophon. See, Marchant and Todd (1997, p. 408).

³ Unfortunately, the West ignores history and mistakenly calls Adam Smith, who copied Xenophon, 21 centuries later, without making reference to Xenophon, as the “father of Economics”. See, Kallianiotis (2013).

⁴ See, Whitehead (1977).

Alexander took into consideration to manage his expedition. This work took place in Athens in the 5th century B.C. (the Golden Century of Pericles),⁵ and continued in the first half of the 4th century A.D.; but even from the Homeric period, we see good “economists” and their ability to manage effectively their societies (controlling inflation, improving trade, and other policies). Some consider Hesiod (Ἡσίοδος; 750-650 B.C.) as the first economist. These economic wisdoms were put in practice since that time, as it will be seen below, during Alexander’s and Hellenistic periods.

Alexander the Great (Μέγας Ἀλέξανδρος; 356-323 B.C.) was borne in North Greece and was living in the 4th century B.C. We know him as a great Greek (Hellen) general, but he was at the same time, an excellent *oekonomologos* (economist) because he had to manage the economy of his wars, his enormous campaign from North Greece (Macedonia)⁶ to India (Hindus River), and to exercise an efficient and effective public policy [revenue (*poroe*), spending (*dapanae*), and surpluses (*pleonazon*)] for his vast Empire and to satisfy all the citizens as a civilizer and not as a conqueror. His role, as it has been proved later, was a divine one; he was a “social forerunner”. Also, “he desired not pleasure or wealth, but only excellence and glory”, which was the moral and ethical Greek philosophy of his time. At a point Alexander said that “...I am grateful to gods that I was borne Hellen...”⁷ and had all these Hellenic values, which made him one of the most important person in human history. He had the consciousness of his historic descent and invitation (“call from God”). Of course, as a student of the greatest of philosophers (*panepistimon*, πανεπιστήμων) Aristotle (Ἀριστοτέλης; 384–322 B.C.),⁸ he has shown outstanding management and leadership capabilities; although military budgets contained more or less what budgets of states comprised (and were directly related to the latter). He was dealing with rates of salaries and compensations, health care and welfare programs, building of projects, supplies of material and food, transports and construction of ships, acquisitions and maintenance of military equipment, reforms of the tax system, tax immunities, indirect taxes, and donations, debt financing (loans), royal lands apportionment, support of veterans and their families, building of cities and infrastructures, even controlling financial scandals and other information useful for our leaders and policy makers, today (after 2,350 years) and for economic historians.

The paper will measure the wages, salaries, and other compensations during Alexander’s expedition and will calculate the cost of the different battles, his army, navy, military equipment, transportation, food, engineers and health personnel cost, and the other expenditures. The currency that was used at the time, drachmae, talents, mnae, staters, obols, and others (silver and gold coins) had a specific (known) weight that is used to determine the cost and to translate these expenditures into dollars by using the price of gold and silver, today. At the end, we make a comparison of the minimum wage in developed economies in 2011 with the wages in the 4th century B.C. The purpose of this work is triple, historic, economic, and numismatic. But, beyond the economic history, we will discuss the social and global consequences of this period, of this person (Alexander), and of Hellenization to the human civilization (through a divine providence).

In addition to economics, numismatics,⁹ and economic policy, we can see many political, military, cultural and futuristic events during that period and the Hellenistic era that followed. Economic history is necessary for all social scientists (especially economists) because this past knowledge can help us to deal with the current complex global economic and political problems. The contribution of Alexander the Great, with the spreading of the Greek civilization, and the learning of the most advanced language, the Greek language by the known world was beyond a human plan and offering. It was a “divine” plan for the preparation of the world to accept the unique event in human history that followed three hundred years later,

⁵ **Pericles** (Περικλῆς, “exceedingly glorious”; 495–429 B.C.) was arguably the most prominent and influential Greek statesman, orator, and general of Athens during the Golden Age (480-404 B.C.) specifically the time between the Persian (499-449 B.C.) and Peloponnesian (431-404 B.C.) wars. See, Thucydides, 2.65. Also, Blois de, Lukas (1997).

⁶ <<Ἔστω οὖν Ἑλλάς καὶ ἡ Μακεδονία.>> (Strabo, Στράβων).

⁷ <<...Εὐγνωμονῶ τοῖς θεοῖς ὅτι ἐγεννήθην Ἕλληνα...>> (Alexander the Great, Μέγας Ἀλέξανδρος).

⁸ According to the *Encyclopædia Britannica*, “Aristotle was the first genuine scientist in history ... [and] every scientist is in his debt.”

⁹ See, Kallianiotis (2015).

the “appearance of God” (the revelation of the highest value, the Truth) that Socrates was expected five centuries ago and he was punished with the punishment of death (poison hemlock, κώνειον) for his unconceivable moral and ethical philosophical conception of “the Unknown God”.

II. Alexander's Expedition and its Expenditures

The major expenses (dapanae, δαπάναι) of Alexander the Great were: (1) The compensation (salaries) of the army; (2) Maintenance cost of armament, equipment, and siege machines; (3) The development and creation of the navy; (4) Food and other provisioning of the huge army personnel; (5) Transportation of the soldiers and equipment; (6) The healthcare of his personnel and soldiers; and (7) The support of veterans and their families. The most costly expenditures were the payroll of the army and especially, the expedition to India, following by its food and transportation cost; and then the indemnities to the families of the fallen soldiers and to all the veterans. His army was comprised by Greek-Macedonians, who were serving their country, also by allies from the Greek cities (especially Thessalian cavalry), and by professional mercenaries (μισθοφόροι). More than a half of the army, for his planned invasion to punish Persia, came from outside the borders of Macedonia, from all over the Greek world and the nearby barbarian tribes.

The army of Alexander the Great was among the greatest military forces of the ancient world. It was created and made formidable by Alexander's father, King Philip II of Macedon (Φίλιππος Β' ὁ Μακεδών; 382–336 B.C.). The latest innovations in weapons and tactics were adopted and refined by Philip II and then, by his son and they created a uniquely flexible and effective army. By introducing military service as a full-time occupation, they were able to drill their men regularly, ensuring unity and cohesion in their ranks. In a remarkably short time, this led to the creation of one of the finest military machines of the ancient world and his military tactics and strategies are still studied in military academies, today.¹⁰

The Macedonian pike (δόρυ), the sarissa (σάρισα), gave its wielder many advantages both offensively and defensively. For the first time in Greek warfare, cavalry became a decisive arm in battle. The Macedonian army perfected the co-ordination of different troop types, an early example of combined arms tactics [the heavy infantry phalanx (φάλαγξ), skirmish infantry (ἀκροβολισταὶ πεζικοῦ), archers (τοξόται), light and heavy cavalry (ἵππικόν), and siege engines (πολιορκητικὰ μηχαναὶ) were all deployed in battle]; each troop type being used to its own particular advantage and creating a synergy of mutual support. Unfortunately, most of the primary historical sources for this period have been lost and we do not have more specific information. As a consequence, scholarship is largely reliant on the writings of Diodorus Siculus¹¹ and Arrian,¹² both of whom lived centuries later than the events they describe and on a few other historians (like, Justin, Plutarch, Strabo, etc.).

Alexander's army crossed the Hellespont (Ἑλλήσποντος) in 334 B.C. with approximately 48,100 soldiers, 6,100 cavalry and a fleet of 120 ships with crews numbering 38,000 (Table 3b),¹³ drawn from Macedon (Μακεδονία) and various Greek city-states, mercenaries, and feudally raised soldiers from Thrace (Θράκη), Paionia (Παιονία), and Illyria (Ἰλλυρία or Ἰλλυρίς).¹⁴ He showed his intent to conquer the entirety of the Persian Empire and punish them for their 50-years invasions of Greece by throwing a spear into Asian soil and saying he accepted Asia as a gift from the gods. This also showed Alexander's eagerness to fight

¹⁰ See, Wasson (2014).

¹¹ See, Siculus, Diodorus; C.H. Oldfather (Translator). "[Library](#)". Perseus Digital Library. pp. Books 9-17 only. Also, Siculus, Diodorus; C.H. Oldfather (Translator). "[Library](#)". Theoi E-Texts Library. pp. Books 4-6 only. Further, Siculus, Diodorus. "[Library](#)" (in Ancient Greek). Perseus Digital Library. pp. Books 9-17 only.

¹² The *Anabasis of Alexander* (Ἀλεξάνδρου Ἀνάβασις) is perhaps his best-known work, and is generally considered one of the best sources on the campaigns of Alexander the Great. Arrian is also considered as one of the founders of a primarily military-based focus on history. See, Arrian; de Sélincourt, Aubrey (1971). *The campaigns of Alexander*. Penguin Classics.

¹³ See, Roisman and Worthington (2010). The 38,000 crews is very large, more than 315 men/ship. These ships might were polyremes (πολυήρεις). Triremes (τριήρεις) had 200 crews of which 170 were rowers, a total of 24,000 men.

¹⁴ See, Arrian (1976). de Sélincourt, Aubrey, ed. *Anabasis Alexandri (The Campaigns of Alexander)*. Penguin Books.

and the bravery of his character, in contrast to his father's preference for diplomacy. Engels (1978) estimates the number of animals that were needed to carry the supplies (grain, tents, blankets, etc.) of this huge army to be 9,700 animals (horses and others).¹⁵

According to Arrian (Ἀρριανός), when Alexander was in Asia, he used Arachosians (from Ἀραχωσία), Bactrians (from Βακτριανή), Parapamisadae, Sogdians (from Σογδιανή), Indians (Ἰνδοί), and Scythians (Σκύθοι),¹⁶ as his army. They were all a part of the grand army revue Alexander assembled after 334 B.C. The army supposedly reached 120,000 front-line troops at one point. This did not include camp followers. There has been considerable debate as to when Alexander first used Orientals in the army. The introduction of Orientals into the army was actively resented by many of the native Macedonians, especially when a cadre of young Persians from aristocratic families was trained in Macedonian fighting techniques and enrolled in the Companion Cavalry.¹⁷

The questions for us, today are the followings: How were soldiers and equipment (siege engines, etc.) of Alexander the Great paid? What was the cost of his fleet? How much was the cost of food supplies, transports, and health care? What was the compensation for the veterans, the orphan children, and the cost of those who want to return home? What was the cost for the families of his soldiers? How many short-term loans did he get in order to finance his military expeditions and why did he forbid the women of Ephesus to wear jewelry? What kind of gifts did he offer the guests who attended his wedding and what became of the huge storehouse of the Gaza perfumes? What was his tax system? What was his budget and how he balanced it? What did he do with the budget surplus? What was Alexander's economic policy and how effective was it? These questions will be answered in this work.

Historical sources give the salary of a common soldier (στρατιώτης) as 1-2 drachmas per day. Decadarches (dekaneis, δεκανεῖς, corporals) were receiving a monthly salary of 40 drachmas. The salary of dimirites (διμοιρῖται, platoon leader or troop commander) was twice the salary of corporals, and the salary of cavalries (horsemen) was twice the salary of the infantries (foot soldiers). According to Diodorus, cavalries (ἱππεῖς) were receiving 300 drachmas per month¹⁸ and the carriers of Macedonian phalanx (φαλαγγίται) were receiving 100 drachmas. For the professional mercenaries (μισθοφόροι), there were extra economic incentives, as Kostopoulos (2012) mentions. By using the mentioned before historical sources, we calculate the wages and salaries of the different personnel of that time, which are given in Table 3a. Tables 1 and 2 present the currencies, their weights, and their values in today's dollars that are used to measure the expenses and revenues.

The total expenditures were enormous in 334 B.C. because of the size of his army that passed the Dardanelles (Δαρδανέλλια) and went to Asia Minor. This military force was 35,000 men, plus another 10,000 people under Parmenion (Παρμενίων), who had passed two years earlier in 336 B.C. and an extra army of 12,000 men that Alexander was keeping in Macedonia. This army was a total of 57,000 men and their salaries are estimated to be 4,000-5,000 talents (τάλαντα)¹⁹ during the first year of the expedition. The

¹⁵ See, Engels (1978, Tables 1, 2, and 3).

¹⁶ See, Davis-Kimball (1995).

¹⁷ Green (1992). Also, http://members.tripod.com/~S_van_Dorst/Alexander.html

¹⁸ This salary of 300 Drs seems very high. The most probable was twice the salary of the phalanx (2 x 100 Drs = 200 Drs).

¹⁹ The **talent** (Latin: *talentum*, from Ancient Greek: *τάλαντον*, *talanton*) was one of several ancient units of mass, a commercial weight, as well as corresponding units of value equivalent to these masses of a precious metal. The talent of gold was known to Homer, who described how Achilles (Ἀχιλλεύς) gave a half-talent of gold to Antilochus (Ἀντίλοχος) as a prize. It was approximately the mass of water required to fill an amphora (ἄμφορεύς). A Greek, or Attic talent, was 26 kilograms (57 lb) or 917.123 oz [1 Kilogram = 2.20462262 Pounds = 35.2739619 Ounces] or 6,000 Drachmas [1 Dr = 0.15285 oz Gold or 1 oz of Gold = 6.54236 Drs.]. The value in dollars of an Attic talent of 26 kgs of **gold in today's (12/22/2014) price of (\$1,174.80/oz)** will be \$1,077,436.111 and the exchange rate between dollars and gold drachmas could be: $e_1 = \$1,174.80 / 6.54236 \text{ Drs} = 179.573 \text{ \$/Dr}$ (a Greek Attic gold Drachma had a value of \$179.573 in today's dollar value with respect the gold). The price of **silver on December 22, 2014 was \$15.46/oz**; then, the value in dollars of an Attic silver talent will be \$14,178.722 and the exchange rate between

cost in 336-335 B.C. was 23,144,000 Drs [Table 3b (i)] and the cost in 334 B.C. was 61,560,000 Drs [Table 3b (ii)], where we can see the weights in ounces of these expenditures, too. The cost in the consecutive years increased to 7,000 talents [without including fleet (στόλος) wages] because Alexander hired more mercenaries from the Greek cities in Asia Minor and he needed to put guards to the areas that he conquered. This cost is measured as 73,578,000 Drs [Table 3b (iii)].

After an initial victory against Persian forces at the Battle of the Granicus (Μάχη τοῦ Γρανικοῦ) in May 334 B.C., Alexander accepted the surrender of the Persian provincial capital and treasury of Sardis (Σάρδεις); he then proceeded along the Ionia (Ἰωνία or Ἰωνίη) coast. Though Alexander believed in his divine right to expend the lives of men in battle, he did experience sorrow, as those who died were rewarded generously: "To the relatives of his fallen, Alexander granted immunity from taxation and public service." Whether it was his own warriors or the Persian forces opposing him, Alexander chose to respect those who died. He even went so far to set up statues to honor and respect these people. Though this did not directly influence the culture of the Persians they did not feel the need to begin a rebellion as their men and rulers were treated with proper respect.²⁰ At Halicarnassus (Ἀλικαρνασσός), in Caria (Καρία), Alexander successfully waged the first of many sieges in 334 B.C., eventually forcing his opponents, the mercenary captain Memnon of Rhodes (Μέμνων ὁ Ρόδιος) and the Persian satrap of Caria, Orontobates (Ὀροντοβάτης), to withdraw by sea. Alexander left the government of Caria to Ada (Ἄδα; 377 – 326 B.C.), who adopted Alexander.

The early Lydian kingdom was very advanced in the industrial arts and Sardis was the chief seat of its manufactures. The most important of these trades was the manufacture and dyeing of delicate woolen stuffs and carpets. The stream Pactolus (Πακτωλός = Ποταμός τῶν Σάρδεων), which flowed through the market-place "carried golden sands" in early antiquity, was in reality gold dust out of Mount Tmolus. It was during the reign of King Croesus (Κροῖσος, *Kroisos*; 595 – 547 B.C.) that the metallurgists of Sardis discovered the secret of separating gold from silver, thereby producing both metals of a purity never known before.²¹ This was an economic revolution, for while gold nuggets panned or mined were used as currency; their purity was always suspect and a hindrance to trade. Such nuggets or coinage were naturally occurring alloys of gold and silver known as electrum and one could never know how much of it was gold and how much was silver. Sardis now could mint nearly pure silver and gold coins, the value of which could be and was trusted throughout the known world. This revolution made Sardis rich and Croesus' name synonymous with wealth itself. For this reason, Sardis is famed in history as the place where modern currency was invented. Alexander seized the city and its wealth, but there are no quantitative data on the amount.

From Halicarnassus, Alexander proceeded into mountainous Lycia (Λυκία) and the Pamphylian (Παμφυλία) plain, asserting control over all coastal cities to deny the Persians naval bases. From Pamphylia onwards the coast held no major ports and Alexander moved inland. At Termessos (Τερμησσός), Alexander humbled, but did not storm the Pisidian (Πισιδία) city. What is known of the history commences principally at the time that Alexander the Great surrounded the city in 333 B.C., which he likened to an eagle's nest and failed to conquer. Arrian, who dealt with this event and recorded the strategic importance of Termessos, notes that even a small force could easily defend it, due to the insurmountable natural barriers surrounding the city. At the ancient Phrygian (Φρυγία) capital of Gordium (Γόρδιον), Alexander "undid" the hitherto unsolvable Gordian Knot (γόρδιος δεσμός), a feat said to await the future "king of Asia". According to the

dollar and silver Drachmas: $e_2 = 2.363 \text{ \$/Dr}$ (Table 2). See, Engen, Darel. "The Economy of Ancient Greece", EH.Net Encyclopedia, 2004. Also, Torr, Cecil, "Triremes", *The Classical Review*, Vol. 20, No. 2 (Mar., 1906), p. 137. Further, we can see their measures as follows: [http://en.wikipedia.org/wiki/Talent_\(measurement\)](http://en.wikipedia.org/wiki/Talent_(measurement)) and http://en.wikipedia.org/wiki/Attic_talent. Calculations are by the author and are presented in Tables 1, 2, 3a, and 3b.

²⁰ See, Arrian (1976). de Sélincourt, Aubrey, ed. *Anabasis Alexandri* (The Campaigns of Alexander). Penguin Books.

²¹ See, A. Ramage, P. Craddock, *King Croesus' Gold: Excavations at Sardis and the History of Gold Refining*. Archaeological Exploration of Sardis, Arch. Expl. Sardis (2001).

story, Alexander proclaimed that it did not matter how the knot was undone and hacked it apart with his sword.²²

The Persian Empire suffered a series of defeats from the Macedonian forces at Issus (Μάχη τῆς Ἴσσοῦ; November 5, 333 B.C.) and Gaugamela (Γαυγάμηλα; October 1, 331 B.C.),²³ and by the end of 331 B.C. Alexander had advanced to Babylon (Βαβυλών) and Susa (Σοῦσα). A Royal Road connected Susa (the first Iranian capital city in Elam) with the more eastern capitals of Persepolis (Περσέπολις) and Pasargadae (Πασαργάδαι) in Persis (Περσίς),²⁴ and was the natural venue for Alexander's continued campaign. Meanwhile, King Darius was building a new army at Ecbatana (Ἐκβάτανα). Ariobarzanes was charged with preventing the Macedonian advance into Persis, and to this effect he relied heavily on the terrain Alexander needed to pass through. According to historian Arrian (Anabasis 3.18.2), Ariobarzanes had a force of 40,000 infantry and 700 cavalry, who faced a Macedonian force of over 10,000.

We see that the annual cost from 333-328 B.C. was 73,578,000 Drs. The period covers six years; thus, the cost was $73,578,000 \times 6 = 441,468,000$ Drs. Also, from 333 B.C. to 330 B.C., Alexander's bonuses to his soldiers were 96,000,000 Drs. The total expenditures in Asia (336-328 B.C.) are calculated to be 622,172,000 Drs (Table 3b, 1). After the occupation of Susa and Persepolis (330 B.C.) and the acquisition of the Darius' Treasure, the cost of army wages skyrocketed. This is a little difficult to be explained; it seems that wages went up, due to an excess supply of money (wealth). Thus, the Darius wealth caused inflation. The cost was 7,000 talents/annum and we assume that it became 8,000 talents/annum (48,000,000 Drs/annum). The army was 79,850 men, which makes the cost 601 Drs/man/annum. From 526 Drs, it reached 601 Drs; an increase in salary by 14.259%. Then, after 328 B.C., Alexander continued with the expedition to India, for which Alexander gathered an army of 140,000 men and his expenditures also went up. This cost is, now, 84,140,000 Drs (140,000 men x 601 Drs/man/annum). He constructed and used also a fleet of 150 ships for the same expedition with 3,000-5,000 sailors. The cost/trireme is estimated of 20,384 Drs; then, total cost: 150 ships x 20,384 Drs = 3,057,600 Drs. (Table 3b). In 327 B.C., the total cost of soldiers, ships, and sailors was 112,127,600 Drs. (Table 3b). Thus, the total cost for the 5 years expedition in India (327-323 B.C.) was 548,407,600 Drs. (Table 3b, 2).

Also, huge were the expenses for maintenance and new acquisitions of military equipment and material.²⁵ His army was followed by engineers, who repaired and maintained the different war machines (πετροβόλους, ξυλοσυνθέτους πύργους, προβόλους, ἐλεπόλεις, κριούς, χελώνας καὶ κάτοπτρα). Also, other technicians, like bridge builders and men who built tents, beds, and other useful tools and constructions.²⁶ Another major expense was the food and transportation of the soldiers and of their families (wives and children).²⁷ Medical services were also expensive because he had doctors, herbalists, botanists, pharmacists, nurses, and other health personnel, who follow the expedition.²⁸ Diodorus Siculus²⁹ mentions that for his expedition to India, Alexander spent for medicines 100 talents per annum (= 600,000 Drs³⁰ = 91,712.28 ozs or \$1,417,871.849 for silver talents or \$107,743,800 for gold talents). (Table 3b, 5).

²² Green, Peter (2007). *Alexander the Great and the Hellenistic Age*. London: Phoenix.

²³ See, <https://www.youtube.com/watch?v=QEGO1V9d-Q>

²⁴ **Fârs**, or known in Old Persian as **Pârsâ**, is the original homeland of the ancient Persians. The native name of the Persian language is *Pârsi*. *Persia* and *Persian* both derive from the Hellenized form Περσίς, *Persis* of the root word *Pârs*. The Old Persian word was *Pârsâ*. See, Nelson Frye (1984).

²⁵ The total material cost for the 13 years of the expedition are calculated as 20,280,000 Drs. (Table 3b, 3).

²⁶ The total cost for engineers was 11,999,000 Drs/annum.

²⁷ Food and transportation cost has been calculated to be 36,000,000 Drs/annum.

²⁸ Total medical services were 23,998,000 Drs.

²⁹ See, Siculus, Diodorus; C.H. Oldfather (Translator). "[Library](#)". Theoi E-Texts Library. pp. Books 4-6 only. Also, Siculus, Diodorus. "[Library](#)" (in Ancient Greek). Perseus Digital Library. pp. Books 9-17 only.

³⁰ The number of people (soldiers and their families) were 200,000 people; then, 3 Drs/person/annum.

Another expense was the indemnities to the parents and families of the soldiers, who fell in the different battles. Alexander was giving to them royal land (βασιλικά κτήματα) and also, tax exemptions. Justin (Ἰουστίνος, ὁ συγγραφεὺς τῆς Ἐπιτομῆς τῶν Φιλίππικῶν Ἱστοριῶν)³¹ says that Alexander was continuing to pay the orphans of the keeled soldiers the salary of their father. The indemnities to families and salaries to children are calculated to be 320,112,000 Drs. (Table 3b, 6). This shows the degree of the social policy and the respect of a great leader, as Alexander, towards his soldiers and his citizens.

Further, another expense was the feasts and celebrations for boosting the confidence of the people and the morale of the army and these costs were enormous, too, due to the huge army and their families. The cost of feasts is calculated to reach the amount of 52,000,000 Drs. Also, he had to pay cooks, waiters, bakers, wheat growers, and for many other professions that are unknown, today. This cost of cooks was 173,420,000 Drs. In addition, he had to cover the cost of appeasers (κατευναστάς), mattress guards (φρουροὺς κλινοστρωμνῆς), billet orderlies (θαλαμοφύλακας), who were guarded Alexander and his generals during their sleep at nights.

Furthermore, royal meals were also a big expense with the cost of food, its preparations, and all the required personnel. Plutarch (Πλούταρχος)³² says that their annual cost was 600 talents or 3,600,000 Drs or 550,273.68 ozs or \$8,507,231.093 (silver), even though that Alexander did not care for any luxurious life. The total royal meals for the 13 years are calculated to be 46,800,000 Drs. Alexander was utterly generous regarding the rewards as bonuses to men, who distinguished themselves in battles and sieges. According to Diodorus, after the victories at Issus (Μάχη τῆς Ἴσσοῦ) and Gaugamela (Γαυγάμηλα) donations of 3,000 talents (18,000,000 Drs or 2,751,368.4 ozs or \$42,536,155.46) were made to his soldiers,³³ while for the conquest of Ecbatana (Ἐκβάτανα) jewels and 13,000 talents (78,000,000 Drs or 11,922,596.4 ozs or \$11,922,596.41) were distributed.³⁴ According to Arrian, a lot of money (χορηγία) were offered to the soldiers that want to return to their native country. Greek allies who wished to repatriate were given to them 2,000 talents (12,000,000 Drs or 1,834,245.6 ozs or \$28,357,436.98) as salaries and expenses for returning home, while those who decided to stay after all received 3 talents (18,000 Drs or 2,751.368 ozs or \$42,536.155) each soldier. Alexander was also generous towards veterans. This total cost is estimated to be 48,000,000 Drs (Table 3b, 6). According to Arrian, Macedonians who became unable for war, due to old age or illness, received their salary and one extra talent [6,000 Drs or 917.123 ozs or \$14,178.718 (silver)], as well as the costs of the journey, the travel expenses to return home. This cost is estimated as 52,335,000 Drs. A summary of all the expenses by category and period is presented in Table 3c, which are 2,562,018,650 Drs or 391,614,286.3 ozs or \$6,054,356,866.³⁵

In addition, a summary of all the expenditures of Alexander during his expedition to Asia and India are given to Table 3c. The calculation has been done in drachmas, ounces, and in percentage of every category with respect the total cost. The largest expenses are salaries, 1,074,579,600 Drs (41.943%). It follows by the indemnities to families of the soldiers, who fell in battles, 437,447,000 Drs (17.074%). Another cost was for the military equipment and other constructions that reached 176,267,000 Drs (6.880% of the total cost). Alexander was very generous with bonuses to his soldiers, which were 96,000,000 Drs (3.747%). The feasts for the soldiers and other social events had a cost of 53,507,050 Drs (2.088%). Medical

³¹ Justin is the author of *Historiarum Philippicarum libri XLIV*, a work described by himself in his preface as a collection of the most important and interesting passages from the voluminous *Historiae philippicae et totius mundi origines et terrae situs*, written in the time of Augustus by Pompeius Trogus.

³² Plutarch (Πλούταρχος, *Plouítarkhos*, later named, upon becoming a Roman citizen, **Lucius Mestrius Plutarchus** (Λούκιος Μέστριος Πλούταρχος; 46–120 A.D.), was a Greek historian, biographer, and essayist, known primarily for his *Parallel Lives* and *Moralia*. Plutarch's *Life of Alexander*, written as a parallel to that of Julius Caesar, is one of only five extant tertiary sources on the Macedonian conqueror Alexander the Great. See, "Plutarch". *Oxford Dictionary of Philosophy*.

³³ The donation per soldier was: 18,000,000 Drs : 117,850 men = 152.74 Drs/soldier.

³⁴ The bonus per person was: 78,000,000 Drs : 117,850 men = 661.86 Drs/soldier.

³⁵ The price of silver with December 22, 2014 is used for the dollar value, which is \$15.46/ oz of silver.

expenses were 31,798,000 Drs (1.241%). Also, financial scandals cost 4,200,000 Drs (0.164%). The total expenditures were calculated to be 2,562,018.650 Drs or 391,614,286.3 ozs or \$6,054,356,866 (in silver coins); an average of 197,078,357.7 Drs/annum.

III. Alexander's Occupations, his Revenue and Tax System

The revenue (*poroe*, πόροι) needed for covering all these expenses was coming from different sources. At the beginning of the campaign (ἐκστρατεία) the money came mainly from the royal treasure (βασιλικός θησαυρός) of Philip, while a very important source of income were the Macedonian mines (μεταλλεία),³⁶ producing gold and silver for the minting of coins (money). Incomes also came from customs, tariffs (δασμοί) and taxes of the royal land (βασιλικαί γαῖαι). This amount was 6,000 talents (36,000,000 Drs). Another source of revenue was borrowing through loans. According to Plutarch, Alexander borrowed short-term 1,460 talents (8,760,000 Drs or 1,338,999.288 ozs).³⁷ (Table 4a, 4).

The costs for professional mercenaries (μισθοφόρων) were covered exclusively from the royal treasure and the cost of the Macedonian army partly was covered from aristocracy grants (χορηγία τῶν εὐγενῶν, λειτουργία) and partly from the royal treasure. The costs for the navy (στόλου) were covered from the trierarchy (θεσμός τῆς τριηραρχίας).³⁸ Some cities had undertaken to offer a number of triremes (τριήρεις) and the expenses for their crew. Trierarchys had offered a total of 2,310 talents or 13,860,000 Drs. (Table 4a, 6).

Regarding the tax system of Alexander; he did not impose taxes to the Greek cities of Asia Minor and declared them ἀσυδότους (= enjoying immunity) because his campaign had as objective to liberate the Greek cities from a subjection tax (φόρος ὑποτελείας) that they were paying to Darius. The non-Greek cities who did not resist the conqueror had to pay a certain amount of money (tax), in order to contribute to the “common cause”, which was the punishment of Darius. Taxes were imposed to foreign cities, who showed a hostile attitude towards Alexander, and the people of Ephesus (Ἐφεσος, *Ephesos*), who put up a sturdy resistance to the conqueror. Taxes were about 17,000 talents/annum (Table 4a, 7). Also, other revenues came from plundering, during seizures of hostile cities. Ancient sources do not give the amounts coming from plundering (λάφυρα).

Justin (13.1.9) gives the annual tax revenue of Alexander as 30,000 Attic talents. Antigonos Monophthalmos (Ἀντίγονος ὁ Μονόφθαλμος; 382–301 B.C.) gives the amount to 11,000 talents. Herodotos (3.89) gives 9,000 Attic talents.³⁹ Except the various kinds of taxation, there was another revenue from the king's own land and the natural resources he controlled, principally water. The total royal revenue derived from agriculture was 6,000 talents (Table 4a, 3), confirming pseudo-Aristotle's *Oikonomika*, where revenue from land is considered the most important. Taxes were on grain land and grain harvests, on oil-producing

³⁶ These mines exist even today and the Greek government is offering them at a very low price to a Canadian quest to mine for gold in the lush forests of northern Greece, which is testing the government's desperation to sell off every public wealth to satisfy the Troika's demands. The Skouries mine on Halkidiki peninsula (a landscape of pristine beaches and rolling hills dotted with olive groves) is among the biggest “investments” (sell off) in Greece since they sank her into a debt crisis, during the latest global financial crisis since 2007. But, it has set Greece's desperate need for finance to rebuild the economy against the interests of its vital tourism industry, and aroused anger on the peninsula (site of the famed Mount Athos monasteries) over the environmental cost and the exploitation of the country's resources. See, <http://www.reuters.com/article/2014/01/13/us-greece-gold-insight-idUSBREA0C0DG20140113> . In addition, see, <http://www.mindat.org/loc-14183.html> . Mountain Athos is also related with Alexander the Great.

³⁷ In current dollars, this loan is \$20,700,928 (silver) or \$1,573,059,480 (if the talents were gold).

³⁸ The cost of a whole Trierarchy was not less than forty (40) minas (μνᾶ) nor more than a talent (τάλαντον), 60 minas, with the average being 50 minas. The responsibility of the Trierarchy as a liturgy was so great that during some eras no other liturgy could be assessed in the same or the following year.

³⁹ See, Aperghis (2001).

plants, on vineyards, on orchards, on livestock, on non-agricultural industries, transport and services were mostly subject to monetary taxes, but there were taxes levied in kind, too.⁴⁰

Alexander journeyed south and was met by Darius' significantly larger army, but Darius was easily defeated, causing him to panic. Although he was chased by some troops, he did not captured, but Alexander took many prisoners of war and even Darius family. "Alexander treated them (Darius' family) with the respect out of consideration", which demonstrated his continued generosity and kindness towards those he conquered during his entire campaign. Darius fled the battle, causing his army to collapse, and left behind his wife, his two daughters, his mother Sisygambis,⁴¹ and a fabulous treasure. Darius offered a peace treaty that included the lands he had already lost, and a ransom of 10,000 talents (τάλαντα) or 60,000,000 Drs or 9,171,228 ozs (\$141,787,215.8 silver talents or \$10,774,361,000 gold talents)⁴² for his family (Table 4a, 9). Alexander replied that since he was now king of Asia, it was he alone who decided territorial divisions.⁴³

Alexander the Great realized that he had control and could receive much more. Darius was thus forced to come back. "This time the offer was impressive. Darius offered all territory as a far the Euphrates... a colossal ransom of 30,000 talents⁴⁴ for his family... invited to marry his eldest daughter". The 30,000 talents are 180,000,000 Drs (Table 4a, 9). This new change in diplomatic relations induced panic among the leaders of the surrounding nations, as they feared a similar defeat. Alexander proceeded to take possession of Syria, and most of the coast of the Levant. In the following year, 332 B.C., he was forced to attack Tyre (Τύρος), which he captured after a long and difficult siege.

When Alexander destroyed Tyre, most of the towns on the route to Egypt quickly capitulated, with the exception of Gaza (Γάζα). The stronghold at Gaza was heavily fortified and built on a hill, requiring a siege. After three unsuccessful assaults, the stronghold fell, but not before Alexander had received a serious shoulder wound. Jerusalem opened its gates in surrender, according to Josephus (Ιώσηπος).⁴⁵ Alexander advanced on Egypt in later 332 B.C., where he was regarded as a liberator.⁴⁶ He was pronounced the new "master of the Universe" and son of the deity of Amon (Άμμων) at the Oracle (μαντεῖον) of Siwa Oasis in the Libyan Desert.⁴⁷ Henceforth, Alexander often referred to Zeus-Ammon (Άμμωνος-Διός) as his true

⁴⁰ See, Von Reden (2007).

⁴¹ **Sisygambis** was the mother of Darius III of Persia, whose reign was ended during the wars of Alexander the Great. After she was captured by Alexander at the Battle of Issus (November 5, 333 B.C.), she became devoted to him, and Alexander referred to her as "mother".

⁴² For the **Attic talent** (the **Athenian talent** or **Greek talent**; *τάλαντον*, *talanton*), see, Table 2. Herodotus, Robin Waterfield and Carolyn Dewald, *The Histories* (1998), p. 593. Also, Talent (Biblical Hebrew), Unit of Measure, unitconversion.org. And, "[London Fix Historical Silver](#)". Further, Torr, Cecil. "Triremes", *The Classical Review*, Vol. 20, No. 2 (March 1906), p. 137. In addition, Engen, Darel. "[The Economy of Ancient Greece](#)", EH.Net Encyclopedia, 2004. See, careers.stateuniversity.com/pages/240/Carpenter.html. Furthermore, Calculated from Robert Allen's "[Wages New](#)", p. 36.

⁴³ See, [Arrian](#) (1976). [de Sélincourt, Aubrey](#), ed. *Anabasis Alexandri* (*The Campaigns of Alexander*). [Penguin Books](#).

⁴⁴ Which was 180,000,000 Drs or 27,513,684 ozs of silver = \$425,361,647.4 (today) or \$32,323,082,400 (if they were gold talents).

⁴⁵ **Titus Flavius Josephus** (Ιώσηπος Φλάβιος ἢ Γιοσέφ μπέν Μαθιά; 37–100 A.D.), who wrote that Alexander was shown the [Book of Daniel's](#) prophecy, presumably chapter 8, which described a mighty Greek king who would conquer the Persian Empire. Alexander spared Jerusalem and pushed south into Egypt.

⁴⁶ See, Ring, Salkin, Berney, and Schellinger (1994).

⁴⁷ The **tomb of Alexander the Great** and, particularly, its exact present location has been a recurring conundrum. Shortly after Alexander's death (in the evening of June 11, 323 B.C. in the palace of Nebuchadnezzar II; Ναβουχοδονόσωρ) in Babylon the possession of his body became a subject of negotiations between Perdicas (Περδίκκας), Ptolemy I Soter (Πτολεμαῖος Α΄ Σωτήρ), and Seleucus I Nicator (Σέλευκος Α΄ Νικάτωρ). According to Saunders (2007), while Babylon was the "obvious site" for Alexander's resting place, some favored to inter Alexander in the Argead (Άργεάδαι) burial at Aegae (Αἰγαί), modern Vergina (Βεργίνα). Aegae was one of the two originally proposed resting places, according to Saunders, the other being Siwa Oasis and in 321 B.C. Perdicas presumably chose Aegae. The body, however, was hijacked en route by Ptolemy I Soter. According to Pausanias (Παυσανίας; 110 –180 A.D. a Greek traveler and geographer) and the contemporary Parian Chronicle (Τό "Πάριον Χρονικόν", ἢ Χρονικόν τῆς Πάρου is a Greek chronology, covering the years from 1582 B.C. to 299 B.C.) records for the years 321–320 B.C., Ptolemy initially buried Alexander in Memphis (Μέμφις), Egypt. In the late 4th or early 3rd century B.C.

father, and subsequent currency depicted him adorned with ram's horn as a symbol of his divinity [see, Alexander's coins in Kallianiotis (2015, Appendix)]. During his stay in Egypt, he founded Alexandria-by-Egypt, which would become the prosperous capital of the Ptolemaic Kingdom (Πτολεμαϊκή βασιλεία)⁴⁸ after Alexander's death.

Leaving Egypt in 331 B.C., Alexander marched eastward into Mesopotamia (Μεσοποταμία, now northern Iraq) and again defeated Darius, at the Battle of Gaugamela (*Γαυγάμηλα*, on October 1, 331 B.C.).⁴⁹ Darius once more fled the field, and Alexander chased him as far as Arbela (Ἄρβηλα). Gaugamela would be the final and decisive encounter between the two. Darius fled over the mountains to Ecbatana (Ἐκβάτανα, modern Hamedan in Iran), while Alexander captured Babylon (Βαβυλών). By the autumn of 330 B.C., Alexander was able to assemble at a central treasury at Ecbatana some 180,000-190,000 talents (Table 4a, 11).⁵⁰ This treasure was \$2,552,169,328 (if it was in silver talents).

From Babylon, Alexander went to Susa (Σοῦσα), one of the Achaemenid (δυναστείας τῶν Ἀχαιμενιδῶν) capitals, and captured its legendary treasury. He sent the bulk of his army to the Persian ceremonial capital of Persepolis (Περσέπολις) via the Royal Road.⁵¹ Alexander himself took selected troops on the direct route to the city. He had to storm the pass of the Persian Gates (in the modern Zagros Mountains, now known as *Tang-e Meyran*), which had been blocked by a Persian army under Ariobarzanes (Ἀριοβαρζάνης) and then hurried to Persepolis before its garrison could loot the treasury.

Many ancient sources tell that Alexander was facing financial difficulties until 333 B.C.⁵² Later, and above all after the Battle of Gaugamela (*Γαυγάμηλα*) in 331 B.C., fabulous riches of the treasuries of Darius in Susa (Σοῦσα) at the end of 331 B.C. and Persepolis (Περσέπολις) in January 330 B.C. were turned over to Alexander.⁵³ Persepolis had surpassed all other Persian cities in prosperity.⁵⁴ Alexander went up to the citadel and took possession of the treasures stored there. They were full of gold and silver, with the accumulation of revenue from Cyrus (Κῦρος Β' ὁ Μέγας, ἢ Κῦρος ὁ πρεσβύτερος), the first king of the Persians (559-530 B.C.), down to that time. Reckoning gold in terms of silver, 2,500 tons were found there. (Table 4a, 12).⁵⁵ Alexander wanted to take part of the money with him, for the expenses of war and to deposit the rest at Susa under close guard. From Babylon, Mesopotamia and Susa, he sent for a crowd of mules, partly pack and partly draught animals, as well as 3,000 dromedaries (δρομάς κάμηλος), and with

Alexander's body was transferred from Memphis to Alexandria (Ἀλεξάνδρεια), where it was reburied. See, Leana Souvaltzi, http://www.souvaltzi.gr/ekdoseis_eng.htm ; also, <http://www.nytimes.com/1995/02/06/world/greek-team-doubts-site-holds-alexander-s-tomb.html> and Souvaltzi (2002). Furthermore, Grimal (1992). Also, Saunders (2007).

⁴⁸ The **Ptolemaic Kingdom** (Πτολεμαϊκή βασιλεία) was a Hellenistic kingdom based in Egypt. The Ptolemaic Kingdom was founded in 305 B.C. and it was ruled by the Ptolemaic dynasty, which started with Ptolemy I Soter's (Πτολεμαῖος Α' Σωτήρ) accession after the death of Alexander the Great in 323 B.C. and which ended with the death of Cleopatra VII (Κλεοπάτρα Φιλοπάτωρ) and the Roman conquest in 30 B.C.

⁴⁹ [Arrian](#) (1976).

⁵⁰ See, Diodorus Siculus 17.80.3; Strabo 15.3.9; Justin 12.1.1. Also, Van De Mierop (2014). This treasure was: 1,080,000,000-1,140,000,000 Drs or 165,082,104-174,253,332 ozs. (Table 4a, 11).

⁵¹ The **Royal Road** was an ancient highway reorganized and rebuilt by the Persian king Darius I the Great of the Achaemenid Empire in the 5th century B.C. Darius built the road to facilitate rapid communication throughout his very large empire from Susa to Sardis. Mounted couriers could travel 1677 miles (2699 km) in ninety days; the journey from Susa to Sardis took ninety days on foot. The Greek historian Herodotus (Ἡρόδοτος, 484-425 B.C.) wrote, "There is nothing in the world that travels faster than these Persian couriers." See, Speck (2002).

⁵² Our data do not support this argument because Alexander had 6,000 talents per annum from taxes on royal lands and over 11,000 talents/annum from other taxes. Total: 17,000 talents x 3 years = 51,000 talents or 306,000,000 Drs, which were more than enough to cover his annual budget, which was 197,078,357.7 Drs.

⁵³ See, [Diodorus Siculus 1963, 17.39.1](#). Also, [Diodorus Siculus 1963, 17.48.2-17.49.2](#). And [Arrian 1893, 3.1](#).

⁵⁴ See, Foreman (2004, p.217). Also, [Hammond, NGL](#) (1983).

⁵⁵ Which make up 96,153.84615 gold talents or 576,923,076.9 gold Drs or 88,184,884.61 ozs of gold or \$103,599,602,400. (Table 4a, 12). The gold/silver ratio is 1/10; then, this treasure was 96,153.84615 gold talents x 10 = 961,538.4615 silver talents x 6,000 Drs = 5,769,230,769 Drs or 881,848,846.1 ozs of silver or \$13,633,383,160.

these he had all the treasure conveyed to the chosen places.⁵⁶ After conquering the Persian Empire, Alexander proceeded to tax and administration reforms, in order to control the vast empire. However, financial scandals did occur, like that of Harpalus (Ἄρπαλος),⁵⁷ who absconded large amounts of money. The cost of this embezzlement was 700 talents or 4,200,000 Drs. (Tables 3b, 8 and 3c, 8).

Alexander then chased Darius, first into Media, and then Parthia. The Persian king no longer controlled his own destiny, and was taken prisoner by Bessus (Βῆσσος), his Bactrian (Βακτριανή) satrap and kinsman. As Alexander approached, Bessus had his men fatally stab the Great King and then declared himself Darius' successor as Artaxerxes V (Ἀρταξέρξης Ε΄), before retreating into Central Asia to launch a guerrilla campaign against Alexander.⁵⁸ Alexander buried Darius' remains next to his Achaemenid predecessors in a regal funeral. He claimed that, while dying, Darius had named him as his successor to the Achaemenid throne.⁵⁹ The Achaemenid Empire is normally considered to have fallen with Darius. But, Spitamenes (Σπιταμένης), who held an undefined position in the satrapy of Sogdiana (Σογδιανή), in 329 B.C. betrayed Bessus to Ptolemy (Πτολεμαῖος Σωτήρ), one of Alexander's trusted generals, and Bessus was executed. However, when, at some point later, Alexander was on the Jaxartes (Ἰαξάρτης) dealing with an incursion by a horse nomad army, Spitamenes raised Sogdiana in revolt. Alexander personally defeated the Scythians at the Battle of Jaxartes (Μάχη τοῦ Ἰαξάρτη) in 329 B.C. and immediately launched a campaign against Spitamenes, defeating him in the Battle of Gabai, in 328 B.C. After the defeat, Spitamenes was killed by his own wife, who then sued for peace.

During that time, Alexander took the Persian title "King of Kings" (βασιλεύς τῶν βασιλευόντων, *Shahanshah*); but, a plot against his life was revealed, and one of his officers, Philotas (Φιλώτας) was executed (in October 330 B.C.) for failing to alert Alexander. The death of the son necessitated the death of the father, and thus Parmenion (Παρμενίων), who had been charged with guarding the treasury at Ecbatana (Ἐκβάτανα), was assassinated at Alexander's command, to prevent attempts at vengeance in 330 B.C. Later, in the Central Asian campaign, a second plot against his life was revealed; this one instigated by his own royal pages (young male servants). His official historian, Callisthenes (Καλλισθένης; 360–328 B.C.) of Olynthus (Ὀλυνθος), was implicated in the plot; however, historians have yet to reach a consensus regarding this involvement.

Following the death of Spitamenes (Σπιταμένης) in 328 B.C. and his marriage to Roxana (Ρωξάνη) to cement relations with his new satrapies, Alexander turned to the Indian subcontinent. Omphis (Ὠμφίς, Indian name Ambhi Kumar), the ruler of Taxila (Τάξιλα ἢ Ταξάσιλα), whose kingdom extended from the Indus (Ἰνδός Ποταμός) to the Hydaspes (Υδάσπησ Ποταμός; Jhelum), assisted Hephaestion (Ἡφαιστίων; c. 356 B.C.–324 B.C.)⁶⁰ and Perdikkas (Περδίκκας; died 321/320 B.C.) in constructing a bridge over the Indus,

⁵⁶ See, http://www.livius.org/aj-al/alexander/alexander_t12.html

⁵⁷ **Harpalus** (Ἄρπαλος), son of Machatas (Μαχάτας), was an aristocrat of Macedon and boyhood friend of Alexander the Great in the 4th century B.C. Harpalus did not follow Alexander in his advance within the Persian Empire, but received nonetheless a post in Asia Minor. In 324 B.C. Harpalus found refuge in Athens. Ecclesia after a proposal of Demosthenes (Δημοσθένης; 384–322 B.C. was a prominent Greek statesman and orator of ancient Athens, who was opposing Macedon's expansion) decided the guarding of Harpalus' money, which were entrusted to a committee led by Demosthenes himself. When the committee counted the money, they found 350 talents, although Harpalus had declared that he had 700 talents. See, Badian (1961). Also, Kingsley (1986). Further, Hypereides, *Against Demosthenes*, 1

⁵⁸ See, [Arrian](#) (1976).

⁵⁹ See, Gergel, ed. (2004).

⁶⁰ Hephaestion (Ἡφαιστίων), the son of Amyntor (Ἀμύντωρ), was a Macedonian nobleman and a general in the army of Alexander the Great. He was "... by far the dearest of all the king's friends; he had been brought up with Alexander." This friendship lasted throughout their lives, and was compared, by others as well as themselves, to that of Achilles (Ἀχιλλεύς) and Patroclus (Πάτροκλος). See, Quintus Curtius Rufus 3.12.16 (He was a Roman historian, writing probably during the reign of the Emperor Claudius; 41–54 A.D. or Vespasian; 69–79 A.D. His only surviving work, *Historiae Alexandri Magni*, is a biography of Alexander the Great in Latin in ten books, of which the first two are lost, and the remaining eight are incomplete). Ancient Greeks considered friendship as one of the highest values in a person's life. For this reason, we see to exalt these famous friendships in history, like Achilles and Patroclus (Ἀχιλλεύς-Πάτροκλος), Hercules and Iolaos (Ἡρακλῆς-Ἰόλαος), Armodius and Aristogeiton

where it bends at Hund, supplied their troops with provisions, and received Alexander himself, and his whole army, in his capital city of Taxila, with every demonstration of friendship and the most liberal hospitality.

After Aornos (ή Ἄορνος Πέτρα ἢ ἀπλῶς Ἄορνος),⁶¹ Alexander crossed the Indus and fought and won an epic battle against King Porus (Πῶρος), who ruled a region in the Punjab (Πενταποταμία), in the Battle of the Hydaspes (ή Μάχη τοῦ Ὑδάσπη Ποταμοῦ) in 326 B.C. Alexander was impressed by Porus's bravery, and made him an ally. He appointed Porus as satrap, and added to Porus' territory land that he did not previously own. Choosing a local helped him control these lands so distant from Greece. Alexander founded two cities on opposite sides of the Hydaspes River, naming one Bucephala (Βουκεφαλία),⁶² in honor of his horse, who died around this time. The other was Nicaea (Ἀλεξάνδρεια Νίκαια; Victory), thought to be located at the site of modern day Mong, Punjab. Thus, Hydaspis (Ὑδάσπη) River (Beas), marks the easternmost extent of Alexander's conquests.

Alexander tried to persuade his soldiers to march farther, but his general Coenus (Κοῖνος; died 326 B.C.) pleaded with him to change his opinion and return. "The men", he said, "longed to again see their parents, their wives and children, their homeland". Alexander eventually agreed and turned south, marching along the Indus (Ἰνδός Ποταμός). Along the way his army conquered the Malhi (in modern day Multan in Pakistan) and other Indian tribes and sustained an injury during the siege. Alexander sent much of his army to Carmania (modern southern Iran) with general Craterus (Κρατερός; c. 370–321 B.C.), and commissioned a fleet to explore the Persian Gulf shore under his admiral Nearchus (Νέαρχος; c. 360–300 B.C.), while he led the rest back to Persia through the more difficult southern route along the Gedrosian Desert (Γεδρωσία is the Hellenized name of an area that corresponds to today's Balochistan) and Makran (Μακρανία is a semi-desert coastal strip in the south of Sindh and Balochistan, in Pakistan and Iran, along the coast of the Persian Gulf and the Gulf of Oman). Alexander reached Susa in 324 B.C., but not before losing many men to the harsh desert.⁶³

Furthermore, as a gesture of thanks, Alexander paid off the debts of his soldiers,⁶⁴ and announced that he would send over-aged and disabled veterans back to Macedonia, led by Craterus. His troops misunderstood his intention and mutinied at the town of Opis (Ὀπίς).⁶⁵ They refused to be sent away and criticized his adoption of Persian customs and dress and the introduction of Persian officers and soldiers into Macedonian units.⁶⁶ The Macedonians quickly begged forgiveness, which Alexander accepted, and held a great banquet for several thousand of his men at which he and they ate together. We assume the participation of 200,000 people at this banquet (324 B.C.) with a cost of 5 Drs/person equal to 1,000,000 Drs (Table 3b, 7). In an attempt to craft a lasting harmony between his Macedonian and Persian subjects, Alexander held a mass marriage of his senior officers to Persian and other noblewomen at Susa. We assume that 10,000

(Ἀρμόδιος-Ἀριστογείτων), Damon and Phidias (Δάμων-Φειδίας), Pylades and Orestes (Πυλάδης-Ὀρέστης), Theseus and Peirithoos (Θησεύς-Πειρίθους or Περιίθοος or Πειρίθοος), Alexander and Hephaestion (Ἀλέξανδρος-Ἡφαιστίων). It is true that the Greeks rendered more significance to friendship in general than any other people. Thus, these pairs of friends were not without heirs in historical times. This is the sense of << Ὁμοίος ὁμοίῳ ἀεὶ πελάζει>> (omoiios omoio aei pelazei; "a similar always approaches a similar"). Most of these heroic friends have similar likes that stretch to sharing the same beliefs, the same problems and of course, the same causes, and give their life in case that it is necessary to save their friend. These friendships were moral and ethical relationships; there are no abnormal, shameful, and against human nature relationships between people of the same sex in Ancient Greece. Of course, Christianity came in Greece in year 50 A.D. and these moral and ethical values of the past became much stronger, due to the Revealed Truth. These groups of friends were representing the beauty, the bravery, and the moderation of the entire Hellenism. The virtues for Hellenes are the same today: Strictness (αὐστηρότης) towards themselves, leniency (ἐπιείκεια) towards the others, and moderation (μέτρον) for everything. See also, Varnakos (1997, p. 154).

⁶¹ See, Lane Fox (1973). Also, Arrian, Anabasis IV, Chapters 28.1-30.4.

⁶² See, Lendering (2007), webpage: Livius-alex-z2.

⁶³ See, Morkot (1996).

⁶⁴ We estimate this amount as 17,000,000 Drs or 2,598,514.6 ozs or \$40,173,035.72 (Table 3b, 6).

⁶⁵ Opis (Ὀπίς) was an ancient Babylonian city near the Tigris, not far from modern Baghdad.

⁶⁶ See, Worthington (2003).

marriages took place in 324 B.C. with a cost of 10 Drs each, equal to 100,000 Drs (Table 3b, 7). After Alexander traveled to Ecbatana to retrieve the bulk of the Persian treasure, his closest friend, Hephaestion (Ἡφαιστίων; c. 356–324 B.C.), died of illness or poisoning.⁶⁷ Hephaestion's death devastated Alexander, and he ordered the preparation of an expensive funeral in Babylon, as well as a decree for public mourning.⁶⁸ Back in Babylon, Alexander planned a series of new campaigns, beginning with an invasion of Arabia, but he would not have a chance to realize them, as he died shortly thereafter.

IV. Alexander's Budget and Economic Policy

The expenditures (δαπάναι) and revenue (πόροι) of Alexander the Great expedition to Asia and India are given by Arrian, Curtius, Diodorus, Plutarch, and Strabo and form an accurate amount. The method used in this paper is simple by using the currency of that time, the weight of these coins, and the translation of their values to current U.S. dollars. Our objective is mostly to measure these expenditures and revenues and to examine his budget and public policy. The currencies (coins) of Alexander's time had an intrinsic value based on their weights in grams (mostly silver coins, also gold and later copper). In Table 1, the subdivisions and the denominations of the Ancient Greek silver drachma (δραχμή) is given, where we see the weights, too. One (1) drachma (δραχμή) is equal to 6 obols (ὀβολούς) equal to 4.3 grams equal to 0.1528538 ounces equal to \$2.36312.⁶⁹ Table 2 gives the Attic (Athenian) talent (τάλαντον) and its subdivisions. We see, there, that 1 drachma is equal to 0.00016667 talents, equal to 0.00433333 kgs, equal to 0.0095 pounds, equal to 0.01 mnae (μναί), equal to 0.5 staters (στατήρ). If the drachma was gold, its dollar equivalent is \$179.57268.⁷⁰

Talents (=26 kgs) and mnae (=0.433333333 kgs) were never minted; they represented weight measures used for commodities as well as for metals (silver or gold). A talent was the mass of water required to fill an amphora (ἀμφορεύς). The silver talent (ἀργυροῦν τάλαντον) was 26 kgs or equal to 57 lbs, equal to 917.123 ozs, equal to 6,000 drachmas, equal to 60 mnae, equal to 3,000 silver staters, equal to 36,000 obols, equal to \$14,178.72 (Table 2). The same table gives the value of the U.S. dollar, today (December 22, 2014), with respect the ancient currencies. The dollar has been completely depreciated, as we can see in the last row of Table 2, after the abandonment of the gold exchange standard in 1971, the enormous money supply after 2000, and the "quantitative easing" by the U.S. Fed since December 2008.

The ancient authors, Arrian (Ἀρριανός), Diodorus (Διόδωρος), Justin (Ἰουστῖνος), and Plutarch (Πλούταρχος) give very good information regarding the wages and salaries of the army personnel, laborers, and other workers. The common soldier (στρατιώτης) was receiving between 1-2 drachmas per day. The average wage per soldier was 1.169-1.461 Drs per day or 421-526 Drs per annum. Decadarches (δεκανεῖς) were receiving 1.33 Drs/day; dimirites (διμοιρίται) 2.66 Drs and cavalries (ἵππεῖς) 6.66 Drs/day. This compensation seems high, but it might include the cost of the horse. Phalanx (φάλαγγιται) were paid with 3.33 Drs/day⁷¹ and sailors with 2.307 Drs/day. A skilled worker was receiving 1.852 Drs/day (assuming 360 days work per annum) or 2.564 Drs/day with 260 days work per year by other authors. (Table 3a).

During the Peloponnesian War (431-404 B.C.), a sailor of trireme⁷² was receiving 1 Dr/day (\$2.36312). Mercenaries' wages were, also, 1 Dr/day during the Hellenistic period and this was the wage of

⁶⁷ See, [Arrian](#) (1976).

⁶⁸ All these expenditures appeared in Table 3b, 7. Assume: Cost of tomb=50 Drs, monument=6,000 Drs, funeral rites=1,000 Drs and perideipnon (200,000 people x 2 Drs)=400,000 Drs. Total cost 407,050 Drs.

⁶⁹ The price of silver, used here, is \$15.46/oz (with December 22, 2014) and the exchange rate between silver drachma and dollar is 2.36312 \$/Dr.

⁷⁰ The price of gold used, here, is \$1,174.80/oz, which is with December 22, 2014. Thus, the exchange rate between gold drachma and U.S dollar is 179.57268 \$/Dr.

⁷¹ See, Diodorus.

⁷² The ship's provider (χορηγός) was known as the trierarch (τριήραρχος, *triērarchos*). He was a wealthy citizen (usually from the class of the pentakosiomedimnoi (πεντακοσιομέδιμνοι), responsible for manning, fitting out and maintaining the ship for his

a common laborer, too. All the information appeared in Table 3a and are used to measure Alexander's expenditures during his expedition that are presented in Table 3b for these 13 years of campaign (8 years in Asia and 5 years in India) from 336-323 B.C.

The expedition to Asia took place from 336 to 328 B.C. that means, it lasted for eight years. Parmenion with 10,000 soldiers and an annual salary of 526 Drs/man had a cost of 5,260,000 Drs per year; then, 10,520,000 Drs for the two years (336-335 B.C.). In Macedonia, 12,000 men had a cost of 6,312,000 Drs (12,000 soldiers x 526 Drs/man) per annum that is 12,624,000 Drs for the two years. The total cost for the first two years was 23,144,000 Drs (10,520,000 Drs for the expedition plus 12,624,000 Drs for the remaining soldiers). [Table 3b (i)].

In 334 B.C., the cost went up with the extra 35,000 men with Alexander's campaign that made the total number of soldiers 57,000 men (10,000 with Parmenion + 12,000 in Macedonia + 35,000 with Alexander) with an annual salary of 526 Drs; thus, 29,982,000 Drs. Also, there were 120 ships with a crew of 38,000 men and their salary was 831 Drs/annum that makes the annual cost of 31,578,000 Drs. The total cost for the year was 61,560,000 Drs (29,982,000 Drs for the soldiers + 31,578,000 Drs for the sailors). [Table 3b (ii)]. Ancient historians were giving the annual cost of soldiers between 421 Drs and 526 Drs and we take the higher cost for our measurement, here.

The consecutive years from 333 B.C. to 328 B.C., Alexander hired more mercenaries, where the cost went up to 7,000 talents or 42,000,000 Drs per annum. Dividing the annual cost by the cost per man (42,000,000 Drs : 526 Drs/man), we determine the number of soldiers as 79,850 men. The total personnel became 117,850 men (79,850 soldiers + 38,000 sailors). Then, the annual cost was 73,578,000 Drs (42,000,000 Drs for soldiers + 31,578,000 Drs for the sailors). [Table 3b (iii)]. This cost is assumed to be the same for six years (333-328 B.C.). Thus, 73,578,000 Drs/annum x 6 years = 441,468,000 Drs for these war years in Asia.

With the victories of Issus (November 5, 333 B.C.) and Gaugamela (October 1, 331 B.C.), Alexander gave a gift to his soldiers of 18,000,000 Drs and after the conquest of Ecbatana (330 B.C.) he gave a bonus of 78,000,000 Drs; then, a total bonus of 96,000,000 Drs. [Table 3b (iv)]. Summing all the salaries, we have a cost of 526,172,000 Drs plus 96,000,000 Drs bonuses and the expenditures for the Asia expedition (336-328 B.C.) reached the amount of 622,172,000 Drs or 95,101,354.48 ozs. This total cost divided by the 8 years, gives average expenditures per annum of 77,771,500 Drs. Table 4a shows an average annual tax revenue of 102,000,000 Drs.⁷³ Thus, there is a budget surplus of 24,228,500 Drs every year.

Now, the expedition to India, from 328 B.C. until Alexander's death in 323 B.C., went up, as historical sources are telling us; also, the number of soldiers increased and new ships were constructed. The cost of the army was before 7,000 talents/annum. We make the assumption that it increased to 8,000 talents/annum or to 48,000,000 Drs/annum for the existing army, which was 79,850 men. The annual cost per man went to 601 Drs (48,000,000 Drs : 79,850 men). We have an increase in salary by 14.259% (from 526 Drs to 601 Drs/man/annum). This is an indication that the acquisition of the Persian treasure had caused a sudden increase in the money supply and the empire experienced inflation. Also, this show that Alexander increased the compensation of his soldiers, as an incentive to continue this lengthy campaign for so many years and thousands of kilometers far from their home.

liturgical year at least; the ship itself belonged to the city-state (i.e., Athens). The trierarchy (τριηραρχία, *triērarchia*) was one of the liturgies of ancient Athens; although it afforded great prestige, it constituted a great financial burden, so that in the 4th century B.C., it was often shared by two citizens, and after 397 B.C. it was assigned to special boards. The cost of the ship was one (1) talent or 6,000 Drs per annum. (For this reason, we do not have many information on its cost of construction and maintenance).

⁷³ The taxes during the 13 years of campaign were: 1,326,000,000 Drs : 13 = 102,000,000 Drs/annum (Table 4a, 7).

The army is now, 140,000 soldiers with an annual cost of 84,140,000 (140,000 men x 601 Drs/man/annum). Alexander constructed and used 150 ships (triremes, τριήρεις), which had a cost of timber and labor of 20,384 Drs per trireme. Ancient sources give the labor cost of 6,000 man-days x 2.564 Drs/day = 15,384 Drs per trireme plus the cost of timber of 5,000 Drs (our assumption) makes the total cost/trireme 20,384 Drs (15,384 Drs + 5,000 Drs). Thus, 150 ships x 20,384 Drs made up a construction cost of 3,057,600 Drs. Historical sources give the number of sailors between 3,000-5,000 men; but, this number is too small. A trireme had 170 oars and a total of 200 sailors at least. Then, 150 ships x 200 sailors = 30,000 men were used for these triremes. The cost of these sailors was: 30,000 men x 831 Drs/man/annum = 24,930,000 Drs/annum. The total cost 140,000 soldiers, 30,000 sailors, and the construction of 150 ships was: 84,140,000 Drs + 24,930,000 Drs + 3,057,600 Drs = 112,127,600 Drs (17,139,129.74 ozs). The expedition to India took 5 years (327-323 B.C.); thus, the total cost was 109,070,000 Drs (soldiers plus sailors) x 5 years = 545,350,000 Drs. Adding the cost of the ships, we have a total cost of 548,407,600 Drs or 83,826,185.61 ozs. (Table 3b, 2).

Another cost was for the acquisitions and maintenance of military equipment and material. We assume that this cost was 1 Dr/month/man, with an average army of 130,000 men; thus, 1,560,000 Drs/annum (130,000 men x 12 Drs/annum). The total material cost for the 13 years of the campaign was: 1,560,000 Drs x 13 years = 20,280,000 Drs or 3,099,875.064 ozs. The cost of engineers, technicians, bridge builders, carpenters, and other supporting personnel was as follows. We assume that these people comprised 10% of the average army of 130,000 men; thus, 13,000 people x 923 Drs/annum (salary of skilled worker) = 11,999,000 Drs/annum. For 13 years this cost was 155,987,000 Drs or 23,843,205.7 ozs. (Table 3b, 3)

A big expense must be the food and transportation of all these soldiers and their families. We assume that these people were 200,000 (130,000 soldiers + 70,000 family members). We also assume a cost of 0.50 Drs/day/person x 360 days = 180 Drs/annum/person. Then, 200,000 people x 180 Drs = 36,000,000 Drs/annum; and for the 13 years, 468,000,000 Drs or 71,535,578.4 ozs. (Table 3b.4). The royal meals had a cost of 600 talents per annum. This means 600 talents x 6,000 Drs = 3,600,000 Drs/annum and for 13 years, equal to 46,800,000 Drs or 7,153,557.84 ozs.

Medical services were offered by doctors, health personnel, and other people. We assume that these personnel were 1% of the total 200,000 people, equal 2,000 doctors. As skilled workers, they have a compensation of 2,000 men x 923 Drs/annum = 1,846,000 Drs/annum x 13 years = 23,998,000 Drs or 3,668,185.495 ozs for the entire campaign. Ancient sources tell us that the cost of medicine was 100 talents (600,000 Drs) per year; thus, 600,000 Drs x 13 years = 7,800,000 Drs or 1,192,259.64 ozs. (Table 3b, 5).

Alexander was paying indemnities to the families of his soldiers, who fell in battles.⁷⁴ The orphan children were receiving the salary of their fathers. Alexander had a very advance social policy (κοινωνική πολιτική) that we cannot see in our today market-oriented world. Ancient sources made up the war casualties about 15% of the army. The maximum number of soldiers was 170,000 men; then, casualties were about 26,000 with 2 children/soldier = 52,000 orphan children. The families of the 26,000 men dead soldiers were receiving 1 talent (6,000 Drs), which is 156,000,000 Drs. Orphans' compensation was: 52,000 children in 13 years, then 4,000 children/annum (52,000 : 13),⁷⁵ with a total cost of 164,112,000 Drs. Alexander paid

⁷⁴ The winner (Alexander's) casualty was about 15%. See, <http://www.quora.com/How-has-mortality-rate-per-battle-changed-throughout-history>.

⁷⁵ At the end of the 1st year: 4,000 children x 526 Drs/annum x 12 years = 25,248,000 Drs.

At the end of the 2nd year: 4,000 x 526 Drs x 11 years = 23,144,000 Drs.

At the end of the 3rd year: 4,000 x 526 Drs x 10 years = 21,040,000 Drs

At the end of the 4th year: 4,000 x 526 Drs x 9 years = 18,936,000 Drs.

At the end of the 5th year: 4,000 x 526 Drs x 8 years = 16,832,000 Drs.

At the end of the 6th year: 4,000 x 526 Drs x 7 years = 14,728,000 Drs.

At the end of the 7th year: 4,000 x 526 Drs x 6 years = 12,624,000 Drs.

At the end of the 8th year: 4,000 x 526 Drs x 5 years = 10,520,000 Drs.

off the debt of his soldiers (assume 1,000 Drs/soldier x 17,000 soldiers = 17,000,000 Drs or 2,598,514.6 ozs. Thus, indemnities to families, salaries to children, and paid off debts, were: 156,000,000 Drs + 164,112,000 Drs + 17,000,000 Drs = 337,112,000 Drs or 51,528,850.23 ozs. To the relatives of his fallen soldiers, Alexander granted immunity from taxation and public service. (Table 3b, 6)

Feasts and celebrations had also another cost. We assume 9 feasts plus 1 other celebration per year, equal 10 feasts/annum x 13 years of campaign = 130 feasts; with 200,000 participants and assuming a cost of 2 Drs/person, we have: 200,000 people x 2 Drs/person = 400,000 Drs; then, 400,000 Drs x 130 feasts = 52,000,000 Drs total cost or 7,948,397.6 ozs. Also, there were wheat growers, millers, bakers, cooks, and other people working for preparing the food. We assume them to be 10% of the total people, equal 20,000 men (200,000 x 10%). Their annual cost was: 20,000 x 667 Drs (salary of skilled worker) = 13,340,000 Drs; and the total cost: 13,340,000 x 13 years = 173,420,000 Drs or 26,507,906 ozs. Appearers, guards, etc. were soldiers and for this reason, there was no extra compensation for them. (Table 3b, 4).

For soldiers, who want to return to their native land (Macedonia), Alexander gave 2,000 talents. The Macedonia soldiers were: 10,000 with Parmenion and 35,000 with Alexander (total 45,000 men) and let assume that about 14% wanted to return (6,300 soldiers, but only left 4,000 men) and each one received 0.5 talent (3,000 Drs). Then, a total cost of 12,000,000 Drs (4,000 soldiers x 3,000/Drs/each) or 1,834,245.6 ozs. The other 2,000 men changed their mind and remained. The soldiers that stayed received 3 talents/each (18,000 Drs/each). A total cost of 36,000,000 Drs (2,000 soldiers x 18,000 Drs/each) or 5,502,736.8 ozs. Macedonians, who became unable for war (veterans) were receiving their salaries, plus 1 talent, plus the travel cost for returning home. We assume that 10% were the unable veterans from the 45,000 Macedonian army, which means 4,500 soldiers. They received their salary of 526 Drs/annum for an average of 5 years = 2,630 Drs/each; plus 6,000 Drs as present, plus 3,000 Drs travel expenses, equal 11,630 Drs/soldier. Total cost for the unable veterans: 4,500 soldiers x 11,630 Drs/each = 52,335,000 Drs or 7,999,603.623 ozs. (Table 3b, 6).

In 324 B.C., a great banquet took place in Opis, where 200,000 people participated, assuming an average cost of 5 Drs per person, equal 1,000,000 Drs or 152,853.8 ozs. The same year a mass marriage⁷⁶ between Macedonians and Persians took place in Susa. We assume 10,000 marriages with a cost of 10 Drs each, equal to 100,000 Drs or 15,285.38 ozs. In the same year Hephæstion died in Babylon. We assume a cost of tomb of 50 Drs, a monument of 6,000 Drs, a funeral rite of 1,000 Drs, and a perideipnon for 200,000 people x 2 Drs/person = 400,000 Drs. Then, a total cost of 407,050 Drs or 62,219.139 ozs. (Table 3b, 7).

Also, it was a financial scandal with Harpalus of 700 talents (x 6,000 Drs) equal to 4,200,000 Drs or 641,985.96 ozs. Total expenditures (δαπάναι) of Alexander's campaign for these 13 years were 2,562,018,650 Drs or 391,614,286.7 ozs or \$6,054,356,866.⁷⁷ See, Tables 3b and 3c. The average per annum cost was 197,078,357.7 Drs. The revenues (πόροι) during these 13 years of the expedition were as follows. Ancient sources reveal that the royal treasury was offering the money to cover the salary of mercenaries, but this amount was not given. The Macedonia mines were minting and offering gold and silver coins for Alexander's campaign, but there are no data on this production of coinage. Also, there were revenues from customs, tariffs, and taxes (rent) on royal lands, which were giving a considerable amount of money to the

At the end of the 9th year: 4,000 x 526 Drs x 4 years = 8,416,000 Drs.

At the end of the 10th year: 4,000 x 526 Drs x 3 years = 6,312,000 Drs.

At the end of the 11th year: 4,000 x 526 Drs x 2 years = 4,208,000 Drs.

At the end of the 12th year: 4,000 x 526 Drs x 1 year = 2,104,000 Drs.

Total: 164,112,000 Drs.

⁷⁶The ancient Greek marriage celebration consisted of a three part ceremony which lasted three days: the *proaulia* (προαύλια), which was the pre-wedding ceremony, the *gamos* (γάμος), which was the actual wedding, and the *epaulia* (επαύλια), which was the post-wedding ceremony. There are villages in Greece, even today that a wedding lasts from 3 to 7 days; the same tradition of this perpetuated culture.

⁷⁷The price of silver used, here, is \$15.46/oz.

king. Unfortunately, we have only limited information on the amounts of these proceeds (royal land offered 36,000,000 Drs; Tables 4a, 1 and 4b, 1).

Plutarch mentioned that Alexander borrowed, at the beginning of his expedition, short-term 1,460 talents, 8,760,000 Drs or 1,338,999.288 ozs (Table 4a, 4). This money might be used for Parmenion's army in 336 B.C., who went to Asia before Alexander. The rest of the money for the Macedonian army was offered by the aristocracy in Vergina.⁷⁸ The money needed for the navy was offered by the Trierarchy. This revenue was estimated as 2,310 talents or 13,860,000 Drs or 2,118,553.668 ozs. Alexander used 120 ships from the beginning of his campaign and for 13 years; he also constructed 150 new ships for the expedition to India and used them for 5 years. The trierarchy was offering 1 talent per ship per annum (120 ships x 1 talent x 13 years = 1,560 talents and 150 ships x 1 talent x 5 years = 750 talents; a total revenue coming from the trierarchy of 2,310 talents or 13,860,000 Drs). (Table 4a, 6).

Alexander had also imposed taxes to non-Greek cities in Asia Minor and to all foreign cities that had a hostile attitude towards him; the amount of tax revenue was 1,326,000,000 Drs (Tables 4a, 7 and 4b). In addition, there was plundering (λάφυρα) after seizing hostile cities (these amounts are not known). In 333 B.C., Darius gave a ransom for his family of 30,000 talents or 180,000,000 Drs or 27,513,684 ozs (Table 4a, 9). In 331 B.C., Alexander captured the treasure of Darius in Susa, but we do not have the amount of this money.

In 330 B.C., Alexander found a treasure at Ecbatana, between 180,000 to 190,000 talents according to Diodorus, Strabo, and Justin. We consider the smaller amount of 180,000 talents, which was 1,080,000,000 Drs or 165,082,104 ozs (Table 4a, 11). Persepolis was the most prosperous city in Persia and Alexander captured its treasure of 2,500 tons of gold, which is calculated as 96,153.84615 gold talents. The gold/silver ratio was 1/13 and now, with all this gold supply, the price of gold fell to a ratio of 1/10. Then, these gold talents were (10 x gold talents) in silver equivalent 961,538.4615 silver talents, which made the amount of 5,769,230,769 Drs or 881,848,846.1 ozs (Table 4a, 12). Other sources tell that the total amount of silver bullions, captured from 333 B.C. to 330 B.C., was between 180,000 and 400,000 talents.

The total amount of the revenue (πόροι) that the ancient sources gave to us is 8,413,850,769 Drs or 1,286,089,063 ozs or \$19,882,936,910 (Table 4a). Table 4b gives a summary of the revenues and the percentage from the different sources. Taking the total revenues (T) and subtracting the total expenditures (G), we have a surplus of 5,851,832,119 Drs (T-G>0).

The economic growth is obvious after this unification of the vast empire and its excellent public finances. The wealth accumulation was spent by the Hellenistic kings, as well as with the large size of the military and the scale of the welfare expenditures from Alexander the Great and with his successors. The new towns, their increasing sizes, the new settlements, the cultivations of new land, trade, and shipping had improved the living standards among Greek and foreign citizens and the elites in the homeland and in Asia for many years.⁷⁹

Banks (τράπεζαι, *trapezai*) had been developed in Athens since fifth century B.C. and were expanded in the entire empire. Their transactions had increased the issues of coinage and other alternative payments system; the forward market was used extensively in the agricultural economy. A merchant was buying in advance a crop, which would be ready for harvest a few months later, at a predetermined (contractual price), the forward price. Cohen (1992) argues about a high development of banking, credit, and

⁷⁸ In ancient times, wealthy people were contributing a lot of money for the city-state, public finance, the army, and other expenditures. Today, we see that wealthy people and businesses try to use "legal" ways to avoid taxes and this has increased taxes on middle class and also, has generated enormous budget deficits and national debts, which are becoming unsustainable.

⁷⁹ See, Von Reden (2007).

legislation about interest rates. These institutions and the economic conditions were used and improved by Alexander and his successors.

Royal banks (βασιλικαὶ τράπεζαι, *basilikai trapezai*) were established as treasuries, for tax-collection purposes and for currency exchange. Coinage created a focus on the monarchy of Alexander the Great and brought a greater cohesion in a regionally diverse empire. Displays of money, bonuses, social institutions, and conspicuous expenditures by Alexander on the occasion of victories and festivals associated money with power, prosperity, and growth, while donations and public rewards made money part of an incentive for people to work and a structural reform of the Alexander's public policy (expansionary fiscal policy). The production of Alexander's coinage, after acquiring the Persian treasures, seems to have been tremendous (about 1,200,000 talents; Table 4a). Coinage was the means with which the Persian kings, Alexander, and his Diadochi (διάδοχοι) displayed their wealth and which they used for the expenditures of their wars and for the public works (investments) of the empire.

Monetary taxation and royal rents provided part of this revenue (from 9,000 to 30,000 talents the first and 6,000 talents the second per annum; Table 4a). Coinage increased the efficiency of the administration and generated a royal surplus. The trade and the export of agricultural products (grain, oil, wine, etc.) provided the basis for the influx of precious metal coinage from the other parts of the empire and later from the other Kingdoms of the Hellenistic world.

V. The Unexpected Death of Alexander the Great and His Successors

On June 11, 323 B.C., Alexander died in the palace of Nebuchadnezzar II (Ναβουχοδονόσωρ Β΄), in Babylon, at age 33.⁸⁰ Diodorus, Plutarch, Arrian, and Justin all mentioned the theory that Alexander was poisoned. Justin stated that Alexander was the victim of a poisoning conspiracy, Plutarch dismissed it as a fabrication,⁸¹ while both Diodorus and Arrian noted that they mentioned it only for the sake of completeness.⁸² The accounts were nevertheless fairly consistent in designating Antipater (Ἀντίπατρος, *Antipatros*; c. 397–319 B.C.), recently removed as Macedonian viceroy (ἀντιβασιλεύς) and at odds with Olympias (Ὀλυμπιάς),⁸³ as the head of the alleged plot.

Alexander's body was laid in a gold anthropoid sarcophagus (σαρκοφάγος) that was filled with honey, which was in turn placed in a gold casket.⁸⁴ According to Aelian (Αἰλιανός), a seer called Aristander (Ἀρίστανδρος ὁ Τελμησσεύς) foretold that the land where Alexander was laid to rest "would be happy and unvanquishable forever".⁸⁵ Perhaps more likely, the successors may have seen possession of the body as a symbol of legitimacy, since burying the prior king was a royal prerogative.⁸⁶ While Alexander's funeral cortege was on its way to Greece (Macedonia), Ptolemy seized it and took it temporarily to Memphis (Μέμφις). His successor, Ptolemy II Philadelphus (Πτολεμαῖος Β΄ Φιλάδελφος; 309–246 B.C.), transferred the sarcophagus to Alexandria, where it remained until at least Late Antiquity. Ptolemy IX Lathyros (Πτολεμαῖος Σωτήρ Λάθυρος) was king of Egypt three times, from 116 B.C. to 110 B.C., 109 B.C. to 107 B.C. and 88 B.C. to 81 B.C., with intervening periods ruled by his brother, Ptolemy X Alexander (Πτολεμαῖος Ἀλέξανδρος) was King of Egypt from 110 B.C. to 109 B.C. and 107 B.C. till 88 B.C. Lathyros,

⁸⁰See, Depuydt, L. (1997), "The Time of Death of Alexander the Great: 11 June 323 BC, ca. 4:00–5:00 pm". *Die Welt des Orients* 28: 117–35.

⁸¹ See, Plutarch (1919). Perrin, Bernadotte, ed. *Plutarch, Alexander*. Perseus Project.

⁸² See, Siculus, Diodorus (1989). "[Library of History](#)". CH Oldfather, translator. [Perseus Project](#). Also, Arrian (1976). [de Sélincourt, Aubrey](#), ed. *Anabasis Alexandri (The Campaigns of Alexander)*. [Penguin Books](#).

⁸³ **Olympias** (Ὀλυμπιάς, c. 375–316 B.C.) was a princess of Epirus, daughter of king Neoptolemus I of Epirus (Νεοπτόλεμος Α΄ Ἡπειροῦ) (370–357 B.C.), the fourth wife of the king of Macedonia, Philip II (Φίλιππος Β΄ ὁ Μακεδόν; 382–336 B.C.), and mother of Alexander the Great (Ἀλέξανδρος ὁ Μέγας).

⁸⁴ See, Kosmetatou (1998).

⁸⁵ See, Aelian, "64", *Varia Historia XII*.

⁸⁶ See, Green (2007).

one of Ptolemy's final successors, replaced Alexander's sarcophagus with a glass one so he could convert the original to coinage.⁸⁷ We see, here, a shortage of gold in Ptolemaic Egypt. This is the reason that they issued bronze coins (chalkous, χαλκοί); a tri-metallic coin system.⁸⁸

Roman emperors, Pompey, Julius Caesar, and Augustus all visited the tomb in Alexandria, where Augustus, allegedly, accidentally knocked the nose off. Caligula was said to have taken Alexander's breastplate (πανοπλία θώρακος) from the tomb for his own use. Around 200 A.D., Emperor Septimius Severus closed Alexander's tomb to the public. His son and successor, Caracalla, a great admirer, visited the tomb during his own reign. After these, details on the fate of the tomb are hazy.⁸⁹ The so-called "Alexander Sarcophagus" (ἡ σαρκοφάγος τοῦ Ἀλεξάνδρου), discovered near Sidon and now in the Istanbul Archaeology Museum in Constantinople, is so named not because it was thought to have contained Alexander's remains, but because its bas-reliefs depict Alexander and his companions fighting the Persians and hunting.

Alexander's death was so sudden that when reports of his death reached Greece, they were not immediately believed it. Alexander had no obvious or legitimate heir, his son Alexander IV by Roxane was born after Alexander's death.⁹⁰ According to Diodorus, Alexander's companions asked him on his deathbed to whom he bequeathed his kingdom; his laconic reply was "τὸ κράτιστόν", "to the strongest" («τῷ κρατίστῳ», δηλαδή «εἰς τὸν ἰσχυρότατον, εἰς τὸν ἰκανώτατον, εἰς τὸν ἄριστον».)⁹¹ Arrian and Plutarch claimed that Alexander was speechless by this point, implying that this was an apocryphal story. Diodorus, Curtius, and Justin offered the more plausible story that Alexander passed his signet ring (σφραγίδα) to Perdikkas (Περδίκκας), a bodyguard and leader of the companion cavalry, in front of witnesses, thereby nominating him. Perdikkas initially did not claim power, instead suggesting that Roxane's baby would be king, if male; with himself, Craterus (Κρατερός), Leonnatus (Λεοννάτος), and Antipater (Ἀντίπατρος) as guardians. However, the infantry, under the command of Meleager (Μελέαγρος), rejected this arrangement since they had been excluded from the discussion. Instead, they supported Alexander's half-brother Philip III Arrhidaeus (Φίλιππος Γ' ὁ Ἀρριδαῖος).⁹²

Eventually, the two sides reconciled, and after the birth of Alexander IV (Ἀλέξανδρος Δ'),⁹³ he and Philip III (Φίλιππος Γ' ὁ Ἀρριδαῖος) were appointed joint kings, albeit in name only. Dissension and rivalry soon afflicted the Macedonians, however. The satrapies handed out by Perdikkas at the Partition of Babylon became power bases each general used to bid for power. After the assassination of Perdikkas in 321 B.C., Macedonian unity collapsed, and 40 years of war between "The Successors" (*Diadochi*, Διάδοχοι) ensued before the Hellenistic world settled into four stable power blocks: Ptolemaic (Πτολεμαϊκή Βασιλεία) Egypt, Seleucid (Αὐτοκρατορία τῶν Σελευκιδῶν) Mesopotamia and Central Asia, Attalid (Δυναστεία τῶν

⁸⁷ The recent (in 2014) discovery of an enormous tomb in northern Greece, at Amphipolis (Ἀμφίπολις), dating to the time of Alexander the Great has given rise to speculation that its original intent was to be the burial place of Alexander. This would fit with the intended destination of Alexander's funeral cortege. But, something strange happened and they did not publicize the findings. See, <http://www.interalex.net/2014/12/amphipolis-greece-tomb-news-dec-10-2014.html>. Also, <http://greece.greekreporter.com/2014/12/04/lingering-mysteries-of-the-amphipolis-tomb/>. Further, <http://en.protothema.gr/pavlopoulos-only-fools-may-doubt-that-macedonia-is-greek/>

⁸⁸ See, Von Reden (2007). Table 1 gives the value of one (1) chalkos = 1/8 obols.

⁸⁹ See, Kosmetatou (1998).

⁹⁰ Green (2007).

⁹¹ Diodorus, Siculus (1989). "[Library of History](#)". CH Oldfather, translator. [Perseus Project](#).

⁹² **Philip III Arrhidaeus** (Φίλιππος Γ' ὁ Ἀρριδαῖος; c. 359 B.C. – December 25, 317 B.C.) reigned as king of Macedon from after June 11, 323 B.C. until his death. He was a son of King Philip II of Macedon (Φίλιππος Β' ὁ Μακεδών) by Philinna (Φιλίνα or **Philine** Φιλίνη) of Larissa, and thus an elder half-brother of Alexander the Great. Named **Arrhidaeus** at birth, he assumed the name Philip when he ascended to the throne.

⁹³ **Alexander IV** (Ἀλέξανδρος Δ'; 323–311 B.C.), erroneously called sometimes in modern times *Aegus*, was the son of Alexander the Great (Alexander III of Macedon) and Princess Roxana of Bactria.

Ατταλιδῶν) Anatolia, and Antigonid (Ἀντιγονίδαι) Macedon. This topic will occupy us in a future work. In the process, both Alexander IV and Philip III were murdered.⁹⁴

VI. Historic Lessons for the Current Economy and Society

As we saw above, these Greek (Hellen) Macedonians have contributed to the civilization of the entire world of their times. Contemporary historians, Herodotus, Thucydides, Arrian, Polybius, Justin, Diodorus, Plutarch, and other sources write for these Greeks (Hellenes) and their King, Alexander III the Great. These Macedonians by themselves were declaring since these ancient times that they were Greeks (<<Μακεδόνες αἰεὶ Ἕλληνες>>) and they were proud for their descent. Alexander by addressing the people of Southern Greece was saying “my fellow Greeks”. Today, all the wars are conquests and not civilizing ones, as it was Alexander’s expedition; they cause enormous debts, casualties, refugees, execution of foreign leaders, and destructions. Thus, Alexander’s successful campaign and his economic management of a huge empire are very useful lessons for our leaders.

For those, who do not know the Greek (Hellenic) language, which was also the language of all Greek city-states and regions, like the Ancient Macedonia; the names of Macedonians are all Greek and their culture, faith, and race, were Greek, too. The name Alexander (Ἀλέξανδρος)⁹⁵ is Greek and it is composed by the two words, ALES (ΑΛΕΣ) and ANDROS (ΑΝΔΡΟΣ). The first (ΑΛΕΣ) renders the meaning of assembly of the same race overtime,⁹⁶ i.e., Greeks. (A=gathering, Λ=similar-same race, E=chronic, through time, Σ=humans). Where the second (ΑΝΔΡΟΣ) explains by whom all these people are brought together, namely by a man (ἄνδρα), who has indeed, high spirituality, strength, vision, energy, fighting power.⁹⁷ Everything is Greek in Macedonians, from language to currency (the inscriptions on the coins were all with Greek names)⁹⁸ to their entire civilization; and this Greek language (Ἑλληνικά) was used to write the Gospels (New Testament), too. The full name of Alexander the Great was Greek and it was, Ἀλέξανδρος Φιλίππου Μακεδόν. This language has a continuity from Ancient Greece to Hellenistic period and from Byzantium (Romania, Ρωμανία) to today Greeks (Hellenes).⁹⁹ All these are, divine providence and historic events and we cannot change this historic truth. What the opponents try to do is, ματαιότης ματαιότητων.

According to Plutarch,¹⁰⁰ among Alexander’s traits were a strong temper and rash, impulsive nature, which undoubtedly contributed to some of his decisions as a leader. Alexander was open to reasoned debate. He also had a calmer side (perceptive, logical, and calculating). He had a great desire for knowledge, a love for philosophy, and was an avid reader. These were no doubt in part, due to Aristotle’s tutelage; Alexander was intelligent and quick to learn. His intelligent and rational side was amply demonstrated by his ability

⁹⁴ See, Green (2007) and Kallianiotis (2015).

⁹⁵ The letters of Α-Λ-Ε-Ξ-Α-Ν-Δ-Ρ-Ο-Σ represent the numbers of the Greek alphabet, 1-30-5-60-1-50-4-100-70-200 = 521 (their sum) = 8, which symbolize a new beginning. The harmony in the Greek language is amazing. Ancient Greeks believed that these words (the names of everything was the absolutely correct name) in the Greek language had been given by the gods. See, <<Εἶναι Πρόνομο νά Μιλᾶς Ἑλληνικά>>, schizas.com, September 7, 2015, pp. 1-4.

⁹⁶ **The Greek nation**, according to **Herodotus (Ἡρόδοτος)**, a Greek historian who was born in Halicarnassus, Caria and lived in the fifth century B.C., c. 484–425 B.C. referred as “The Father of History”), was <<ὁμόαιμον, ὁμόγλωσσον, ὁμόθησκον, ὁμότροπον>> (ομοαιμον = same blood, omoglosson = same language, omothriskon = same religion, omotropon = same ways, behaviour); but with any Greek City State maintaining its independent leadership and rulers, with their own alliances and their own civil wars in the Greek region. From Homer up to Herodotus, who also mentions that, <<τό Ἑλληνικόν γλῶσση αἰεὶ τῇ αὐτῇ διαχρᾶται>> (“the Greek language has always been spoken”); but in the pass of time, in this long Greek history (7 thousands years), the Greeks were calling themselves with a variety of names. See, <http://hellinon.net/EllinismosMakedonia.htm>

⁹⁷ See, Varnakos (1997, pp. 49-50).

⁹⁸ See, Kallianiotis (2015, pp. 56-69).

⁹⁹ See also, «Α ΜΠΕ ΜΠΑ ΜΠΑΛΟΜ, ΤΟΥ ΚΕΙΘΕ ΜΠΑΛΟΝ»! ΣΥΓΚΛΟΝΙΣΤΙΚΗ (γλωσσική) ΔΙΑΧΡΟΝΙΚΟΤΗΣ; <https://christianvivliografia.wordpress.com/2012/10/11/%e1%bc%84-%ce%bc%cf%80%ce%ad-%ce%bc%cf%80%e1%bd%b0-%ce%bc%cf%80%ce%bb%cf%8c%ce%bd-%cf%84%ce%bf%e1%bf%a6-%ce%ba%ce%b5%e1%bf%96%ce%b8%ce%b5-%ce%bc%cf%80%ce%bb%cf%8c%ce%bd/>

¹⁰⁰ Plutarch (1919) and Plutarch (1936).

and success as a general, executive, and political leader. He had great self-restraint in “pleasures of the body”, necessary abilities for a wise man. Alexander was erudite and patronized both arts and sciences. He was seeking the Homeric ideals of honor (τιμή, *timê*) and glory (δόξα, κλέος, κῦδος = *kudos*).¹⁰¹ He had great charisma and force of personality, characteristics which made him a great leader, a successful executive, and effective economist. His unique abilities were further demonstrated by the inability of any of his generals to unite Macedonians and all Greeks and retain the Empire after his death; only Alexander had the ability to do so.

His mother, Olympias (Ὀλυμπιάς), always insisted to him that he was the son of Zeus, a theory apparently confirmed to him by the oracle of Amun at Siwa (an oasis in Egypt).¹⁰² He began to identify himself as the son of Zeus-Ammon. However, Alexander also was a pragmatic ruler, who understood the difficulties of ruling culturally disparate peoples, many of whom lived in kingdoms, where the king was “divine”. Thus, rather than megalomania, his behavior may simply have been a practical attempt at strengthening his rule and keeping his empire together with the introduction of the Greek moral and ethical value-oriented system. Another oracle was found in pseudo-Callisthenes’ biography of Alexander the Great.¹⁰³

In addition, there were many finds in Vergina (Βεργίνα) or Aegae (Αἰγαί)¹⁰⁴ and Dion (Δίον) of tombstones that bear only Greek names. These tombstones provide strong evidence of the Hellenic origin of the Macedonians.¹⁰⁵ Alexander’s expedition was a Greek campaign to civilize the barbarian world of that period and offer its language and paideia to Middle East, Asia, and Africa that all these people to be ready to accept the “Revealed Truth” that was coming three centuries later.¹⁰⁶ This civilization has contributed greatly to our socio-economic-political system from these distant times up to now.

Thus, Alexander’s legacy to Hellenism and to humanity extended beyond his military conquests. His campaigns greatly increased contacts and trade between East and West, his currency became the only money of the Empire, and vast areas to the east were significantly exposed to Greek civilization and influence. Some of the cities he founded became major cultural and economic centers, many surviving into the 21st century.¹⁰⁷ His chroniclers recorded valuable information about the areas through which he marched, while

¹⁰¹ Κῦδος (*kydos*) = δόξα (κυρίως πολεμική), κλέος, φήμη, εὐκλεία, καύχημα, τιμή, ἐγκώμιον. The English word *kudos* is misspelled; the correct must be *kydos*.

¹⁰² See, Liana Souvaltzi. <http://www.independent.co.uk/news/world/some-talk-of-alexanders-tomb-starts-to-ring-hollow-1571876.html>. Souvaltzi did the excavation at Siwa, Egypt, but they did not allow the continuation of her work to bring her findings to the light. <http://www.nytimes.com/1995/02/06/world/greek-team-doubts-site-holds-alexander-s-tomb.html> See also, Σουβαλτζή (2002).

¹⁰³ See, Kallianiotis (2015).

¹⁰⁴ Vergina = Aegae (Βεργίνα = Αἰγαί) means water and coastal land, from which we have the name Aegean (Aegaeon) Sea (Αἰγαῖον Πέλαγος). Also, it was found in the Palace of Vergina, on the floor, the inscription: << Ἡρακλῆ Πατρῶν >> (= “Hercules the Head of the Race”). This is an amazing history that we can derive lessons even today, but it is difficult to do the appropriate connections.

¹⁰⁵ An inscription of a damnation (=κατάδυσμος), which was revealed in Pella (Πέλλα), was also written in this superior Greek language. See, I. N. Kallianiotis, “An Archaeological Perspective of the Macedonian Question”, *Χριστιανική Βιβλιογραφία (Christian Vivliografia)*, ΙΣΤΟΡΙΑ, October 11, 2010, pp. 1-7. <http://christianvivliografia.wordpress.com/2010/10/11/an-archaeological-perspective-of-the-macedonian-question/>

¹⁰⁶ Apostles and teachers traveled to all these Hellenized regions to preach the New Gospel, mostly in the Greek (Hellenistic) language (*lingua franca*). Matthias went to Syria; John to Ephesus and Patmos; Paul to Asia Minor, Greece, and Rome; Peter went to Babylon, Mesopotamia, Britain, and Rome (many authors write that St. Peter never went to Rome); Andrew to Greece, Black Sea, and Denmark; Thomas went to India; Matthew went to Parthia, Ethiopia, and near India; Philip to North Africa; Bartholomew to India with Thomas, to Armenia, Ethiopia, and South Africa; James the son of Alpheus went to Syria; Simon the Zealot to Persia; and Mark went to Africa and found the Church of Alexandria. See, <http://www.christianity.com/church/church-history/timeline/1-300/whatever-happened-to-the-twelve-apostles-11629558.html> Also, <http://www.christianity.com/church/church-history/timeline/1-300/whatever-happened-to-the-twelve-apostles-11629558.html>

¹⁰⁷ We see ISIS, today, destroying the Hellenic exhibits in museums in Iraq and other areas in the Middle East. See, <http://www.theguardian.com/world/2015/feb/26/isis-fighters-destroy-ancient-artefacts-mosul-museum-iraq>. Also, they blew up

the Greeks themselves got a sense of belonging to a world beyond the Mediterranean. Actually, he prepared the ground for Socrates' (Σωκράτης; 470-399 B.C.) "Unknown God" to become known to humanity with Alexander's Hellenistic language and civilization.¹⁰⁸

Undoubtedly, Alexander's most immediate legacy was the introduction of Macedonian (Hellenic) rule and Xenophon's economic philosophy to the huge new boundless extensions into Asia. At the time of his death, Alexander's Empire covered some 5,200,000 km² (2,000,000 square miles), and was the largest state not only of its time, but in the entire human history. Many of these remote areas remained in Greek hands or under Greek influence for the next 300 years. The successor states that emerged were dominant forces, and these 300 years are referred to as the Hellenistic period (Ἑλληνιστική Περίοδος), which was from 323 B.C. until the emergence of the Roman Empire, as signified by the Battle of Actium in 31 B.C. He managed his wars and his empire by exercising an efficient and effective public economic policy with a surplus at the end of 5,851,832,119 Drs (Tables 3c and 4b). Also, he was generous in his payments. He was paying more than 1 Dr/day = 0.1528538 ozs/day or \$7.612/day up to 6.66 Drs/day = 1.0180063 ozs/day or \$50.697/day, which was \$0.952/hour. (Table 3a and Figure 1).¹⁰⁹ Assuming an inflation rate of 1% per annum since 4th century B.C. (for 2,330 years), the nominal wage must be today, \$11,154,185,480/hour.¹¹⁰

Over the course of his conquests, for thirteen years (336-323 B.C.), Alexander founded some twenty cities that bore his name, most of them east of the Tigris (Τύγρης ποταμός).¹¹¹ The first, and greatest of all, was Alexandria (Ἀλεξάνδρεια) in Egypt, which would become one of the leading Mediterranean cities.¹¹² These cities' locations reflected trade routes as well as defensive positions. Three centuries or so after Alexander's death, many of the Alexandrias were thriving, as economic centers, with elaborate public buildings and substantial populations that included both Greek¹¹³ and local peoples.

Some of the most unusual effects of Hellenization can be seen in Afghanistan and India, in the region of the relatively late-arising Greco-Bactrian Kingdom (250-125 B.C.) in modern Afghanistan, Pakistan,¹¹⁴

the Hellenistic city of Palmyra (Syria) in August 2015, where there are many Greeks still living there. See, http://www.nytimes.com/2015/08/24/world/middleeast/islamic-state-blows-up-ancient-temple-at-syrias-palmyra-ruins.html?_r=0. All these areas that were part of Alexander's Empire and later parts of the Hellenistic Kingdoms, were having the Greek culture until the 7th century A.D., when Islam took over this region and degraded the Greek-Orthodox civilization.

¹⁰⁸ See, <https://www.youtube.com/watch?v=4mXeMU4c140>

¹⁰⁹ The price of silver is \$49.80/oz (the 2011 price). The nominal wage in the 4th century B.C. is at the same level as the U.S. minimum wage, today. But, the inflation is enormous during all these 2,330 years; thus, the real wage, today, is completely insignificant (enormous exploitation of labor).

¹¹⁰ Alexander's minimum wage was \$0.952/hour. Then, today's minimum wage, with an annual inflation of 1%, must be: $\$0.952(1+0.01)^{2330} = \$0.952(1.1716581390) = \$11,154,185,480/\text{hour}$, but it is only \$7.25/hour. Of course, if the current wage can cover the cost of living of a household, everything is perfect because the recourses on earth are limited. The unfair distribution of wealth is the biggest problem of our societies, today.

¹¹¹ See, [Arrian 1976](#), IV, 5–6, 16–17.

¹¹² Greeks are in Alexandria, Egypt, since those days up to now. The Greek community, there, with the Patriarchate of Alexandria and the Greek Patriarch are thriving and contribute to the life of the city and the entire Africa even, today.

¹¹³ Also, these Greeks in the Palestine region, who were there since Alexander's time, went to meet Jesus, as we see in the Bible: "Now there were certain Greeks among those who came up to worship at the feast. Then they came to Philip, who was from Bethsaida of Galilee, and asked him, saying, 'Sir, we wish to see Jesus'. Philip came and told Andrew, and in turn Andrew and Philip told Jesus. Jesus answered them, saying, 'The hour has come that the Son of Man should be glorified' [by these Greeks]". (John 12: 20-23). During that period, there were 115 Greek cities in Palestine. See, Δημοσθένης Δ. Λιακόπουλος, *Ἰησοῦς Χριστός: Ἑλληνισμός-Χριστιανισμός*, Ἐκδόσεις Λιακόπουλος, Ἀθήναι, 2000.

¹¹⁴ There is a tribe, the Kallas or the Kalasha or the Kalasha of Chitral or simply Kalasha, which is an ethnic group living in the Hindu Kush region of Pakistan. They are [probably] an ancient Dard people, who speak the Kalasha-mun language, have light skin, eyes, and hair, similar to what one would find in Southern Europe. Many Kalash claim that they are the direct descendants of either Greek settlers, Alexander the Great's army or even Alexander himself. Their religion and culture have many ancient Greek elements. Today, Greece has a very good relationship with Kallas. See, <https://wondersofpakistan.wordpress.com/2012/09/03/kalasha-the-white-tribe-of-pakistan/> Also, http://www.huffingtonpost.com/brian-glyn-williams/pagan-kalash-people-of-pakistan_b_4811627.html

and Tajikistan; and the Greco-Indian Kingdom (180 B.C.-10 A.D.) in modern Afghanistan and India. Also there, on the newly formed *Silk Road*, Greek culture apparently hybridized with Indian, and especially Buddhist culture. The process of Hellenization extended to the sciences, where ideas from Greek astronomy filtered eastward and had profoundly influenced Indian astronomy by the early centuries A.D. For example, Greek astronomical instruments dating to the 3rd century B.C. were found in the Greco-Bactrian city of Ai Khanoum (possibly the historical Alexandria on the Oxus= Ἀλεξάνδρεια ἢ ἐπὶ τοῦ Ὠξοῦ) in modern-day northern Afghanistan, while the Greek concept of a spherical earth surrounded by the spheres of planets was adopted in India and eventually supplanted the long-standing Indian cosmological belief of a flat and circular earth.

Alexander and his exploits were admired by many Romans, especially generals, who wanted to associate themselves with his achievements. Polybius (Πολύβιος)¹¹⁵ began his *Histories* by reminding Romans of Alexander's achievements, and thereafter Roman leaders saw him as a role model. Pompey the Great (Γναῖος Πομπήιος ὁ Μέγας) adopted the epithet "Magnus" and even Alexander's anastole-type haircut, and searched the conquered lands of the east for Alexander's 260-year-old cloak (μανδύας), which he then wore as a sign of greatness. Julius Caesar (Γάϊος Ἰούλιος Καῖσαρ) dedicated a Lysippean equestrian bronze statue, but replaced Alexander's head with his own, while Octavian (Γάϊος Ἰούλιος Καῖσαρ Ὀκταβιανός) visited Alexander's tomb in Alexandria and temporarily changed his seal from a sphinx to Alexander's profile. Emperor Trajan (Τραϊανός) also admired Alexander, as did Nero (Νέρων) and Caracalla (Καρακάλλας). The Macriani, a Roman family that in the person of Macrinus (Μακρίνος) briefly ascended to the imperial throne, kept images of Alexander on their persons, either on jewelry, or embroidered into their clothes. On the other hand, some Roman writers, particularly Republican figures, used Alexander as a cautionary tale of how autocratic tendencies can be kept in check by republican values. Alexander was used by these writers as an example of ruler values such as *amicitia* (friendship) and *clementia* (clemency), but also *iracundia* (anger) and *cupiditas gloriae* (over-desire for glory). Alexander the Great is the most admired leader in human history.¹¹⁶

Apart from a few inscriptions and fragments, texts written by people, who actually knew Alexander or who gathered information from men, who served with Alexander were almost all lost.¹¹⁷ Contemporaries, who wrote accounts of his life are, included Alexander's campaign historian Callisthenes (Καλλισθένης; c. 360–328 B.C.), Alexander's generals Ptolemy (Πτολεμαῖος Σωτήρ, c. 367–c. 283 B.C.) and Nearchus (Νέαρχος, Nearchos; c. 360–300 B.C.), Aristobulus (Ἀριστόβουλος τῆς Κασσανδρείας; c. 375-301 B.C.), a junior officer on the campaigns and Onesicritus (Ὀνησίκριτος; c. 360– c. 290 B.C.), Alexander's chief helmsman. Their works are lost, but later works based on these original sources have survived. The earliest of these is Diodorus Siculus (Διόδωρος Σικελιώτης; 1st century B.C.), followed by Quintus Curtius Rufus (mid-to-late 1st century A.D.), Arrian (Ἀρριανός; 1st to 2nd century A.D.), the biographer Plutarch (Πλούταρχος; 1st to 2nd century A.D.), and finally Justin (Ἰουστῖνος) whose work dated as late as the 4th century A.D. Of these, Arrian is generally considered by historians the most reliable, given that he used Ptolemy and Aristobulus as his sources, closely followed by Diodorus.

Lastly, Alexander was the only civilizer in human history, a great leader, an excellent general, and a very good economist (οἰκονομολόγος), who was managing this vast empire, his enormous campaign, his

¹¹⁵ **Polybius** (Πολύβιος, *Polýbios*; c. 200 – c. 118 B.C.) was a Greek historian of the Hellenistic Period noted for his work, *The Histories*, which covered the period of 264–146 B.C. in detail. The work describes the rise of the Roman Republic to the status of dominance in the ancient Mediterranean world. Polybius is also renowned for his ideas concerning the separation of powers (legislature, executive, and judiciary) in government, later used in Montesquieu's *The Spirit of the Laws* and in the drafting of the [United States Constitution](#). Undoubtedly, everything is coming from Ancient Greeks ("Totum Graecorum est", Cicero; 106 B.C.-43 B.C.).

¹¹⁶ This is the reason that many non-Greek people, even foreign nations, claim that they are Macedonians, descendants of Alexander the Great. (*sic*).

¹¹⁷ See, Bose (2003).

huge army and personnel, and their expenses; but, also he was administrating the different sources of revenue by having at the same time a very generous social policy, not only to balance the empire's budget, but he had surpluses, too. Greece enjoyed a period of peace and prosperity during Alexander's campaign in Asia.¹¹⁸ Alexander sent back vast sums of money and other valuables from his conquest and used a large amount of currency to improve his vast empire. His wages and all his compensations were very generous, which stimulated the economy (expansionary fiscal policy) and increased trade and prosperity across his empire. However, Alexander's constant demands for troops and the migration of Macedonians throughout his empire depleted Macedonia's manpower,¹¹⁹ greatly weakening it in the years after Alexander, and ultimately led Greece to its subjugation by Rome in 146 B.C.; but, Greece conquered Rome intellectually.

VII. Conclusion: Economic Prosperity and Hellenization of the Known World

Alexander III (July 20, 356-June 11, 323 B.C.) earned the epithet "the Great" (Μέγας Ἀλέξανδρος Γ' ὁ Μακεδών), due to his unparalleled success as a military commander and a civilizer of the known world at that time.¹²⁰ He never lost a battle, despite typically being outnumbered. This was due to use of terrain, phalanx (φάλαγξ) and cavalry tactics, bold strategy, and the fierce loyalty of his troops. He always was personally involved in battles, in the manner of a Macedonian king. Greek biographer Plutarch (Πλούταρχος; c. 45–120 A.D.) describes Alexander's appearance as a model.¹²¹ Greek historian Arrian (Lucius Flavius Arrianus 'Xenophon', Ἀρριανός; c. 86–160 A.D.) described Alexander as: "[T]he strong, handsome commander with one eye dark as the night and one blue as the sky."¹²² Ancient authors recorded that Alexander was so pleased with portraits of himself created by Lysippos (Λύσιππος) that he forbade other sculptors from crafting his image. Lysippos' sculpture, famous for its naturalism, as opposed to a stiffer, more static pose, is thought to be the most faithful depiction.

Some of Alexander's strongest personality traits formed in response to his parents.¹²³ His mother had huge ambitions, and encouraged him to believe it was his destiny to conquer the Persian Empire.¹²⁴ Olympias' influence instilled a sense of destiny in him; of course, without preventing divine providence. Plutarch tells us that his ambition "kept his spirit serious and lofty in advance of his years".¹²⁵ However, his father Philip II (382-336 B.C.) was Alexander's most immediate and influential role model, as the young Alexander watched him campaign practically every year, winning victory after victory while ignoring severe wounds.¹²⁶ Alexander's relationship with his father forged the competitive side of his personality; he had a need to out-do his father,¹²⁷ illustrated by his reckless behavior in battle. While Alexander worried that his father would leave him "no great or brilliant achievement to be displayed to the world",¹²⁸ he proved that there were greater than his father's achievements, with his unique campaign as far as to India.

¹¹⁸ See, Roisman and Worthington (2010).

¹¹⁹ <<Οὐδέν καλόν ἀμιγές κακοῦ.>>

¹²⁰ Roisman and Worthington (2010).

¹²¹ "The outward appearance of Alexander is best represented by the statues of him which Lysippus made, and it was by this artist alone that Alexander himself thought it fit that he should be modelled. For those peculiarities which many of his successors and friends afterwards tried to imitate, namely, the poise of the neck, which was bent slightly to the left, and the melting glance of his eyes, this artist has accurately observed. Apelles, however, in painting him as wielder of the thunder-bolt, did not reproduce his complexion, but made it too dark and swarthy. Whereas he was of a fair color, as they say, and his fairness passed into ruddiness on his breast particularly, and in his face. Moreover, that a very pleasant odor exhaled from his skin and that there was a fragrance about his mouth and all his flesh, so that his garments were filled with it, this we have read in the *Memoirs of Aristoxenus*." See, Plutarch (1919).

¹²² See, "[Alexander the Great](#)". *Mithic*.

¹²³ See, Green (2007).

¹²⁴ Greeks are saying, even today, that "behind a saint, there is always a holy mother".

¹²⁵ See, Plutarch (1919).

¹²⁶ See, Roisman and Worthington (2010).

¹²⁷ From what was the belief in Ancient Sparta: <<ἄμμες δέ γ' ἐσόμεθα πολλῶ κάρρονες>> [we shall become better (than you)].

¹²⁸ Plutarch (1919).

Alexander married twice. First, Roxana (Ρωξάνη), daughter of the Bactrian nobleman Oxyartes (Ὀξύαρτης) and Stateira II (Στάτειρα Β'), a Persian princess and daughter of Darius III of Persia (Δαρεῖος Γ' τῆς Περσίας ἢ Δαρεῖος ὁ Κοδομανός). He apparently had two sons, Alexander IV of Macedon (Ἀλέξανδρος Δ' Μακεδών) of Roxana and, possibly, Heracles of Macedon (Ἡρακλῆς ὁ Μακεδών) from his mistress Barsine (Βαρσίνη). He lost another child when Roxana miscarried at Babylon. Apart from wives, Alexander had many more female companions.¹²⁹ Also, Alexander accumulated a harem in the style of Persian kings, but he used it rather sparingly; showing great self-control in "pleasures of the body". Nevertheless, Plutarch described how Alexander was infatuated by the pretty Roxana.

Alexander's economic abilities were also excellent, due to Xenophon's and Aristotle's teaching on the philosophy of *Oeconomicos*. He managed the economy of his wars; an enormous campaign from Greece to India with success and very efficient. His public policies (revenue, *poroe* and spending, *dapanae*) were very effective, not only balancing his budget, but generated a surplus, which was sent back to Macedonia and was also used to improve prosperity for his empire. The cost (δαπάναι) of Alexander's expedition from 336 B.C. to 323 B.C. was 2,562,018,650 Drs, which was 391,614,286.3 ozs of silver (\$6,054,356,866 in today's silver price). The revenue (πόροι) from different sources was 8,413,850,769 Drs, which was 1,286,089,063 ozs of silver (\$19,882,936,910). Then, his surplus (πλεονάζον) was (8,413,850,769 - 2,562,018,650 Drs =) 5,851,832,119 Drs or 894,474,776.7 ozs or \$13,828,580,050. (Tables 3b, 3c, 4a, and 4b). His average budget surplus was 450,140,932.2 Drs per annum. He was compensating very well his soldiers and all his personnel, as Table 3a shows. His social policies were also excellent as Tables 3b and 3c reveal. Table 3a gives salaries from 1 Dr to 6.66 Drs per day (0.1528538-1.018006308 ozs) or \$2.363119748 to \$15.73837752 per day, which were much better than today's minimum wages. (Figure 1). Table 1 gives the different denominations of the silver drachma and Table 2 calculates the subdivisions of the Attic talent, which are used for the measures of expenditures and revenue. From the economic point of view, this is a good lesson for our politicians, today, who have generated an unsustainable national debt and the countries are facing bankruptcies. Our current social policies are very insignificant and the workers are extremely exploited, too. Then, we need to learn from the past history.

With the word *Hellenization* we denote the spread of Greek language, culture, currency, economic philosophy, science, and population into the former Persian Empire after Alexander's conquest. That this export of Greek civilization took place is undoubted, and can be seen in the great Hellenistic cities of, for instance, Alexandria, Antioch, and Seleucia (south of Baghdad). Alexander sought to insert Greek elements into Persian culture and attempted to hybridize Greek and Persian culture. This culminated in his aspiration to homogenize the populations of Asia and Europe. Thus, Hellenization occurred throughout this vast region. The core of this Hellenistic culture was essentially Athenian (from the "golden age" of the city). The close association of men from across Greece in Alexander's army directly led to the emergence of the largely Attic-based "*koine*" (κοινή), or "common" or Hellenistic (Ἑλληνιστική) Greek dialect or the language of the New Testament (Ἑλληνικὴ τῆς Καινῆς Διαθήκης).¹³⁰ Koine spread throughout the Hellenistic world, becoming the *lingua franca*¹³¹ of Hellenistic lands and eventually the ancestor of Modern

¹²⁹ As we see, Alexander had been married twice and had many other women companions, which was normal at that time and everything shows that he had relationships only with pretty and noble women.

¹³⁰ *Koine Greek* displayed a wide spectrum of different styles, ranging from more conservative literary forms to the spoken vernaculars of the time. As the dominant language of the Byzantine Empire (Romania, Ρωμανία), it developed further into Medieval Greek, the main ancestor of Modern Greek. Literary Koine was the medium of much of post-classical Greek literary and scholarly writing, such as the works of Plutarch and Polybius. Koine is also the language of the Christian New Testament, of the Septuagint (the 3rd-century B.C. Greek translation of the Hebrew Bible, "Old Testament"), and of most early Christian theological writing by the Church Fathers. (St. Basil the Great and St. Gregory the Theologian studied in Athens in the 4th century A.D.). In this context, Koine Greek is also known as "Biblical", "New Testament", "Ecclesiastical" or "Patristic" Greek (and as a good American friend is saying, "this is the language that is spoken in Paradise"). It also continues to be used as the liturgical language of services in the Greek Orthodox Church.

¹³¹ A *lingua franca* (plural: lingue franche or *lingua francas*), also known as a bridge language, trade language or vehicular language, is a language *systematically* (as opposed to occasionally or casually) used to make communication possible between

Greek. Furthermore, town planning, education, economics, trade, local government, and art in the Hellenistic period were all based on Classical Greek ideals, evolving into distinct new forms commonly grouped as Hellenistic. Aspects of Hellenistic culture were evident in the traditions of the Byzantine (Medieval Greek) Empire in the mid-15th century and they are still present even in today's Greece. The entire of long duration Greek culture is based on tradition (Παράδοση), which is preserved and is transferred from one generation to the other through the family and the traditional *paideia*.

Lastly, Alexander the Great was a gifted man by God (divine providence is in control, as Ancient Greeks believed, too). His role in history is unique and he had all these talents to pursue this historic objective, the preparation of the known world to accept the expected "Unknown God" of Socrates and of the other Greek philosophers. Actually, Alexander was the Greek "social forerunner". The divine plan was successful in only twelve (12) years (335-323 B.C.) and was preserved with Alexander's successors (Διάδοχοι). Alexander's short life for only 33 years (356-323 B.C.) was enough to accomplish the historic plan for humans' salvation. He was successful in all his tasks and of course, in his economic policy and triumphant in his social, foreign, and global policies. It is obvious that if a leader has similar values and virtues as Alexander, he will be very successful for his people and the world. The problem, today, is that our leaders do not know history and they repeat the same mistakes and their people (citizens) are paying the cost.

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persons not sharing a native language, in particular when it is a third language, distinct from both native languages, as it is the English language, today.

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Table 1: Denominations of Ancient Greek Silver Drachma

Image	Denomination	Value	Weight	Greek
	Dekadrachm	10 drachmae	43 grams	Δεκάδραχμον
	Tetradrachm	4 drachmae	17.2 grams	Τετράδραχμον
	Didrachm	2 drachmae	8.6 grams	Δίδραχμον
	Drachma	6 obols	4.3 grams	Δραχμή
	Tetrobol	4 obols	2.85 grams	Τετρώβολον
	Triobol (hemidrachm)	3 obols ($\frac{1}{2}$ drachma)	2.15 grams	Τριόβολον (ήμιδραχμον)
	Diobol	2 obols	1.43 grams	Διόβολον
	Obol	4 tetartemoria ($\frac{1}{6}$ drachma)	0.72 grams	Ὄβολός (ὄβελός)
	Tritartemorion	3 tetartemoria	0.54 grams	Τριταρτημόριον (τριτημόριον)
	Hemiobol	2 tetartemoria ($\frac{1}{2}$ obol)	0.36 grams	Ἡμιοβέλιον (ήμιοβόλιον)
	Trihemitetartemorion	$\frac{3}{2}$ tetartemorion	0.27 grams	Τριημιτεταρτημόριον
	Tetartemorion	$\frac{1}{4}$ obol	0.18 grams	Τεταρτημόριον (ταρτημόριον, ταρτήμορον)
	Hemitetartemorion	$\frac{1}{2}$ tetartemorion	0.09 grams	Ἡμιτεταρτημόριον

Historic currency divisions¹³²

8 *chalkoi*; *χαλκοί* (coppers) = 1 *obolus*; *ὄβολός*

6 *oboloi*; *ὄβολοί* = 1 *drachma*; *δραχμή*

70 *drachmae*; *δραχμαί* = 1 *mina* or *mna*; *μνᾶ* (later 100 *drachmae* = 1 *mina*)¹³³

¹³² Ἡ λέξις δραχμή προέρχεται ἀπὸ τὸ ρῆμα *δράττω*, τὸ ὁποῖον σημαίνει ἀρπάζω (*δράττωμαι* = πιάνω σφικτά). Εἰς τὴν ἀρχαιότητα, μία δραχμή ἦτο ἴση πρὸς ἕξι ὀβολούς, νόμισμα τὸ ὁποῖον εἰς τὴν παλαιότεραν μορφήν του εἶχε σχῆμα σιδερένιας ράβδου. Τὸ πάχος των ἦταν τόσο, ὥστε ἡ φούχτα ἐνὸς ἀνδρικοῦ χερικοῦ νὰ ἠμπορῇ νὰ πιάσῃ ἕξι ἀπὸ αὐτοῦς. Ἔτσι ἐκ τοῦ δράττω (ὅσους ὀβολούς ἠμποροῦσε νὰ ἀδράξῃ ἡ παλάμη) προκύπτει ἡ λέξις δραχμή. See also, Table 2.

¹³³ Aristotle, Athenian Constitution, 10.2

60 minae; *μναί* = 1 Athenian Talent; *Ἀθηναϊκὸν ἢ Ἀττικὸν Τάλαντον* (Athenian standard)

Note: The weight of the silver drachma (ἄργυρά δραχμή) was approximately 4.3 grams (γραμμάρια), although weights varied significantly from one city-state to another. It was divided into six (6) obols (ὀβολούς) of 0.72 grams, which were subdivided into four (4) tetartemoria (τεταρτημόρια) of 0.18 grams, one of the smallest coins ever struck, approximately 5 – 7 mm in diameter.

Minae (μναί) and talents (τάλαντα) were never actually minted: they represented weight measures used for commodities (e.g. grain) as well as metals like silver or gold, which help us, today, to make a comparison of these measures with ours. The New Testament mentions both didrachma and, by implication, tetradrachma in context of the Temple tax. Luke's Gospel (Τὸ κατὰ Λουκᾶν Εὐαγγέλιον) includes a parable told by Jesus of a woman with 10 drachmae, who lost one and searched her home until she found it. (Luke 15:8-10).

Source: British Museum Catalogue 11 - Attica Megaris Aegina; American Numismatic Society (1916). [American Journal of Numismatics](#), 49-50. American Numismatic and Archaeological Society.

Table 2

Attic or Athenian Talent (pure silver)

1 **gold talent** = 26 Kgs = 57 lbs = 917.123 ozs = 6,000 Drs = 300 gold staters = 60 mnae = 36,000 oboloi = \$1,077,436.10

1 **silver talent** = 26 Kgs = 57 lbs = 917.123 ozs = 6,000 Drs = 3,000 silver staters = 60 mnae = 36,000 oboloi = \$14,178.72158

<i>Talents</i>	Currency Parities						Gold	Silver	
	<i>Kgs</i>	<i>lbs (pounds)</i>	<i>Ounces</i>	<i>Drs</i>	<i>mnae</i>	<i>staters</i>	<i>oboloi</i>	<i>dollars</i>	
1 talent	26	57	917.123	6,000	60	3,000	36,000	\$1,077,436.10	\$14,178.72
0.03846	1 Kg	2.19231	35.27396	230.76923	2.3076923	115.3846	1,384.615	\$41,439.85	\$545.3354
0.01754	0.45614	1 lb (pound)	16.08988	105.26316	1.052631579	52.63158	631.5789	\$18,902.3877	\$248.7495
0.00109037	0.02834952	0.062150878	1 oz	6.54219772	0.065421977	3.271099	39.2532	\$1,174.80	\$15.46
0.00016667	0.004333333	0.0095	0.1528538	1 Dr	0.01	0.5	6	\$179.57268	\$2.36312
0.01666667	0.433333333	0.95	15.285383	100	1 mna	50	600	\$17,957.26833	\$236.312
0.000333333	0.0086666	0.019	0.3057076	2	0.02	1 stater	12	\$359.14536	\$4.72624
0.00002777	0.0072222	0.0015833	0.0254756	0.1666666	0.00166666	0.083333333	1 obol	\$29.928779	\$0.393853
0.00000093	0.00002413	0.000052903	0.0008512	0.0055688	0.000055688	0.00278438	0.0334126		\$1

Note: See, Table 1. Talents (τάλαντα) and mnae (μναί) were never minted; they represented weight measures; 1 talent = 26 kgs = 917.123 ozs and 1 mna = 0.43333 kgs = 15.28538 ozs. The price of gold is with December 22, 2014 (\$1,174.80/oz) and the price of silver is with December 22, 2014 (\$15.46/oz). The last row of the Table shows the insignificant value of the dollar (\$) with respect the ancient currencies (the U.S. dollar is completely depreciated).

Source: Attic Talent, http://en.wikipedia.org/wiki/Attic_talent, Talent (Measurement), [http://en.wikipedia.org/wiki/Talent_\(measurement\)](http://en.wikipedia.org/wiki/Talent_(measurement)), Talent (Weight), [http://simple.wikipedia.org/wiki/Talent_\(weight\)](http://simple.wikipedia.org/wiki/Talent_(weight)) and author's calculations.

Table 3a

Salaries and Other Compensations (Δαπάναι)

	Daily	Monthly	Annually
Common soldier (στρατιώτης)	1-2 Drs	30 Drs	360 Drs
Decadarches (δεκανεῖς)	1.33 Drs	40 Drs	480 Drs
Dimirites (διμοιρῖται)	2.66 Drs	80 Drs	960 Drs
Cavalleries (ἰππεῖς)	6.66 Drs	200 Drs ¹	2,400 Drs
Phalanx (φαλαγγῖται)	3.33 Drs	100 Drs ²	1,200 Drs
Average wage/soldier (Alexander's) ³	1.169–1.461 Drs	35.08-43.83 Drs	421-526 Drs
Sailors (Alexander's)	2.307 Drs	69.21 Drs	831 Drs

Skilled worker ⁴	1.852 Drs	55.56 Drs	667 Drs
Skilled worker ⁵	2.564 Drs	76.92 Drs	923 Drs
Sailor of trireme ⁶	1 Dr	30 Drs	360 Drs
Mercenaries (Hellenistic period)	1 Dr	30 Drs	360 Drs
Common laborer:	1 Dr	30 Drs	360 Drs

Note: See Tables 1 and 2. 1 Attic talent of silver = 6,000 Drs was the wage of 9 man-years of skilled work (360 days work) = 16.667 Drs/day (9 men) = 1.85185 Drs/day/skilled worker; or (if the work was 260 days/year) = 23.07692308 Drs/day (9 men) = 2.564102564 Drs/day/skilled worker. During the Peloponnesian war: 1 Attic talent of silver (6,000 Drs) was 1 month wages of a trireme crew of 200 men = 200 Drs/day for 200 men = 1 Dr/day/man. 1 Dr/day = 4.3 grs of silver/day/rower = 0.151678028 ozs (\$15.46/oz) = \$2.344942313/day.

¹ It seems a little high (it might include the cost of the horse, too).

² Diodorus.

³ We use for our budget, here, the higher wage (cost) = 1.442 Drs/day.

⁴ Assuming 360 days work/year.

⁵ Assuming 260 days work/year (by some other authors).

⁶ During the Peloponnesian war (431-404 B.C.).

Alexander's conquests lasted for 13 years (336-323 B.C.); thus, the budget is for 8+5=13 years (total).

Source: Diodorus, Justin, Plutarch, Arrian.

Table 3b

Expenditures (Δαπάναι) of Alexander the Great Expedition

A'. The Expedition to Asia 336-328 B.C.

In 336-335 B.C. Parmenion with 10,000 people: cost = 5,260,000 Drs x 2 years = 10,520,000 Drs = 1,608,021.976 ozs

For 336-335 B.C.¹ (We take the higher average annual wage of 526 Drs; where 10,000 soldiers x 526 Drs = 5,260,000 Drs)

In Macedonia 12,000 people: cost = 6,312,000 Drs x 2 years = 12,624,000 Drs = 1,929,626.371 ozs

(12,000 soldiers x 526 Drs = 6,312,000 Drs)

(i) Total Cost: 23,144,000 Drs = 3,537,648.347 ozs

In 334 B.C. Alexander with 35,000 people

In Macedonia 12,000 people

Parmenion with 10,000 people

Total: 57,000 men x 526 Drs = 29,982,000 Drs = 4,582,862.632 ozs

Plus 120 ships with 38,000 crews x 831 Drs = 31,578,000 Drs = 4,826,817.296 ozs

Grand Total: 95,000 men

(ii) Total Cost: 61,560,000 Drs = 9,409,679.928 ozs

Cost: 1st year (334 B.C.): 4,000-5,000 talents/annum = 24,000,000-30,000,000 Drs/annum (421.053-526.316 Drs/annum/man) (from historians)

Plus sailors: $38,000 \times 831 \text{ Drs} = 31,578,000 \text{ Drs}$

Consecutive years (333-328 B.C.): $7,000 \text{ talents/annum} = 42,000,000 \text{ Drs/annum} = 6,419,859.6 \text{ ozs}$

Plus sailors: $38,000 \text{ crews} \times 831 \text{ Drs} = 31,578,000 \text{ Drs} = 4,826,817.296 \text{ ozs}$

(iii) Total Cost: 73,578,000 Drs/annum = 11,246,676.9 ozs/annum

Alexander hired more mercenaries: $42,000,000 \text{ Drs} : 526 \text{ Drs/man} = 79,850 \text{ soldiers}$

Plus 120 ships with 38,000 sailors

Total: 117,850 men

After the victories of Issus (November 5, 333 B.C.) and Gaugamela (October 1, 331 B.C.): Alexander donated to his soldiers 3,000 talents or $18,000,000 \text{ Drs} = 2,751,368.4 \text{ ozs}$

Alexander advanced on Egypt (late 332 B.C.)

After the conquest of Ecbatana (330 B.C.): Alexander gave to his soldiers jewels and 13,000 talents or $78,000,000 \text{ Drs} = 11,922,596.4 \text{ ozs}$

(iv) Total Bonuses: 96,000,000 Drs = 14,673,964.8 ozs

Total Cost: (336-335 B.C.): 23,144,000 Drs = 3,537,648.347 ozs (i)

(334 B.C.): 61,560,000 Drs = 9,409,679.928 ozs (ii)

(333-328 B.C.): 73,578,000 Drs/annum = 11,246,676.9 ozs/annum; (iii) $\times 6 = 441,468,000 \text{ Drs} = 67,480,061.4 \text{ ozs}$

(333, 331, 330 B.C.): bonuses 96,000,000 Drs = 14,673,964.8 ozs (iv)

1. Total Cost in Asia (336-328 B.C.): 622,172,000 Drs = 95,101,354.48 ozs

Where, (1a) Salaries: $526,172,000 \text{ Drs} = 80,427,389.68 \text{ ozs}$

and (1b) Bonuses: $96,000,000 \text{ Drs} = 14,673,964.8 \text{ ozs}$

B'. The Expedition to India 328 B.C. until the Death of Alexander 323 B.C. (Cost went up for these 5 years)

From historic sources, we know that cost went up, let say to 8,000 talents/annum or 48,000,000 Drs/annum for the existing army of 79,850 men (601 Drs/man). We have an increase in salary of 14.259% (from 526 Drs to 601 Drs). Alexander gathered an army of 140,000 men.

Then, $140,000 \text{ soldiers} \times 601 \text{ Drs/man/annum} = 84,140,000 \text{ Drs/annum} = 12,861,118.73 \text{ ozs}$ (v)

He constructed and used, **Ships 150** with **3,000-5,000 sailors** (historical sources). The construction [shipbuilding of triremes (τριήρεις) was from pine, oak, fir, and cedar trees] had the cost of timber and the labor one. The labor cost was 6,000 man-days $\times 2.564 \text{ Drs} = 15,384 \text{ Drs}$ (ancient sources) plus the cost of timber (assumption)² 5,000 Drs. Total cost/trireme = 20,384 Drs. Then, $150 \text{ ships} \times 20,384 \text{ Drs} = 3,057,600 \text{ Drs} = 467,365.779 \text{ ozs}$. The number of sailors is too small; a trireme had 170 oars and a total of 200 sailors at least. Thus, $150 \text{ ships} \times 200 \text{ silors} = 30,000 \text{ men}$.

Total army: 140,000 soldiers plus 30,000 sailors = 170,000 men

Construction of **150 ships:** $\text{Cost } 150 \times 20,384 \text{ Drs} = 3,057,600 \text{ Drs} = 467,365.779 \text{ ozs}$ (vi)

Sailors 3,000-5,000, total cost: By taking the $30,000 \text{ sailors} \times 831 \text{ Drs/annum} = 24,930,000 \text{ Drs /annum} = 3,810,645.234 \text{ ozs}$ (vii)

Total Cost : (327 B.C.): $112,127,600 \text{ Drs} = 17,139,129.74 \text{ ozs}$ (v)+(vi)+(vii)

Total cost (army and sailors): (327-323 B.C.): $109,070,000 \text{ Drs}; (v)+(vii) \times 5 = 545,350,000 \text{ Drs}$ or $16,671,763.96 \times 5 = 83,358,819.82 \text{ ozs}$

2. Total cost in India (327-323 B.C.): $548,407,600 \text{ Drs} = 83,826,185.61 \text{ ozs}$.

Acquisitions and maintenance of military equipment and material: average army = 130,000 men $\times 12 \text{ Drs}$ (assumption 1 Dr/month) = 1,560,000 Drs/annum = 238,451.928 ozs/annum.

3. Total material cost for 13 years: $1,560,000 \times 13 = 20,280,000$ Drs = $238,451.928 \times 13 = 3,099,875.064$ ozs

Cost of engineers, technicians, bridge builders, carpenters, etc.: (Assumption 10% of the average army = 13,000 people). Cost: $13,000 \times 923$ Drs (skilled workers) = 11,999,000 Drs/annum = 1,834,092.746 ozs/annum

3. Total engineers cost for 13 years: $11,999,000 \times 13$ years = $155,987,000$ Drs = $1,834,092.746 \times 13 = 23,843,205.7$ ozs

Food and transportation (soldiers and their families): (Assuming an average of 130,000 soldiers + 70,000 family members = 200,000 people) with a cost of 0.5 Drs/day $\times 360$ days = 180 Drs/annum. Then, $200,000 \times 180$ Drs/annum = 36,000,000 Drs/annum.

4. Total food and transportation cost for 13 years: $36,000,000$ Drs/annum $\times 13 = 468,000,000$ Drs = $5,502,736.8 \times 13 = 71,535,578.4$ ozs

Medical services (doctors, health personnel, etc.): (Assumption 1% of the total soldiers and their families of 200,000 = 2,000 doctors) with 923 Drs/annum (skilled workers) = 1,846,000 Drs/annum = 282,168.115 ozs/annum

5. Total medical service cost for 13 years: $1,846,000$ Drs/annum $\times 13 = 23,998,000$ Drs = $282,168.115$ ozs/annum $\times 13 = 3,668,185.495$ ozs

Medicines: 100 talents or 600,000 Drs or 91,712.28 ozs

5. Total cost of medicines: $600,000$ Drs $\times 13$ years = $7,800,000$ Drs or $91,712.28$ ozs $\times 13$ years = $1,192,259.64$ ozs.

Indemnities to the families of the soldiers, who fell in battle³ (orphan children were receiving the salary of their father): Maximum number of soldiers $170,000 \times 15.299\% = 26,000$ casualties with 2 children/soldier = 52,000 orphans. 26,000 deaths $\times 1$ talent (6,000 Drs) = 156,000,000 Drs. Orphans compensation: 52,000 children in 13 years, about 4,000/annum $\times 526$ Drs/annum $\times 12$ years = 25,248,000 Drs + 4,000 $\times 526$ Drs $\times 11$ years = 23,144,000 Drs + 4,000 $\times 526$ Drs $\times 10$ years = 21,040,000 Drs + 4,000 $\times 526$ Drs $\times 9$ years = 18,936,000 Drs + 4,000 $\times 526$ Drs $\times 8$ years = 16,832,000 Drs + 4,000 $\times 526$ Drs $\times 7$ years = 14,728,000 Drs + 4,000 $\times 526$ Drs $\times 6$ years = 12,624,000 Drs + 4,000 $\times 526$ Drs $\times 5$ years = 10,520,000 Drs + 4,000 $\times 526$ Drs $\times 4$ years = 8,416,000 Drs + 4,000 $\times 526$ Drs $\times 3$ years = 6,312,000 Drs + 4,000 $\times 526$ Drs $\times 2$ years = 4,208,000 Drs + 4,000 $\times 526$ $\times 1$ year = 2,104,000 Drs. Total 164,112,000 Drs.

Also, Alexander paid off the debts of his soldiers (assume 10% of the 170,000 soldiers with a debt of 1,000 Drs/each): $17,000 \times 1,000$ Drs = 17,000,000 Drs or 2,598,514.6 ozs.

6. Thus, Indemnities to families, salaries to children, and paid off debts of soldiers: 156,000,000 Drs + 164,112,000 Drs + 17,000,000 = 337,112,000 Drs or 51,528,850.23 ozs.

Feasts and celebrations: About 9 feasts plus 1 other celebration, total 10/annum x 13 years = 130 feasts. About 200,000 participants x 2 Drs = 400,000 Drs.

7. Then, cost 400,000 Drs x 130 feasts = 52,000,000 Drs = 7,948,397.6 ozs.

Cooks, bakers, wheat growers, etc.: (Assuming 10% of the total people of 200,000 = 20,000 cooks, etc.). Cost: 20,000 x 667 Drs/annum = 13,340,000 Drs.

4. For 13 years the cost of cooks and others was: 173,420,000 Drs = 26,507,906 ozs.

Appeasers, guards, etc.: (Assumption: these were soldiers and there was no extra compensation).

Royal Meals: 600 talents per annum or 3,600,000 Drs

4. Total royal meals: 3,600,000 Drs x 13 years = 46,800,000 Drs = 7,153,557.84 ozs.

To the relatives of his fallen soldiers, Alexander granted immunity from taxation and public service.

For soldiers, who want to return to their native country, Alexander gave: 2,000 talents or 12,000,000 Drs

[Assumption: the Macedonia soldiers were 45,000 (Parmenion's 10,000 and Alexander's 35,000) and about 14% (6,300 soldiers wanted to leave and each one received 0.5 talent)]. But, only about 4,000 left; the other 2,000 changed their mind and stay.

6. Total cost for returning soldiers: 2,000 talents or 12,000,000 Drs = 1,834,245.6 ozs.

Soldiers, who decided to stay received: 3 talents each or 18,000 Drs/soldier

(Assuming that 32% of them (from the 6,300) decided to stay, which is about 2,000 soldiers).

6. Total cost of staying soldiers: 2,000 x 3 talents = 6,000 talents = 36,000,000 Drs = 5,502,736.8 ozs.

Macedonians, who became unable for war (veterans): They were receiving their salaries plus 1 talent or 6,000 Drs

plus the travel cost to return home

(We assume 10% veterans of 45,000 Macedonians, which means 4,500 soldiers became unable and received each: salary of 526 Drs/annum for an average of 5 years = 2,630 Drs, plus 6,000 Drs, plus 3,000 Drs travel expenses = 11,630 Drs)

6. Total cost for unable veterans: 4,500 soldiers x 11,630 Drs = 52,335,000 Drs = 7,999,603.623 ozs.

Great banquet of Opis (324 B.C.):

(Assuming 200,000 people with an average cost of 5 Drs per person)

7. Total cost for the great banquet: 200,000 x 5 Drs = 1,000,000 Drs = 152,853.8 ozs.

Mass marriage between Macedonians and Persians at Susa (324 B.C.)

(Assumption: 10,000 marriages with a cost of 10 Drs each).⁴

7. Total cost of mass marriage: 10,000 x 10 Drs = 100,000 Drs = 15,285.38 ozs.

Expensive Funeral for Hephaestion (324 B.C.) in Babylon

(Assumption: Tomb = 50 Drs, monument = 6,000 Drs, funeral rites = 1,000 Drs, and perideipnon for 200,000 people x 2 Drs = 400,000 Drs)

7. Total cost for Hephaestion's funeral: 407,050 Drs = 62,219.139 ozs.

Financial Scandals (Harpalus, 3 times; 324 B.C.) of 700 talents.

8. Total cost (loss): 700 talent x 6,000 Drs = 4,200,000 Drs = 641,985.96 ozs.

Total cost (Δαπάναι) of Alexander's campaign for 13 years: 2,562,018,650 Drs = 391,614,286.3 ozs

or (x \$15.46 = \$6,054,356,867).

Note: See, Tables 1, 2, and 3a. 1 Attic talent of silver = 6,000 Drs was the wage of 9 man-years of skilled work (360 days work) = 16.667 Drs/day (9 men) = 1.85185 Drs/day/skilled worker; or (if the work was 260 days/year) = 23.07692308 Drs/day (9 men) = 2.564102564 Drs/day/skilled worker. During the Peloponnesian war: 1 Attic talent of silver (6,000 Drs) was 1 month wages of a trireme crew of 200 men = 200 Drs/day for 200 men = 1 Dr/day/man. 1 Dr/day = 4.3 grs of silver/day/rower = 0.151678028 ozs (\$15.46/oz) = \$2.344942313/day.

¹ Assuming Parmenion had no ships (there are no information regarding ships, his army went through land to Asia Minor).

² The ship's provider (χορηγός) was known as the trierarch (τριήραρχος, *triērarchos*). He was a wealthy citizen (usually from the class of the pentakosiomedimnoi (πεντακοσιομέδιμνοι), responsible for manning, fitting out and maintaining the ship for his liturgical year at least; the ship itself belonged to the city-state (i.e., Athens). The trierarchy (τριηραρχία, *triērarchia*) was one of the liturgies of ancient Athens; although it afforded great prestige, it constituted a great financial burden, so that in the 4th century B.C., it was often shared by two citizens, and after 397 B.C. it was assigned to special boards. The cost of the ship was one (1) talent or 6,000 Drs per annum. (For this reason, we do not have many information on its cost of construction and maintenance).

³ The winner (Alexander's) casualty was about 15%. See, <http://www.quora.com/How-has-mortality-rate-per-battle-changed-throughout-history>.

⁴ The ancient Greek marriage celebration consisted of a three part ceremony which lasted three days: the *proaulia*, which was the pre-wedding ceremony, the *gamos*, which was the actual wedding, and the *epaulia*, which was the post-wedding ceremony.

Alexander's conquests lasted for 13 years (336-323 B.C.); thus, the budget is for 8+5=13 years (total).

Source: Diodorus, Justin, Plutarch, Arrian.

Table 3c

Summary of Cost of Alexander the Great Expedition (Table's 3b)

1. The Expedition to Asia (336-328 B.C.) Total	622,172,000 Drs	95,101,354.480 ozs	24.284%
1a. The Expedition to Asia (336-328 B.C.) Salaries	526,172,000 Drs	80,427,389.680 ozs	20.537%
1b. The Expedition to Asia (336-328 B.C.) Bonuses	96,000,000 Drs	14,673,964.800 ozs	3.747%
2. The Expedition to India (327-323 B.C.) Salaries, etc.	548,407,600 Drs	83,826,185.610 ozs	21.405%
3. Military Equipment and Constructions	176,267,000 Drs	26,943,080.760 ozs	6.880%

4. Food and Transportation	688,220,000 Drs	105,197,042.200 ozs	26.862%
5. Medical Expenses	31,798,000 Drs	4,860,445.135 ozs	1.241%
6. Indemnities and Veterans	437,447,000 Drs	66,865,436.250 ozs	17.074%
7. Feasts and Social Events	53,507,050 Drs	8,178,755.919 ozs	2.088%
8. Financial Scandals	4,200,000 Drs	641,985.960 ozs	0.164%
Total	2,562,018,650 Drs	391,614,286.300 ozs	100%

Note: See, Table 3b.

Source: See, Table 3b.

Table 4a
Revenue (Πόροι)

1. Royal Treasury (covered mercenaries) (amount unknown)
2. Gold and silver coins from the Macedonian mines (amount unknown)
3. Revenue from customs, tariffs, and taxes on royal lands (**6,000 talents/annum**)¹: **36,000,000 Drs or 5,502,736.8 ozs**
4. Loan (short-term):² **1,460 talents or 8,760,000 Drs or 1,338,999.288 ozs**
5. Aristocracy grants (covered Macedonian army) (amount unknown)
6. Cost of navy was covered from the trierarchy (about 1 talent): **2,310 talents or 13,860,000 Drs or 2,118,553.668 ozs**
(120 ships x 1 talent x 13 years = 1,560 talents or 9,360,000 Drs or 1,430,711.568 ozs)

(Plus 150 ships x 1 talent x 5 years = 750 talents or 4,500,000 Drs or 687,842.1 ozs)

7. Taxes (to non-Greek cities in Asia Minor and to foreign cities with hostile attitude) **(9,000 talents,³ 11,000 talents,⁴ 30,000 talents,⁵ per annum).**

(We take an average of 17,000 talents/annum x 13 years = **221,000 talents**) or **1,326,000,000 Drs** or **202,684,138.8 ozs**.

8. Plundering (λάφυρα) by seizing hostile cities (334 B.C.) in Asia Minor (amount unknown)

9. Darius ransom (λύτρα) for his family (333 B.C.): 10,000 talents (60,000,000 Drs), which was not accepted and he gave a colossal ransom of **30,000 talents or 180,000,000 Drs or 27,513,684 ozs**

10. Darius treasure in Susa in 331 B.C. (amount unknown)

11. In 330 B.C., at Ecbatana, Alexander had the amount of **180,000-190,000 talents⁶ or 1,080,000,000-1,140,000,000 Drs or 165,082,104-174,253,332 ozs** (We take the smaller amount of 180,000 talents).

12. In 330 B.C., at Persepolis (a very prosperous city) that it had a lot of gold and silver, he got: 2,500 tons of gold,⁷ which was 96,153.84615 gold talents or **961,538.4615 silver talents or 5,769,230,769 Drs or 881,848,846.1 ozs**

(2,500,00 kgs : 26 kgs = 96,153.84615 talents of gold x 10 = 961,538.4615 silver talents x 6,000 Drs = 5,769,230,769 Drs)

13. Other sources tell that the total amount of silver bullion captured between 333-330 B.C. was between 180,000 and 400,000 talents of silver (1,080,000,000-2,400,000,000 Drs).

14. Tax and administration reforms to control the vast empire (amount unknown)

15. Alexander retrieve the bulk of the Persian treasure from Ecbatana (324 B.C.) (amount unknown)

Total: (3)+(4)+(6)+(7)+(9)+(11)+(12) 8,413,850,769 Drs 1,286,089,063 ozs

Note: ¹ Pseudo-Aristotle's *Oikonomika*; ² Plutarch; ³ Herodotos (3.89); ⁴ Antigonos Monophthalmos; ⁵ Justin (13.1.9); ⁶ Diodorus Siculus 17.80.3, Strabo 15.3.9, and Justin 12.1.1; ⁷ The gold/silver ratio was 1/13 and due to this huge amount of gold (excess supply) its price fell to 1/10.

Source: Diodorus (17.80.3), Strabo (15.3.9), Justin (12.1.1), Arrian, Curtius, Plutarch.

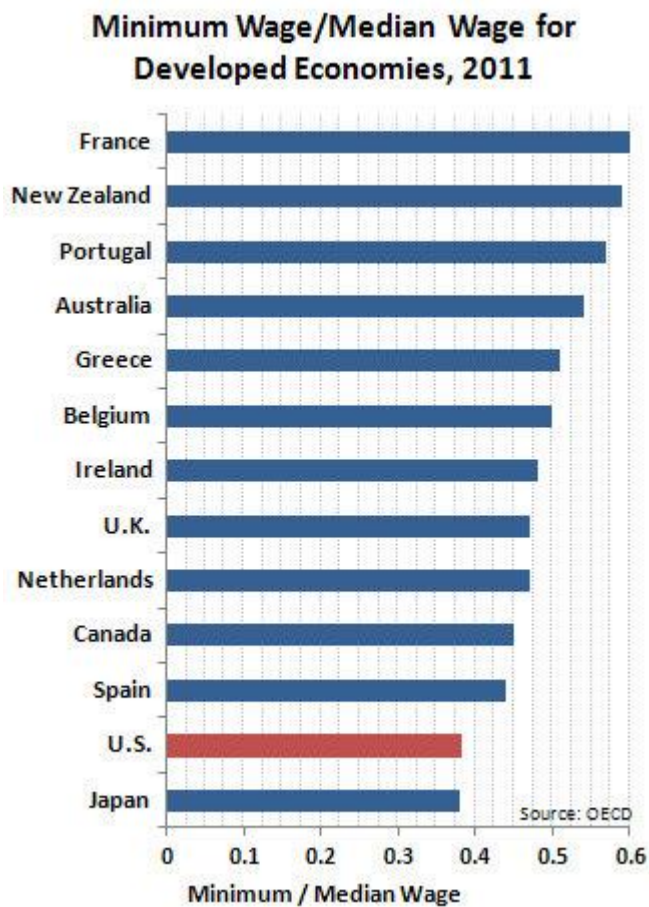
Table 4b
Summary of Revenue (Πόροι)

1. Royal Land (3):	36,000,000 Drs	5,502,736.800 ozs	0.428%
2. Loan (short-term) (4):	8,760,000 Drs	1,338,999.288 ozs	0.104%
3. Cost of navy was covered from the trierarchy (about 1 talent) (6):	13,860,000 Drs	2,118,553.668 ozs	0.165%
4. Taxes (7):	1,326,000,000 Drs	202,684,138.800 ozs	15.760%
5. Darius ransom (λύτρα) for his family (333 B.C.) (9):	180,000,000 Drs	27,513,684 ozs	2.139%
6. In 330 B.C., at Ecbatana, Alexander had the amount (11):	1,080,000,000 Drs	165,082,104 ozs	12.836%
7. In 330 B.C., at Persepolis (a very prosperous city) that it had (12):	5,769,230,769 Drs	881,848,846.1 ozs	68.568%
Total:	8,413,850,769 Drs	1,286,089,063 ozs	100%

Note: See Table 4a.

Source: See Table 4a.

Figure 1



Note: In 2011 the minimum nominal wage for the U.S. was \$7.25 / hour. Thus, based on the above Figure 1, Greece's minimum wage was \$10.15, France's (the highest) \$11.60, and Japan's (the lowest) \$7.15. In Alexander's period the minimum wage was 1 Dr/day (0.1528538 ozs) or \$7.612/day (price of silver in 2011: \$49.80) or \$0.952/hour. After 2,330 years the wage has grown by 661.555% or 0.0028% per annum. Is the cost of living (inflation) increasing by 0.0028% per annum? No! The inflation rate is very high. Then, the workers' income (and wealth) is deteriorated with the passing of time. The industrial revolution brought also the exploitation of labor. The business objective of profit maximization has kept the wages to a destitution level. Assuming 1% inflation rate per annum, the nominal wage must be, today: over \$11 billion/hour.

$$(\$0.952(1+0.01)^{2330} = \$0.952(1,716,581,390) = \$11,154,185,480/\text{hour}).$$

Source: <http://www.infoplease.com/ipa/A0774473.html>