Sustainability and ‘The Fall of the Western Roman Empire’: Grain, Labor Markets, and Military Policies

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ABSTRACT

Sustainability and ‘The Fall of the Western Roman Empire’:
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The issue of societal sustainability is relevant to both modern and ancient civilizations. Ancient Rome was defined and influenced by the issue of sustainability because it was integral to the fundamental structure of the Roman society. In the 5th Century CE, the fall of the Western Roman Empire took place because of consequences that resulted from the issue of sustainability. The societal factors of grain production, military policy, and labor markets all served to influence the sustainability of the Roman West. Roman military policy defined the nature of the Roman economy and established the type of labor system that it employed. Free and unfree labor markets structured the agrarian economy and formed the Roman system of internal taxation and rent collection. Local and commercial grain producers were relied upon to maintain the populations of the Roman West, uphold the Roman military, and sustain the growing servile populations.
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Introduction

The role of grain in ancient Rome has continuously encouraged my research and structured my interests. How an agrarian resource could have such an extensive role in the Roman economy, and such a large influence on Roman society as a whole, was what drew me to focus my research on the role of grain in the Roman Republic and the Roman Empire. At first my research was just focused on establishing what the role of grain was within the Roman economy. As I proceeded with my research, I came to realize that the societal factor of grain was integral to the success of the Roman government, military, and economy. Grain was essential to the success of the Roman society because it was deeply connected to the additional societal elements of the Roman military policy and the Roman free and unfree labor markets of the economy. After working through the importance of grain to the success of Roman society, and studying the societal connections inherent to the relationships between grain and the Roman military policy and the Roman economy, I came to the conclusion that grain was far more pivotal and essential to the survival and persistence of the Roman society than I had ever imagined. I conclude that the role of grain even impacted some the reasons that caused the ultimate fall of the Roman society of the Western Roman Empire in the Fifth century CE. At that point, I soon found out that the societal factor of grain was not directly or primarily connected to the reasons and causes established for the final fall of the Roman West. The issue of Roman sustainability was influenced and shaped by the significant, but supplemental, societal factors of grain, Roman military policy, and the Roman economy. In regards to the definition and measurement of the
maintainability of Roman society, the perishability in question refers to the successful maintaining of a specified institution or organization for an extensive and lengthy period of time, not the minimalistic upholding of an institution or organization just for a short duration of time and immediate results. The sustainability, or rather unsustainability, of the Roman society was therefore the more comprehensive reason that was responsible for some of the causes that led to the fall of the Roman West in the Fifth century CE.

The issue of societal sustainability that faced the Roman society of antiquity is still very relevant in our own modern world of today. A great example of the relevance of it in the modern world is the situation of our own contemporary United States of America, because with the current leadership of our government the successful imperishability of the American civilization is not a sure thing and can be thoroughly debated. Just like the economy of Ancient Rome, the economy of modern America takes advantage of widespread servile labor, as we use undocumented and unregistered immigrants as hard labor and cheap workers. The modern American economy is also like that of our Roman predecessors because it is extensively reliant and dependent upon the importation of foreign resources and goods for survival, as we outsource the vast majority of our industrial production and manufacturing to foreign countries that provide America with maximized profits. Societal viability is still an integral issue that we face in our own modern times, and that is why I set out to examine and research the sustainability of the Roman society as my thesis topic.

Arguably the most central and noteworthy characteristic of my thesis, is that the societal factors of Roman grain, Roman military policy, and the Roman economy, have all been studied and analyzed individually in the past, but that for my thesis I chose to study all of the societal factors together. In my thesis, I analyzed and studied all three of the societal factors together, and
that was paramount to my argument because it allowed me to identify the connections and relationships that existed between them all, as well as allowed me to establish their connection to the non-maintainability of the society of the Roman Empire.
Chapter 1) Grain and Roman Society

Grain served as one of the defining elements and features that influenced and shaped the structure of their societies.

Grain was to antiquity what oil is to the world of today. Few of the larger cities of the Mediterranean could rely solely on what was grown locally; most were compelled to eke this out with purchases from those favored lands that had a surplus to dispose of… So dependent were they on a supply from elsewhere that, if for any reason it was cut off, they faced hardship and even famine. A service so vital could not be left totally to private enterprise, the government had to mix in.¹

Ancient societies and economic systems of the Classical period of the Mediterranean world are so interconnected with grain because: 1) it is a good that is cheaply mass produced on a large scale, in many different areas around the Mediterranean, 2) it is employed to feed immense populations, 3) it is institutionally taxed or subsidized by the government, 4) it is widely harvested in many different strains and varieties, 5) it is integral to the potentiality and sustainability of a society’s military expansion and territorial accumulation, 6) it influences the definition and sustainability of the free and unfree labor markets, 7) it does alter and redefine the roles and characteristics of a society’s entire economy, and 8) it is integral to both the stability of the societal formation, and the sustainability of the societal growth and economic advancement of each of the societies.

Among the ancient societies of the Mediterranean, such as Pharaonic Egypt, Classical Greece, and the Hellenistic kingdoms, grain always served as a crucial element of societal

Grain is the agrarian staple of the economic systems of the listed societies, and that is key for the role of grain in the Roman economic system, because the agrarian economy of Rome inherited characteristics and traits from their predecessors, but they also developed and created new defining factors for agrarian food production in order to maximize their production and increase agricultural efficiency. In the Roman Republican Period (509 BCE to 31 BCE), as well as the Early Imperial Period (31 BCE to 68 CE), grain is the key agricultural resource required for Roman stability. The period of the Late Roman Empire is a parallel to that of the Late Republican and Early Imperial Periods, because just like its precursors, the Roman state and bureaucracy of the Late Empire relied on grain to uphold their imperial power, to maintain the territory added to Rome through their earlier and successful military expansion, to influence the survival of the city of Rome itself, to maintain the regularity of the economic system, to sustain the military defensive of the imperial borders, and to uphold the status quo of the labor markets.\(^2\) Grain is an intrinsic element which is key to the upholding of Roman preeminence and superiority, because grain contributes to the survival of the city of Rome itself, and is the instrumental factor in the successful management of the Roman state as well.\(^3\) Grain is not only integral to the survival of the city of Rome, but is also one of the main elements that influences the ultimate ‘Fall of Western Rome’ that takes place in the Fifth century CE. The collapse of the Roman West was influenced by grain because its role in the Roman society both defined and formulated the sustainability of the Roman society, since grain was connected to the Roman military policy and the Roman economy. The influences that the societal factors of grain and the Roman military policy had on the maintainability of the Roman economy were also indirectly shaped by the supplemental factors of the free and unfree labor markets, and the imperial system of institutionalized servile labor. In the Fifth century CE, grain is critical to the collapse of the
Roman West, because grain is directly connected and related to Roman military policy, since the sustainability of Roman territorial growth was dependent on the regularized and continuous military success of the Romans during the Republican period, and the defensibility of the Roman border and frontier protections were dependent on the efficient function of the internalized economy of the Roman Empire.

In addition to the connection that existed between grain and the Roman military policy, grain also had a supplemental relationship with the institutionalized servile labor force of the Roman society, which consisted of chattel slavery, indentured servitude, and tenant farming, because the size of the unfree labor markets of Rome, and the development of the agrarian economy of Rome, were both influenced by the supportability of a regular influx of newly defeated populations into the Roman labor markets,\(^4\) as well as by the viability of the economic price ranges of Roman goods and resources,\(^5\) since the accumulation of cheap resources and wealth through successful military expansion made Roman advancement possible, even though the incomes of the non-elite majority of the Roman population were insufficient and inadequate.\(^6\) Grain and institutionalized servile labor share relationship under the Roman Empire, because the unfree laborers and servile workers of the Roman West were used to farm and produce the grain that was used to supply the Roman military and feed the urban lower classes of the west. The connection between grain and institutionalized servile labor is crucial because the unfree and free labor markets of the Roman economy were influenced by the outcomes of the acts of Roman military expansion, as well as by the results of the growth of the Roman imperial bureaucracy of

\(^4\) See Table XI in Appendix I.
\(^5\) See Table VII in Appendix I.
\(^6\) See Table VI and Table VII in Appendix I.
tax and rent collection. The relationship existing between grain, Roman military policy, and the labor markets of the Roman economy, was established by their shared connection to the issue of societal sustainability, and that is significant to the entirety of the Roman West. The continuation and success of the grain production industry, by the end of the First century CE, was far less efficient and far more unstable because the Roman institutionalized servile labor system was not upheld by the successful completion of military expansion by the Romans. Without the successful completion of territorial expansion, the Romans could no longer repopulate and stimulate the servile labor system of the unfree labor markets with newly defeated populations, which were originally made up of chattel slaves under the Roman Republic, but later became dominated by indentured servants and tenant farmers under the Roman Empire. The shift of the Roman servile labor system, from chattel slavery to indentured servitude and tenant farming, occurred when the addition of newly defeated populations could no longer be sustained by the defensive military policy of the Roman Empire. By changing to a servile labor system dominated by indentured servitude and tenant farming, the Romans preserved the uneven economic affiliation that existed between the unfree and free labor markets of the internalized economy of the Roman society. The military conquests and territorial expansion of the Roman Republic could not be continued by the Roman Empire, and that was why the Roman military policy was shifted to one of defense and conservatism under the Roman Empire. Imperial Rome’s adoption of a defensive military policy was vital because the standing army of the Roman military became strictly consumers and were reliant on the internalized economy of the Roman Empire for all their resources and supplies. Dependence of the standing army of the Roman Empire on the

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7 See Table V in Appendix I.
8 See Table IV in Appendix I.
9 See Table III in Appendix I.
internalized economy of the Roman provinces was unfeasible in the long run, because the negative results stemming from the shift of Rome’s military policy were not replaced by just increasing the prices of individual taxes and increasing the amount of total taxation. When they’re bonded all together, the societal factors of grain and Roman military policy, and the supplemental factors of labor markets and the institutionalized servile labor system, are all influential on the unsustainability of the Western Roman Empire, that led to the ultimate collapse of the society of the Roman West in the Fifth century CE, because the growth of both local and commercial grain production for Rome also meant a simultaneous amplification of the institutionalized servile labor system, and a concurrent increase in the total amount of imperial taxation, as the agrarian and monetary taxes of Rome were steadily increased upon the lower classes and rural populations, who were exploited and manipulated in order for the Roman economy to adjust to the rapid decline of the free labor markets, and the decrease of the size of the taxable population of Rome. Grain was therefore integral to the survival and successful management of the entire society of the Roman West, because its connections to the Roman military policy, the Roman economy, and the Roman labor markets, allowed for it to influence and shape the perishability that was developed for the society of the Western Roman Empire up until its ultimate fall in the Fifth century CE
Chapter 2) Roman Military Policy

2.1) The Relationship between Grain and the Military

Grain and the Roman military go hand in hand, because it was through their military policies of Republican expansion and Imperial defensive conservatism, that the Romans were able to acquire their grain-producing regions and provinces, which were located outside of Italy and supplied Roman consumption. The regions of local grain production and internal supply were all acquired by Rome through aggressive military expansion that took place during the Roman Republic\textsuperscript{10} and the very early Roman Empire,\textsuperscript{11} through the use of strategically offensive military expansion that stimulated Rome’s economy and established an international system of commerce across the Mediterranean.\textsuperscript{12} The local and major grain producers of Rome, located outside of Italy, embody the sustainability, or should I say unsustainability, of the Roman Empire. The provincial grain producers embody Roman viability because the initial growth and expansion of Rome, that occurred from Rome’s conquest of Italy up until the death of the Emperor Claudius in 54 CE, had been sustained almost solely by the completion of successful military conquests. Maintainability and the provincial grain producers are also connected because the continued rise and growth of the Roman Empire had been sustained by the development of the internalized imperial economy, which exploited the provinces through intense taxation and resource allotment. Societal perishability was represented by the grain

\textsuperscript{10} Scheidel, Walter. “A Model of Real Income Growth in Roman Italy.” 333.
\textsuperscript{11} Dio, Cassius. The Roman History: The Reign of Augustus. 53.25-53.26, 147-149.
\textsuperscript{12} See Graph I in Appendix II.
producers of the Roman economy because in order to successfully sustain the resource
requirements and agrarian surpluses of the ever-growing Roman society, the Romans had to not
only engage in the unsustainable territorial expansion of the Roman Republic,\(^{13}\) but also had to
engage in the unmanageable border defenses and militarized frontier politics of the Roman
Empire.\(^{14}\) In the glory days of the Roman Republic, the higher intensity of active military
expansion and ongoing territorial conquest did lead to an increase in the amount of defeated
populations and displaced foreigners, who were either migrating to Roman territories or
continuing to live in their now Roman occupied homelands.\(^{15}\) However, the overall population
growth of the Roman society was not fundamentally influenced by the periodic influxes of the
newly defeated populations into the Roman Republic, because the overall population growth of
the Roman society continued to increase in size during the early Roman Empire, up until the end
of the Second century CE.\(^{16}\) The wave of population growth initiated by the Roman Republic
continued on into the early Roman Empire, even though the success of their military expansion
and the influx of newly defeated populations was virtually non-existent under the Roman
Empire, when compared to the earlier Roman Republic, with Roman population growth reaching
its peak at the end of the Second century CE.\(^ {17}\) The more the Romans expanded militarily during
the Republic, the more the roles and positions of the already established Roman grain producers
were changed, altered, and redefined, within the economic system of the Roman society. Sicily,
Sardinia, and the Italian Peninsula all start out as the major grain producers of the Roman west,\(^ {18}\)
but with further military expansion the major grain producers of Rome shift, as Sicily and

\(^{14}\) Suetonius. *The Twelve Caesars. Domitian.* 2, 296, Domitian.6, 299.
\(^{16}\) See Table XIV in Appendix I.
\(^{17}\) See Table XIV in Appendix I.
Sardinia remain as one of the major grain producers, but the newly attained North Africa surpasses and replaces the Italian Peninsula as a major and commercial wheat producer for Rome, as the Italian peninsula diminished as a major producer and initially became one of the local grain producers of the Empire.19

As the Roman Empire advanced and continued to grow, the major grain producers of Sicily, Sardinia, and North Africa, all remained as the primary and major commercial grain suppliers. The three initial grain producers remained but were accompanied by the new major grain producer of the Black Sea Region, which used to serve as a commercial producer for Classical Greece, before it was conquered and politically reorganized by the Roman Republic. Adding the new grain producer of the Black Sea Region was key because they supplied the Roman military with local grain surpluses and facilitated Rome’s economic relationship with the markets of the east.20 By the end of the Roman Republic, in 31 BCE, and the start of the Principate, the size of the Roman state had grown and had become five times as large as the original Roman polity of Italy, because Roman military expansion had steadily increased in scope, intensity, frequency, size, regularity, and potential throughout the existence of the Roman Republic.21 Although the Roman Empire never experienced the widespread and ever-frequent military expansion of the Roman Republic, the Roman Empire itself was formed and structured by the rise of military expansion throughout the Republican period, since the Republican expansion led to the inclusion of many new territories and numerous new regions into Roman hands, which came to make up the heartland and core of the Roman Empire.

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The shift of the Roman military policy into a strategy of defense and conservatism occurred with the establishment of the Roman Empire and that was vital to the structure and formation of the new imperial Rome because it brought about the following: 1) the decline of the Black Sea Region into a local grain producer,22 2) the degeneration of Italy from a local grain producer into just a grain consumer,23 3) the establishment of Egypt as a new major and commercial grain producer, 4) the creation of Gaul as a new local grain producer, 5) the founding of Hispania as a new local grain producer, and 6) the maintaining of Sicily, Sardinia, and North Africa as the primary grain producers that they were under the Roman Republic.

Local grain producers are also connected with Roman military policy because they used their agrarian surpluses to locally supplement the Roman military with barley, and that was crucial to the successful management and defense of the imperial border and frontiers. The local barley producers were located in the regions of the Roman Empire that were faced with the most military conflict, which meant that the local grain producers consistently had to effectively supplement the commercial wheat suppliers in order to successfully uphold the defensibility of the imperial borders of the Roman Empire. Local producers generated enough grain to supply their own people and the Roman military populations stationed within their regions, which allowed them to engage in an internalized agrarian economy,24 to sustain the military supply lines of their region,25 to maintain the Roman military bases of their region,26 and to routinely supply the active Roman legions stationed or campaigning within their region.27 whether or not

they were defensive frontier legions or offensive campaigning legions. Internalized agrarian economies were critical to the success of the local grain producers, and the larger and international Roman economy that they belonged to, because the internalization meant that they had developed a villa-economy that was separate from urban manufacturing but provided the community with complete self-sufficiency. The internalized villa-economy of the Roman Empire was crucial to the local grain producers because the wealthy and elite villa owners spent and invested their money in agricultural enterprises, so that the villa-economy thrived and served to not only supply sources of income to the elite villa owners, but also to provide the resources and materials required for the self-sufficiency of all of the laborers and workers of the villa.

The internalization and communal nature of the villa-economy are what allowed for the development of the systems self-sufficiency, because the agrarian based economy consisted of a combination of different enterprises related to agriculture, such as the holding of animals, the cultivation of fresh food, the cultivation of cash crops, the processing of natural resources, and the processing of raw materials. Rome’s commercial grain producers were intensely influenced by the internalization of the villa-economy of the Roman Empire because the internalized economy led to the increase of imperial tax collection and rent collection, which was integral to

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the supportability of the imperial economy as the tax-centric income system could not be efficiently maintained over a long duration of time.

2.2) Overextension, Stagnation, and Failure: The End of the Republic

The shift of the military policy of Rome, from aggressive expansionists to defensively conservative imperialists, was initiated as the new military policy for the Roman Empire at the end of the Roman Republican. After the Roman Republic, Augustus established a new form of Roman government that led the Roman world into the Imperial period, and during his Principate, Augustus engaged in numerous military campaigns that were waged on all the Roman frontiers. The military campaigns of Augustus were all offensive and expansionistic in nature and that is why they contributed to the initiation of the overextension, stagnation, and exhaustion of the republican military policy of aggressive territorial accumulation. The German frontier of the north, and the Sarmatian frontier of the northeast, both became epicenters of Imperial Rome’s newly adopted defensive military policy after the reign of Augustus had ended. The regions acquired by Augustus were located on the furthest frontiers and the newest borders of the Roman Empire, where the barbarous Germanic tribes were repeatedly coming into conflict with Rome along the Rhine River and the borders of the provinces of Gaul.\textsuperscript{32} In addition to the Germanic frontiers, the regions acquired by Augustus were also where the ferocious Scythian and Sarmatian tribes were regularly coming into conflict with Rome in the northeast and along the border of Dalmatia.\textsuperscript{33} In order to maintain and successfully uphold the Roman frontiers of the new Roman Empire, the conquest of Moesia took place from 29 BCE to 7 BCE under

\begin{thebibliography}{9}
\bibitem{32} Tacitus. \textit{Annals. 1.31.}, 20.
\bibitem{33} Suetonius. \textit{The Twelve Caesars. Tiberius.16-Tiberius.20.}, 114-116.
\end{thebibliography}
Augustus, as well as that the annexation of Pannonia, Raetia, and Noricum also took place from 12 BCE to 9 BCE, under the rule of Augustus. The successful military campaigns of Augustus established new border provinces that further separated Rome from the barbarian forces of the north and east, and marked the start of a more defensive military policy meant to protect the Roman society. Even though the procedures and protocols of Roman military expansion were shifting to a less offensive type of expansion, the Emperor Augustus proceeded to launch an invasion of Germania. Augustus embodied Rome’s military perishability at the start of the Roman Empire with his invasion of Germania, which was totally obliterated and wholesomely defeated in the Battle of the Teutoburg Forest. The Romans suffered one of their worst and most embarrassing losses in the Tuetoburg campaign because three entire legions of Roman soldiers were entirely annihilated. The Roman commander given leadership of the campaign by Augustus was Publius Quinctilius Varus, and he was out strategized and greatly outnumbered by the alliance of Germanic tribes that were led against his forces by their chieftain Arminius. The Battle of the Teutoburg Forest is one prime example of the unviability of the military policy of the Roman Republic, because it showed how purely offensive and aggressive military expansion eventually led to disaster and failure. Rome’s diminished military expansion, by the end of the First century CE, was represented by the crushing defeat of Augustus in his Germanic campaign, and that led to the rise of the defensively oriented military policy of the

41 Tacitus. *Annals*. 1.60., 35.
Roman Empire that was developed to sustain the imperial borders and maintain the imperial frontiers.

Augustus launched the first invasion of the Kingdom of Kush ever attempted by the Romans. The Kingdom of Kush was a sub-Saharan African kingdom that was located beneath Egypt and existed independently for over 1,000 years itself. On the orders of Augustus, Rome went to war against the Kingdom of Kush and invaded their territory from 23 BCE to 22 BCE, under the command of the general Petronius. The Roman legions were led into Kush by the general Petronius so that they could punish the Kushites for defiling Roman monuments and stealing the bronze statues of Augustus (not to mention that the Romans also wanted to obtain the wealth and commercial trade of the Kingdom of Kush as well). Rome’s offensive campaign against Kush was initially successful and Petronius was able to sack and destroy the city of Napata, to obliterate the great temple of Amun at Jebel Barkal, and to extend the borders of Roman Egypt farther into Nubia. When the Roman supply lines became unmanageable and the army of Petronius could not advance any farther into Kushite territory, the Treaty of Samos was decreed by Augustus and the ambassadors of the Kushite Queen Candace. In the end, the Kingdom of Kush was not conquered or subjugated in anyway by the Romans, but the Romans did establish new economic relationships with Kush that were more advantageous and lucrative for the Romans than those of the past. Roman attention and interest continued to be associated with the Kingdom of Kush, even after the death of Augustus, and the Emperor Nero launched another expedition into Kush, almost a hundred years after the campaign of Petronius took place.

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43 Fairservis Jr., Walter A. The Ancient Kingdoms of the Nile: And the Doomed Monuments of Nubia. 201.
44 Fairservis Jr., Walter A. The Ancient Kingdoms of the Nile: And the Doomed Monuments of Nubia. 200.
45 Fairservis Jr., Walter A. The Ancient Kingdoms of the Nile: And the Doomed Monuments of Nubia. 201.
The military expedition launched by Nero was tactical in nature and just scouted the region to obtain intelligence for a future Roman invasion of Kush. After obtaining the intelligence and scouting reports on the Kingdom of Kush, the Emperor Nero decided that a military campaign to conquer Kush and annex it for Rome would be far too costly and inefficient. Nero decided to not invade into Kush and instead signed a peace treaty and a new economic agreement with Kush, which was beneficial to Rome and solidified their southern border. The Kingdom of Kush served as a prime example of the unsustainability of the expansionistic military policy of the Roman Republic because the campaign of Augustus was a failure and the campaign of Nero was cancelled, but in both cases the southern frontier of Rome was reinforced and new economic relationships were added to the internalized imperial economy.

Archaeological evidence is used in order to depict the shift of Rome’s military policy, from the expansionistic nature of the Republic to the protectionist strategy of the Empire. Regarding Rome’s military policy, the three most relevant examples of archaeological evidence are the Column of Trajan, the Column of Marcus Aurelius, and the Defensive Walls of Britannia. The Column of Trajan is essential to the representation of the evolution of Rome’s military policy because the conquest of Dacia was the last act of Roman expansion to be successfully completed in the offensive style of the Roman Republic, and it marked the end of Rome’s territorial growth as well, since the Roman Empire would never expand to be any larger than it was after Trajan’s annexation of Dacia and Mesopotamia. Rome’s military policy and its evolution over time are both represented by the Column of Marcus Aurelius because the successful defense of the northern borders and the defeat of the Marcomanni tribes are examples of the shift to a new defensive military policy by the Roman Empire, as the Marcomanni Wars

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47 Fairservis Jr., Walter A. *The Ancient Kingdoms of the Nile: And the Doomed Monuments of Nubia*. 201.
were entirely fought over control of Roman territories and Roman borders. The Defensive Walls of Britannia, the Antonine Wall and Hadrian’s Wall, are crucial to the representation of the evolution of the military policy of the Roman society because they were both built specifically to establish a border across the width of Britannia that was more protectable and defendable, so they could more feasibly hold Roman Britannia against the unending onslaught of Caledonian attacks.

2.3) The Column of Trajan: Monument of Imperial Rarity

The Western Roman Empire fell to the invading Germanic forces of the north and east in the Fifth century CE, and that is directly connected to the military policy of the Roman Empire. Failure to continue the military expansion of the Roman Republic led to the overextension and over-exhaustion of the Roman grain system. The agrarian economy of Rome was injured by the shift of military policy because the local grain producers and the major grain producers had to produce their grain at the maximum efficiency level just to uphold the provinces of the Roman Empire. Rome’s grain system was also faced with over-exhaustion and fatigue because under the new military policy of the Roman Empire, it needed to actively support and maintain the standing army of Rome, which was permanently defending the imperial borders and frontiers. After the Roman Republic and military campaigns of Augustus had culminated, after the disastrous Roman defeat at the hands of the Germanic Cherusci in the Battle of Teutoburg Forest, Rome never again experienced the widespread territorial growth and frequent military expansion of the Roman Republic. New territories and new sources of wealth were added very sparingly and sporadically to the Roman Empire, and the Roman society became primarily

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reliant upon the internalized economy of provincial tax and rent collection. In overall terms, the military policy of the Roman Empire was defensive and conservative in nature, when compared to that of the Roman Republic, but there were some rare exceptions to the contrary. The first exception to the defensive military policy of the Roman Empire is the invasion and conquest of Britannia by the Emperor Claudius in 43 CE. A second exception to the defensive military policy of Imperial Rome is the conquest of Dacia by the Emperor Trajan in the Dacian Wars of 101 to 102 CE and 105 to 106 CE. The last major exception to the defensive military policy of the Roman Empire is the conquest of Mesopotamia and Armenia by the Emperor Trajan in the Armenian-Parthian War of 114 to 117 CE. Roman military policy is especially influential and notable to the Roman Empire during the period of 98 to 180 CE, because the military campaigns of Trajan and Marcus Aurelius are vital to the understanding of the issue of Roman sustainability. Trajan represents the last embodiment of the prolific military expansion of the Roman Republic because during a period of defensive military policy he managed to conquer and annex both Dacia and Mesopotamia, in 106 CE and 117 CE respectively. Marcus Aurelius represents an embodiment of the new defensively oriented military policy of the Roman Empire, because he engaged in two defensive and conservative wars, against the Marcomanni and the Parthians, in order to maintain the borders and sustain the frontiers he had inherited when he became emperor.

The Dacian Wars of Trajan are immortalized and commemorated through classical artwork and imagery. Ancient Roman artwork represents the two wars by displaying each of

49 Suetonius. The Twelve Caesars. Divus Claudius.17, 189.
52 Gibbon, Edward. The Decline and Fall of the Roman Empire. 51-54.
their histories, based on facts of the campaigns, through a chronological and artistically designed narrative of the events.\textsuperscript{53} The Column of Trajan uses a triumphal style of artwork and extremely detailed imagery to acknowledge and explain the victory in the Dacian Wars,\textsuperscript{54} which established Roman military expansion by memorializing military success, touting military triumph, recording the historical events, and serving as examples of Roman superiority and preeminence.

The Column of Trajan rises 38 meters high and is a completely free-standing column that was built as a traditional victory monument and was a testament to triumphal monuments.\textsuperscript{55} The motifs of victory and triumph that adorn the Column of Trajan are established to celebrate Roman military victories and successful military expansion.\textsuperscript{56} Victory and triumph are integral themes of the Column of Trajan, but the most fundamental element of the monument is that it represents the connection between grain and Roman military policy. The above themes are also intertwined with military policy and serve to represent how Trajan’s Column portrays defeated enemies as inferior, depicts iconography of imperial might, presents the benefits of successful expansion, and portrays Romans as culturally superior to the defeated populations.\textsuperscript{57} The triumphal nature of the Column of Trajan also establishes the monument’s connection with military policy because the imagery of the helical frieze of low relief sculpture is the main feature of the monument and it most represents how the Column does not portray Roman military expansion, but depicts the new defensive and conservative military policy of the Roman Empire, which allowed the Romans to preserve their borders and successfully protect their frontiers.\textsuperscript{58} The imagery of the frieze best represents the definition of Roman military policy,
because the subject matter for the entire frieze recounts the events, and the different stages of the two Dacian Wars fought by Trajan at the start of the Second century CE. All 155 scenes depicted on the helical frieze of the Column of Trajan are integral to the history of the Dacian Wars, but only a small amount of the scenes from the helical frieze are essential to the Roman military policy of the empire. The Romans leading the defeated Dacian’s away into slave labor, as well as the Romans taking the natural resources of Dacia for Roman consumption, are the most informational scenes on the implementation of Roman military expansion during the empire. Scenes presenting the Romans exploiting the defeated Dacian populace as slave labor, as well as the Romans accepting tribute of natural resources or finished goods from the Dacian’s, and/or manipulating the natural resources of Dacia for their own survival and subsistence, best depict and exemplify the military expansion of Rome. Roman military expansion is defined on the Column of Trajan by the scenes portraying the Dacian’s becoming slaves, as well as by the scenes depicting the natural resources from Dacia being exploited and consumed by the Romans, because these scenes exemplify the reasons and causes that drove Rome to enact widespread and purely offensive military expansion during the Roman Republic. By the time of the Roman Empire, the city of Rome and the other urban centers of Western Europe were dependent on imports of foreign natural resources for their own survival. Imperial Rome also saw the city of Rome and the other urban centers of the Western Empire become entirely reliant on the institutionalized servile labor system to produce the resources and goods

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60 See Figure 11 in Figure List.
61 See Figure 11 in Figure List.
62 See Figure 15 in Figure List.
63 See Figure 12 in Figure List.
64 See Figure 14 in Figure List.
needed to sustain Roman consumption. Scene 76 embodies the unmaintainability of the military expansion of the Roman Republic within the new military policy of the Roman Empire. Unsustainability is represented by Scene 76 of Trajan’s Column because the scene focuses on the portrayal of the Dacian’s being forced into a servile status by the Romans. The Dacian’s obtaining a servile status in Scene 76 connects to the issue of societal viability because the extensive slave labor system of the Roman Republic was not effectively maintained by the new defensively oriented military policy of the Roman Empire. The extent of Rome’s imperial borders left the Roman military with very few tenable territories to target and potentially conquer and expand into during the Roman Empire. In response to the internalization of the Roman economy, the imperial system of institutionalized servile labor developed with slaves, indentured servants, and tenant farmers. The new servile labor system was established for Imperial Rome so that the Roman economy could exploit the inferior peoples of the society in order to maintain the high production rates and uphold the low labor costs of the labor system. Servile status being forced upon the Dacians is exemplified by Scene 76 because it portrays the Dacian civilians being forcefully deported from their homes, so they can be transported into Rome and included into the unfree labor markets, which will serve to stimulate the Roman economy and increase Roman profits. The influx of defeated Dacians into the servile population did not meaningfully stimulate the unfree labor markets of the Roman economy on their own. By the time of Trajan, the Roman Empire could no longer sustain an economy dominated solely by the slave labor system of the Roman Republic, because there is no primary source material or evidence that can officially confirm that the price of labor was decreased, or the unfree labor markets were

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67 See Figure 16 in Figure List.
68 See Figure 17 in Figure List.
enlarged, by the influx of defeated Dacian prisoners. The relief of Spiral 17 exemplifies the noteworthiness of Roman military policy because the focal point of the imagery is set on the Roman soldiers who are farming the Dacian wheat. Trajan’s army stopping to farm the Dacian wheat was crucial because it was used to supply their own actively campaigning legion, to supply other Roman military units, and to supply other Roman urban centers.\textsuperscript{69} Spiral 17 is a prime example of how the large-scale accumulation of new natural resources pushed the Roman Republic to engage in offensive military expansion, but that the internalized economy of the Roman Empire made that unnecessary, which is why the Roman troops were taking natural resources in order to supply and feed themselves while on campaign. The unsustainability of resource and wealth accumulation, through the successful completion of military expansion, led to the dismissal of offensive military expansion as one of the main economic enterprises of the Roman Empire. Military expansion was eliminated as a primary feature of the imperial economy of Rome and that is why the Roman army of Trajan stopped during an active campaign to farm the Dacian wheat, so they could use it to directly supply their campaigning legions and supplement the military’s government supplied grain as well.\textsuperscript{70}

2.4) The Column of Marcus Aurelius: Military Policy and Triumphal Architecture

Marcus Aurelius represents the new military policy of the Roman Empire because he actively protects the Roman Empire by solely engaging in defensive campaigns and the holding of the imperial borders, instead of attempting Roman military expansion and conquest like his counterpart Trajan, which was societally beneficial for Rome because Marcus Aurelius was

\begin{itemize}
  \item \textsuperscript{69} See Figure 3 in Figure List.
  \item \textsuperscript{70} See Figure 3 in Figure List.
\end{itemize}
unquestionably successful and triumphant in his Parthian War of 161 to 166 CE,\textsuperscript{71} and in his Marcomannic Wars of 166 to 180 CE.\textsuperscript{72}

Built by his son and imperial successor Commodus, the Column of Marcus Aurelius is a 39-meter-high free-standing column, which was built to be a traditional victory monument, and an artistic representation of the Roman triumph,\textsuperscript{73} just like its predecessor the Column of Trajan.\textsuperscript{74} The Column of Marcus Aurelius portrays the goddess Victory, alongside the rest of the friezes’ subject matter of intense warfare, which equals the glory and military magnificence of a Republican triumphal column, even though it was built to commemorate the successful defense of the northern border and the successful prevention of a Germanic invasion of the Roman Empire.\textsuperscript{75} Rome’s inability to successfully renew the defeated populations needed to efficiently run the Roman economy ultimately led to the alteration of the Roman military policy of the Roman Republic into the defensive and conservative military policy of the Roman Empire, which allowed for the Roman economy to become based on the institutionalized servile labor system that supplemented chattel slavery with indentured servitude and tenant farming.\textsuperscript{76} One scene not only depicts the obtainment of natural resources as a reason for a defensive military policy, but also portrays the transfer of displaced populations into the Roman system of institutionalized servile labor, which is pivotal because this is the only example of a scene that embodies both of the reasons that connect Roman military expansion to the sustainability of the Roman Empire.\textsuperscript{77} Natural resources and new sources of slave labor are reasons why the Romans

\begin{footnotesize}
\textsuperscript{71} NA. History Augusta: The Life of Marcus Aurelius. 9.1-9.6, 156-157.
\textsuperscript{72} Dio, Cassius. Roman History. LXXII.3, LXXII.11-12, 11-18.
\textsuperscript{73} See Figure 2 in Figure List.
\textsuperscript{76} See Figure 6 in Figure List.
\textsuperscript{77} See Figure 9 in Figure List.
\end{footnotesize}
enacted military expansion during the Roman Republic, but in the single scene (referenced above) from the Column of Marcus Aurelius, the accumulation of natural resources for the military themselves, and the introduction of unfree labor into the institutionalized servile labor system, represent that the viability of the Roman Empire altered the military policy of the empire as well, since the scene not only portrays a group of Roman soldiers leading away captive Marcomanni women into the institutionalized servile labor system, but also simultaneously displays the Romans leading away natural resources of cattle to supply their campaign as well.\textsuperscript{78} As in the last scene, there is another scene of the frieze that portrays the Marcomanni women being taken prisoner by the Romans, in order to be transported south into the unfree labor markets of Rome, and placed into the institutionalized servile labor system that underlined the Roman economy of the Roman Empire, which represents that the Roman Empire used their defensive military policy to preserve their institutionalized servile labor system, since they could not uphold the military expansion needed to support a one-dimensional unfree labor system of chattel slavery.\textsuperscript{79} Although the last two scenes, from the Column of Marcus Aurelius, were representative of populations of Marcomanni women being captured and forced into institutionalized servile labor, after their male populace was executed following their defeat,\textsuperscript{80} the next scene involved with defining Roman military policy and strategy is different in its subject matter. The scene that differs from those that depict the Marcomanni women being captured and introduced into the institutionalized servile labor system, is different than its counterparts because it portrays an entire tribe of Marcomanni peoples being forcefully deported from their homeland by the Romans in mass, which is different because it symbolizes that the

\textsuperscript{78} See Figure 9 in Figure List.  
\textsuperscript{79} See Figure 5 in Figure List.  
\textsuperscript{80} See Figure 4 in Figure List.
Romans were not solely interested in the stimulation of their economy with the influx of unfree labor, but that the Romans of the Imperial period were also highly interested in the manageable protection of the frontiers and the deportation of native populations in order to bring stability and defensibility to new regions of the Roman Empire.

2.5) Overextension, Stagnation, and Failure: The Culmination of the Empire

After the rule of Trajan, the size and circumference of the entire Roman Empire never became any larger than it was after Trajan’s campaigns, with specific areas of the Empire becoming classified as frontier regions that were designed for military defense, existing territory management, and the upholding of provincial borders, which embodies the unfeasibility of the military expansion of the Roman Republic and symbolizes the shift of Roman military policy to defensive and conservative under the Roman Empire. Roman military policy varied across Rome’s existence because the Roman Republic was defined as a period of aggressive military campaigning, largescale military expansion, widespread territorial increases, and frequent province creation. In contrast, the Roman Empire was defined as a period of vigilant border protection, regularized frontier defense, limited military campaigning, infrequent territorial increases, and conservative province management. The unattainability of the military expansion of the Roman Republic, as well as of the unfree labor system of chattel slavery, which was upheld by the unmanageable success of the extensive territorial conquest, both serve to represent how the issue of sustainability that defined the role of grain in the Roman society was also able to define the role of military expansion and military policy in the Roman Empire.
The Dacian Wars of 101 to 102 CE,81 the Dacian Wars of 105 to 106 CE,82 and the Armenian-Parthian War of 114 to 117 CE,83 were all vital to the military policy developed by the Roman Empire. The two Dacian Wars of Trajan were the last major territorial conquests and largescale military campaigns of the Roman society. Trajan’s Armenian-Parthian War was the first successful military campaign launched against Parthia, and it gained Mesopotamia and Armenia as new territories for Rome. The victory of Trajan in the Armenian-Parthian War was also fundamental because it served to establish a new eastern frontier and border that was to be defended and upheld by the standing army of Rome. Trajan’s wars were integral to the military policy of the Roman Empire because they served as the last examples of successful outward military expansion and offensive territorial growth. The shift of the Roman military policy from one of offensive and aggressive military expansion, to one of defensive and conservative military protection, was highlighted by the imperial rarity of Trajan’s victorious campaigns. Trajan’s Column is a portrayal of both of the Dacian Wars, that were fought from 101 to 106 CE, and that is critical to the columns connection to Roman military policy and the issue of Roman societal sustainability. The triumphal monument solidifies that Trajan’s conquest of Dacia officially confirmed the shift of the Roman military policy to one of defense and self-management, and marked the end of the offensive military expansion of the Roman Republic.

The Parthian War of 161 to 166 CE,84 and the Marcomannic Wars of 166 to 180 CE,85 were both crucial to the new military policy of the Roman Empire. Marcus Aurelius’ success in the Parthian War of 161 to 166 CE represents the alteration of the Roman military policy because

81 Gibbon, Edward. The Decline and Fall of the Roman Empire. 13.
85 Dio, Cassius. Roman History. LXXII.3, LXXII.11-12, 11-18.
it was one of the first frontier wars of the Roman Empire that was fought entirely as a defensive war by the Romans. War was taken up against the Parthians by Marcus Aurelius in 161 CE so that he could maintain the provinces of the Black Sea region and reestablish a solidified eastern border with Parthia. The shift of the Roman military policy is also embodied by Marcus Aurelius because the Marcomannic Wars of 166 to 180 CE were also entirely defensive in nature, as the Germanic invasions and assaults into Roman territory were repeatedly defeated and sent back across the Roman border. The Column of Marcus Aurelius portrays the Marcomannic Wars, fought against the Germanic tribes of the North, and it is vital to the connection that exists between the triumphal monument and the Roman military policy. Defensive military policy was represented by the Marcomannic Wars because in his fight against the Marcomanni and their allies, Marcus Aurelius set out to successfully defend the northern frontier from incursions and preserve the pre-existing border against Germanic advances. The warfare depicted on the Column of Marcus Aurelius establishes that Roman military policy was focused on keeping and maintaining everything the Romans already had control over, by being defensive and conservative instead of outwardly aggressive.

The Roman interest in the Kingdom of Kush did not end with Nero’s expedition, but continued to acquire attention throughout the Roman Empire. A key example of Rome’s persistence in the Kingdom of Kush was the campaign of the Roman Emperor Diocletian, who attacked the Kushites and made war against them in 297 CE. When the Roman supply lines were not maintained and the Roman military was unable hold their newly acquired territory, Diocletian withdrew the Roman forces out of Nubia and relocated them farther north at Aswan in 298 CE. Diocletian’s retreat out of Kush represents the unsustainability of Roman military expansion under the Roman Empire, but the failure of his campaign allowed him to engage in
diplomatic talks with Kush, and establish a new pro-Roman economic relationship with Kush.\textsuperscript{86} The internal economy of the Roman Empire was stimulated by the new economic relationship formed with the Kingdom of Kush because the Romans gained involvement in the trade networks of the Red Sea, Arabia,\textsuperscript{87} the Eastern Dessert, Nubia, Sudan, and Ethiopia.\textsuperscript{88}

The unviability of military expansion and territorial growth in the Roman Empire was embodied by the shift of the Roman military policy to one of defense and conservatism, because the building of defensive border walls established that expansion had officially ended and that the management of the provinces was now the Roman priority.\textsuperscript{89} The first defensive border wall of Rome that represents the shift of Roman military policy, and the decay of the military expansion of the Roman Republic, is the fortification of Hadrian’s Wall in Britannia. Hadrian’s Wall was built across the width of Britannia from 122 to 128 CE.\textsuperscript{90} Hadrian chose to build his wall from Newcastle to the river Irthing,\textsuperscript{91} from the river Irthing to the Solway,\textsuperscript{92} and from Newcastle to Wallsend.\textsuperscript{93} Altogether, the entire length of Hadrian’s Wall was equal to a distance of 76 Roman miles.\textsuperscript{94} Hadrian’s Wall was vital to the defensive military policy of the Roman Empire because it established the northern border for the province of Britannia and separated the Romans from the northern lands of the Britons and Picts, which were located north of the bays of the North Sea and the Irish Sea.\textsuperscript{95} As a whole, Britannia became divided into three separate sections after the creation of Hadrian’s Wall. The northernmost section of Britannia was located

\textsuperscript{86} Welsby, Derek A. \textit{The Kingdom of Kush: The Napatan and Meroitic Empires}. 71.
\textsuperscript{87} Fairservis Jr., Walter A. \textit{The Ancient Kingdoms of the Nile: And the Doomed Monuments of Nubia}. 201.
\textsuperscript{88} Kirwan, L.P. “The International Position of Sudan in Roman and Medieval Times.” 25.
\textsuperscript{89} Adkins, Genevieve and Mills, Nigel. “The Hadrian’s Wall Interpretive Framework.” 173.
\textsuperscript{90} Osborn, Geraint. \textit{Hadrian’s Wall and its People}. 5-8.
\textsuperscript{91} Osborn, Geraint. \textit{Hadrian’s Wall and its People}. 5.
\textsuperscript{92} Osborn, Geraint. \textit{Hadrian’s Wall and its People}. 5.
\textsuperscript{93} Osborn, Geraint. \textit{Hadrian’s Wall and its People}. 5.
\textsuperscript{94} Osborn, Geraint. \textit{Hadrian’s Wall and its People}. 5.
\textsuperscript{95} Breeze, David J. “John Collingwood Bruce and the Study of Hadrian’s Wall.” 3-6.
above the wall and was established as the non-Roman Caledonia. The middle section of Britannia (located from directly beneath Hadrian’s Wall, all the way to Mersey and the Wash in the south) was established as the province of Britannia Inferior. The southernmost section of Britannia (located from the Mersey line, all the way to the English Channel in the south) was established as the province of Britannia Superior. Hadrian’s Wall embodies the undefendability of military expansion in the Roman Empire because the only way the Romans were able to conquer and hold the province of Britannia was by using a massive amount of resources, imperial funds, and labor resources. Allocation of such a large amount of imperial resources and funds, in order to build a gigantic defensive border wall to keep all the barbarous Britons and Picts out of Roman territory, is also representative of the non-supportability of territorial expansion under the Roman Empire. The defensive military policy of the Roman Empire is also exemplified by Hadrian’s Wall because of the watchtowers, forts, milecastles, gates, ditches, vallum, and other additional defenses that are built into the wall. Of all the defensive features inherent to the structure of Hadrian’s Wall, the vallum was arguably the most critical and vital for the fortifications success. The vallum was principal to the success of the entirety of Hadrian’s Wall because it was the largescale system of ditches and banks that was located to the rear of the wall, so it could serve as the last line of the walls defense and provide a buffer zone between the military and the natives of Britannia. To properly supply the large

97 See Table XVI in Appendix I.
99 Breeze, David J. “John Collingwood Bruce and the Study of Hadrian’s Wall.” 7,11.
100 Breeze, David J. “John Collingwood Bruce and the Study of Hadrian’s Wall.” 13.
105 Breeze, David J. “John Collingwood Bruce and the Study of Hadrian’s Wall.” 16.
army of 12,000 soldiers,\textsuperscript{107} which were needed to successfully man the wall and defend the British frontier, the Roman government had to repurpose the local grain of Britannia.\textsuperscript{108} The amounts of grain necessary for Roman subsistence and sustainment in Britannia could not be continued solely by the local grain surpluses,\textsuperscript{109} and that is why the Roman government had to transport commercial supplies of grain to the standing army of Britannia.\textsuperscript{110} Roman unsustainability in Britannia was represented by the need to redirect Roman economic markets to the island,\textsuperscript{111} to establish new distribution routes for goods produced by state-owned factories,\textsuperscript{112} and to use imperial funds to maintain the supply lines to Hadrian’s Wall.\textsuperscript{113}

The second defensive border wall of the Roman Empire that is representative of the unviability of Rome’s military expansion is the fortification of The Antonine Wall. The Antonine Wall was built from the east coast to the west coast of Britannia, across the Central Belt of Scotland, from 142 to 154 CE.\textsuperscript{114} Britannia’s newly built Antonine Wall came to function as an actively manned defensive fortification from 154 to 211 CE.\textsuperscript{115} Even though Hadrian’s Wall already provided a major defensive fortification, the Romans built the Antonine Wall farther north in Britannia, so the Romans could have more security and safety from the insurgent and barbarous Caledonians of the north.\textsuperscript{116} The Caledonians and other non-Roman Britons remained in open rebellion against the Roman Empire, after the construction of Hadrian’s Wall, and they constantly committed raids into Roman territory and launched offensive attacks against Roman

\textsuperscript{107} Osborn, Geraint. \textit{Hadrian’s Wall and its People}. 47.
\textsuperscript{108} Osborn, Geraint. \textit{Hadrian’s Wall and its People}. 49.
\textsuperscript{109} Hanson, William S. and Maxwell, Gordon S. \textit{Rome’s North West Frontier: The Antonine Wall}. 178-179.
\textsuperscript{110} Osborn, Geraint. \textit{Hadrian’s Wall and its People}. 47-48, 52.
\textsuperscript{111} Osborn, Geraint. \textit{Hadrian’s Wall and its People}. 48-49.
\textsuperscript{112} Osborn, Geraint. \textit{Hadrian’s Wall and its People}. 48.
\textsuperscript{113} Osborn, Geraint. \textit{Hadrian’s Wall and its People}. 49.
\textsuperscript{114} Hanson, William S. and Maxwell, Gordon S. \textit{Rome’s North West Frontier: The Antonine Wall}. 104-136.
\textsuperscript{115} Hanson, William S. and Maxwell, Gordon S. \textit{Rome’s North West Frontier: The Antonine Wall}. 137-139, 155-157.
\textsuperscript{116} Hanson, William S. and Maxwell, Gordon S. \textit{Rome’s North West Frontier: The Antonine Wall}. 1-32.
settlements and strongholds. To combat the advances of the Caledonians, the Romans moved farther north into Caldeonian territory and built their new defensive fortification of the Antonine Wall,\textsuperscript{117} under the leadership of the governor Lollius Urbicus.\textsuperscript{118} By establishing a greater defensive barrier between the Caledonians and the Romans, as the Antonine Wall was built 39 miles long across the width of Britannia, the Romans gained more influence\textsuperscript{119} and control over the entirety of Britannia.\textsuperscript{120} The Antonine Wall embodied the non-feasibility of military expansion in the Roman Empire because it represented how the Romans wasted valuable resources\textsuperscript{121} and irreplaceable manpower\textsuperscript{122} in order to complete the construction of the Antonine Wall.\textsuperscript{123} Imperial Rome’s defensibility is also portrayed by the Antonine Wall because in addition to wasting manpower resources and raw materials, the imperial treasuries of Rome were also strained and drained by the building of the wall.\textsuperscript{124} In order to sustain Roman rule and control over Britannia, the Roman government mobilized massive amounts of resources to build the defensive border walls of the province, and redistributed the large occupying force needed to successfully hold Britannia and preserve the Caledonian border as well.\textsuperscript{125} The Antonine Wall also symbolized the defensive shift of the Roman military policy because it consisted of the supplemental defenses of the primary fort system,\textsuperscript{126} the secondary fort system,\textsuperscript{127} the fortlet or

\begin{itemize}
\item \textsuperscript{117} Hanson, William S. and Maxwell, Gordon S. \textit{Rome’s North West Frontier: The Antonine Wall}. 4-6, 139.
\item \textsuperscript{118} Hanson, William S. and Maxwell, Gordon S. \textit{Rome’s North West Frontier: The Antonine Wall}. 3-4.
\item \textsuperscript{119} Hanson, William S. and Maxwell, Gordon S. \textit{Rome’s North West Frontier: The Antonine Wall}. 162.
\item \textsuperscript{120} Hanson, William S. and Maxwell, Gordon S. \textit{Rome’s North West Frontier: The Antonine Wall}. 169-172.
\item \textsuperscript{121} Hanson, William S. and Maxwell, Gordon S. \textit{Rome’s North West Frontier: The Antonine Wall}. 126, 129, 131-134.
\item \textsuperscript{122} See Table XVI in Appendix I.
\item \textsuperscript{123} See Table XXII in Appendix I.
\item \textsuperscript{124} Hanson, William S. and Maxwell, Gordon S. \textit{Rome’s North West Frontier: The Antonine Wall}. 109, 126-136.
\item \textsuperscript{125} Hanson, William S. and Maxwell, Gordon S. \textit{Rome’s North West Frontier: The Antonine Wall}. 104-136.
\item \textsuperscript{126} Hanson, William S. and Maxwell, Gordon S. \textit{Rome’s North West Frontier: The Antonine Wall}. 22, 159-165.
\item \textsuperscript{127} Hanson, William S. and Maxwell, Gordon S. \textit{Rome’s North West Frontier: The Antonine Wall}. 22, 165-169.
\end{itemize}
signal post system, the ditch system, and the rampart system. In addition to the supplemental defenses of the Antonine Wall, the Military Way was built as a military road and highway for the Romans, and its construction signified the Roman exhaustion of a momentous amount of resources and manpower. By building a military highway to the Antonine Wall, the Romans signified how vital the efficient transportation of resources, and the successful management of supply lines, were to the sustainment of Roman Britannia. Even though the Roman armed forces stationed in Britannia were better trained, better equipped, and better supplemented with artillery and siege engines, the relentless Caledonians were able to use their vastly superior numbers to defeat the Romans and push them back past the walls of both Hadrian and Antonine.

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131 Hanson, William S. and Maxwell, Gordon S. *Rome’s North West Frontier: The Antonine Wall*. 133.
Chapter 3) Roman Agricultural Economy: The Local Grain Producers

3.1) Local Grain Production: Background and Definition

In the Roman Empire, the regions of Gaul, Hispania, and the Black Sea Region, served as the local and small-scale grain producers of the imperial economy of Rome. Climate is crucial for the regions of minor grain production and internal grain distribution in Rome, because the factors establish the following: 1) if barley can be grown in the region, 2) what other types of lesser grains can be cultivated in the region, 3) what types of soil exist within the region, 4) how much grain can be produced to sustain local populations, 5) how much grain can be produced for internal circulation, 6) how much commercial or government-issued grain is needed to supplement and sustain the provinces of the local grain producer, and 7) why each local producer developed different types of industries as their primary industry and function within the Roman economic system, instead of focusing on the agrarian industry like the major grain producers. The Roman provinces of local and minor grain production were defined by the regions that regularly produced the cheaper and non-commercial local grain of barley.136 Barley is a type of grain that can grow in fields and plains that are less productive and fertile than those needed to grow the pricier grains like wheat; it is more generally available and cheaper137 but also less desirable in taste.138 The region of Gaul was an integral part of

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137 See Table X and Table XI in Appendix I.
138 Pliny the Elder. The Natural History. 18.18.
the agrarian economy of the Roman Empire and it consisted of five separate barley producing provinces.\textsuperscript{139} The Roman Republic created the provinces of Gaul by engaging in campaigns of military expansion and it was the Gallic Campaigns of the Punic Wars that established a Roman presence in Gaul,\textsuperscript{140} it was Julius Caesar who originally conquered Gaul in his Gallic Wars of 58 to 50 BCE,\textsuperscript{141} and it was Augustus who redefined Roman rule over Gaul and adjusted the provincial borders of the Gallic region.\textsuperscript{142} Just like the area of Gaul, the region of Hispania, which is modern day Spain and Portugal, was a key component of the Roman empire and was made up of five separate provinces within the region.\textsuperscript{143} In order to keep Roman control over Hispania, the Romans exhausted extensive resources and manpower by actively waging wars and putting down revolts in the region for multiple centuries, as it was the Punic Wars fought against Carthage, and the generals Hamilcar and Hannibal, that initially obtained Hispania for Rome.\textsuperscript{144} To obtain the region of Hispania, the Roman Republic also waged the Sertorian War against Quintus Sertorius and the native peoples of Hispania, with Pompey and Metellus winning a military victory over Hispania that extended and reorganized the Roman rule of region.\textsuperscript{145} An eastern equivalent of Hispania and Gaul was the Black Sea Region, and it was a fundamental region of the Roman Empire and the agrarian economy that consisted of at least twelve different provinces.\textsuperscript{146} The vast majority of the provinces of the Black Sea Region were established as Roman with the

\textsuperscript{140} Polybius. The Histories. 2.13-2.36, 86-105.
\textsuperscript{141} Caesar, Julius. The Gallic War. 218.
\textsuperscript{142} Dio, Cassius. Roman History. 54.19-54.36, 171-187.
\textsuperscript{143} O’Callaghan, Joseph F. “Hispania.” 27-29.
\textsuperscript{144} Polybius. The Histories. 3.72-3.117, 186-222.
\textsuperscript{145} Plutarch. Roman Lives: The Life of Pompey. 235-239.
\textsuperscript{146} Huzar, Eleanor Goltz. “Reorganizing Eastern Provinces and Allies.” 150.
widespread military expansion and aggressive armed campaigns of the Roman Republic. Most of the Black Sea territories were obtained for Rome in the Mithridatic Wars that were fought and won against the Kingdom of Pontus. More of the Black Sea territories that were obtained by Rome were taken in the Armenian-Parthian War launched by Marc Antony and Ventidius Bassus in the late First century BCE. The Armenian-Parthian War of Antony was launched against Armenia, Sophene, Commagene, and the Parthian Empire. The Parthian War of Trajan, and the Parthian War of Marcus Aurelius, were both fought along the easternmost border of the Black Sea Region so that Rome could maintain, uphold, and stabilize the provinces that already existed as a part of the Roman Empire. Location is also valuable to the small-scale grain producers of the Late Roman Empire because they all primarily grow their grain for the subsistence of their own local populations and the survival of their own resident communities, but secondarily they grow their grain for the payment of taxes and tribute to the Roman military of the region. In addition to barley the local grain producers also harvested quantities of millet and panic and these other lesser grains are critical components of the success of the local and small-scale grain producers of the Roman Empire, because it is these types of grain that upheld the agrarian economy of Rome and allowed for the yearlong supplementation of commercial wheat, since millet and panic are grown and harvested during a different season of the year than both barley and wheat, which allows for the renewability of the Roman grain supplies when the agrarian markets have to rely

just on wheat reserves and barley surpluses from the previous season. Sustainability again comes into play with the regions of local grain production because the only reason that the local producers had to pay agrarian tribute to the Roman military was because of the indefensibility of the imperial borders. The clear necessity for the permanent stationing of frontier legions in the border provinces of the empire indicated that the local grain producers had to provide their local barley surpluses to the Roman military in order to supplement the inadequate amount of wheat supplied by the commercial grain producers of the Roman government.

3.2) Local Producer #1: The Black Sea Region

The climate and geographic location of the local grain producers is integral to their role in the agrarian economy of Rome and the Black Sea Region serves as a prime example. Grain reallocation to the military was primarily supplied and maintained by the local grain producers and that is central to the geographic location of the territories because the regions of local production were where the standing army of the Roman military was stationed and assigned. The unmaintainable nature of the defense of the imperial borders of the Roman Empire caused the Romans to have to establish military bases and border legions in the frontier regions, which explains why the development of new military districts occurred in the local grain producing regions, since the regions of local grain production were located outside the Mediterranean Climate Region and were directly adjacent to the Roman border and frontier. The Black Sea Region was chiefly positioned inside the Mediterranean Climate Region, except for the northern areas of the

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152 Pliny the Elder. *The Natural History.* 18.10.
154 Wheeler, Everett L. “Roman Fleets in the Black Sea: Mysteries of the ‘Classis Pontica’.” 142
Bosporus and Crimea, and the production of bulk sources of barley, millet, and panic grass were maximized by the lands and soils of the region.\textsuperscript{156} Due to the status of the Black Sea Region as a local grain producer, the provinces of the region instead focus on the exotic goods and luxury items industries, because the provinces of the region act as the middlemen for the silks and spices of the East, as well as serve as the western distribution centers for the other finished goods of the East.\textsuperscript{157} The exotic and luxurious resources transported from the Black Sea Region are representative of the leading non-agricultural industry of the region. Provinces of the Black Sea territories do not solely act as middlemen and distributors for the exotic goods of the East, but also serve as the processing centers for the raw materials and natural resources of the East.\textsuperscript{158} Control over the exotic resources and luxury goods of the East was crucial to the establishment of the Black Sea Region as a local grain producer, because by maintaining the primary industry of economic middleman, the region was able to uphold a supplemental industry of local grain production and provide for Roman consumption.\textsuperscript{159} Grain, military expansion, and labor markets are all connected by the failure of the sustainability of the economy, government structure, and decaying military of Rome, but the local grain producer of the Black Sea Region is at odds with that relationship, because the trade networks and commercial routes connecting the eastern markets to those of the West never faltered and were successfully sustained by the Eastern Romans until the end of the Byzantine Empire.

\textsuperscript{156} Pliny the Elder. \textit{The Natural History}. 18.24-18.25.
\textsuperscript{157} Charlesworth, M.P. \textit{Trade Routes and Commerce of the Roman Empire}. 76.
\textsuperscript{158} Bowen, Edwin W. “Roman Commerce in the Early Empire.” 205.
\textsuperscript{159} Charlesworth, M.P. \textit{Trade Routes and Commerce of the Roman Empire}. 99.
3.3) Local Producer #2: The Region of Gaul

Gaul is located to the north of the Mediterranean Climate Region, which instills that the types of grain produced by the area are barley and rye, as well as that the area’s soil and types of agrarian fields are not suited for either wheat production or large-scale grain farming, because the provinces are north of the Mediterranean Climate Zone.\textsuperscript{160} Minerals, precious metals, and unoccupied land are the resources that the provincial economies of Gaul focus on, instead of grain, because the provinces’ topographical features that make large-scale agriculture unfavorable. Land from the provinces of Gaul served as one of the main resources of the Gallic Region because the Romans used the lands of Gaul to appease the Germanic barbarians and provide them with Roman territory to inhabit and form into their own barbarian client kingdoms,\textsuperscript{161} and federates.\textsuperscript{162} The connection between grain and military policy was embodied by the resettling of barbarian peoples within the Gallic provinces of the Roman Empire because the imperial borders were so unmanageable that the Romans had to concede Roman territory to the barbarians and allow them to not only settle on Roman lands.\textsuperscript{163} Additionally, the provinces of the Gallic Region also produced minerals and precious metals, as their other leading resource and industry, because the mountain ranges, river valleys, and shorelines of the territory, are all conducive to the production of amplified yields of minerals and metals,\textsuperscript{164} which also stimulated the creation of finished goods from the raw materials and served to increase the use of large factories to complete the commercial exportation of those goods.\textsuperscript{165}

\textsuperscript{160} Semple, Ellen Churchhill. “Geographic Factors in the Ancient Mediterranean Grain Trade.” 48-49.
\textsuperscript{161} Ferrill, Arther. \textit{The Fall of the Roman Empire: The Military Explanation}. 124-125.
\textsuperscript{162} West, Louis C. “The Economic Collapse of the Roman Empire.” 103.
\textsuperscript{163} Ferrill, Arther. \textit{The Fall of the Roman Empire: The Military Explanation}. 119-120.
\textsuperscript{164} Bowen, Edwin W. “Roman Commerce in the Early Empire.” 205.
\textsuperscript{165} Bowen, Edwin W. “Roman Commerce in the Early Empire.” 203.
3.4) Local Producer #3: The Region of Hispania

In contrast to Gaul, the region of Hispania lies within inside the Mediterranean Climate Region, except for some northern areas, and that establishes that the provinces of the area will be able to produce barley, millet, and panic, as well as consist of lands that are less productive and are described as having fields of greatly reduced fertility.166 Just like Gaul, the region of Hispania is focused on commercially producing large amounts of precious metals and minerals, and that is why Hispania functions as a local grain producer, as they focus their commercialized industry on the more profitable sale and trade of precious metals and minerals that were obtained through painstaking labor in the mines. After the region of Hispania had been conquered in the Middle to Late Republican Period, the Romans quickly began mining and taking advantage of the abundance of metals and minerals in the area, and by the Late Republican Period the Romans had established the mines of Hispania as their most proficient and valuable source of precious metals, with the societal reliance and social necessity of the mines of Hispania only increasing throughout the imperial periods.167 The valuable and profitable mines of Hispania are representative of the influence of grain and military policy on the fall of Western Rome because the Romans could no longer successfully defend the Gallic borders and consequently lost the mines of Hispania and all of their wealth to the Germanic and Gothic barbarians who invaded south into Roman territory and occupied Hispania for themselves.168 The provincial economies of the region of Hispania are defined by precious metals and valuable minerals, because the area is located within the Mediterranean Climate Region and is defined by mountain ranges, mineral rich valleys, and river lands silted with minerals.169 Mining was the most vital industry of the

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Hispania Region and the mines of Hispania’s provinces provided Rome with the vast amounts of gold and silver that they use to mint coinage, purchase commercial grain, and import the exotic goods of the East.\textsuperscript{170} Gold and Silver were able to be mined efficiently, and at high production rates, throughout the provinces of the Hispania region, because after the Romans defeated Carthage and took Hispania, as well as after they subdued the local populaces of the territory, they proceeded to engage in large-scale commercial mining operations, which were enabled by the new mining technologies and the new extraction techniques installed by the Romans.\textsuperscript{171}

### 3.5) The Connection between the ‘Fall of Western Rome’ and the Local Grain Producers

The local grain producers of the Roman Empire are interconnected with the collapse of the society of the Western Roman Empire, that occurred during the Fifth century CE, by the issue of Roman sustainability. The standing army of the more defensive and conservative military policy of the Roman Empire was not maintained entirely by the grain of the local producers because the grain of the commercial producers was also used to supply the Roman military and their frontier legions. Societal viability and the local grain producers are also connected by the internalization of the villa-economy because the tax-based internal economy of the empire was not able to maintain the imperial incomes that were reduced by the switch to the defensive military policy of the Roman Empire. Local grain producers influenced the fall of the Western Roman Empire in the Fifth century CE because the increased taxation and rent collection of the imperial economy was not able to meet the agrarian requirements of the standing army of the defensive border legions of the Roman frontiers. Non-supportability was inherited by the local grain producers of the Roman society because the reduction to the size of

\textsuperscript{170} West, Louis C. “The Economic Collapse of the Roman Empire.” 104.
\textsuperscript{171} Wilson, Andrew. “Machines, Power and the Ancient Economy.” 17-18.
the taxable population of the empire was responsible for the inability to maintain the institutionalized servile labor system and uphold the efficiency of the unfree labor markets. The local grain producers are also connected to the fall of the Western Roman Empire because the steep rise in agrarian inflation that resulted from the elimination of Rome’s free labor markets, and the diminishment of the taxable population of the empire, were accountable for the failure of Rome to uphold the populations of the Roman Empire and preserve the agrarian system of the internal economy of the empire.
Chapter 4) Roman Agricultural Economy: The Major Grain Producers

4.1) Commercial Grain Production: Climate and Geographic Background

In the imperial period of the Roman Empire, from 31 BCE to 476 CE, the agrarian economy consisted of the major grain suppliers and the commercial grain producers of Egypt, Sicily and Sardinia, and North Africa (Africa, Numidia, and Cyrene).\textsuperscript{172} The regions dedicated to the commercial and international distribution of grain are crucial to the sustainability of the economy of the Roman Empire, because the large-scale grain producers supplied Rome with the grain that they needed and relied upon to support the imperial populations of Italy and the city of Rome itself. Grain from the commercial producers upheld the imperial populations and that allowed for the continued growth of the Roman economy and the expansion of the labor markets of Rome.\textsuperscript{173} Even though the large-scale wheat producers decreased in number or switched their roles,\textsuperscript{174} from the end of the Republic to the start of the Roman Empire, the different types and strains of wheat that were available to the Romans remained numerous and defined by regional affiliation. The growth of different types and strains of wheat was influential on the total size of the wheat output of Rome because the capability to grow different types of wheat, at varying times of the year, and in different types of soil, allowed the Romans to maximize their total

\textsuperscript{172} Semple, Ellen Churchill, “Geographic Factors in the Ancient Mediterranean Grain Trade.” 72.


\textsuperscript{174} Semple, Ellen Churchill. “Geographic Factors in the Ancient Mediterranean Grain Trade.” 49.
wheat production. Roman production of varying types of wheat, as well as of different types and strains of grain, both serve to represent the role that the environmental season, and the time of year, have to play in the growth and development of grain production and supply in Rome, through both the local and major producers. The differing weather of the ecological seasons allowed for the Romans to produce different grains, as well as several types of wheat, for the entire length of the Roman year. The ability to produce grain sources of wheat in surplus amounts, for the entire year, serves to classify the regions of Egypt, Sicily and Sardinia, and North Africa (Africa, Numidia, and Cyrene), as the leaders of the international grain industry, as well as the most important states for the commercial production of grain, because wheat is regarded as the most flavorful, the most desirable, the most nutritious, the most in demand, and the most required, of all the different types of grain that exist in the Mediterranean and are available on the agricultural markets of the Roman empire. Regions and provinces able to produce wheat on an extensive scale are also classified as the most essential imperial resource for Rome, because of all the different strains of grain available throughout the Roman world, it is the strain of wheat that is the most expensive. Wheat can only be grown and produced in the areas around the Mediterranean that meet a specific set of geographic and climatic qualifications, with one requirement being their location outside of the Mediterranean Climate Region. The environmental and climatic conditions, which define the different types of grain that can be farmed in the various regions of the empire, are crucial to the distribution of grain throughout the Roman world, because the trade routes and supply lines of the Roman markets are all centered

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on, and implemented between, the regions that have the climatic environments that are capable of supporting largescale agricultural productivity.180

In addition to the environmental seasons, and the regional climates, both within and outside the Mediterranean Climate Zone, the different types of soil that wheat, and the other strains of grains, can grow in, are integral to the success of the Roman agricultural system, which uses a limited amount of major wheat producers that are supplemented by the local producers of lesser quality grains. Soil type is so influential to the Roman agrarian system because the type of soil determined the strains of grain that could grow in the region, the times of the year that grain could be grown in the region, and the size of the potential yield of the grain being cultivated in the region.181

The imperial province of Egypt is one of the key grain suppliers for Rome because it is the province that has the agrarian land of the best quality, since the Nile River Valley supplies the agrarian lands of Egypt with the alluvial silts and fertile floodplains that make the lands of Egypt extremely arable and cultivable.182 The Nile River Valley is the lifeblood of Egypt, as well as the savior of Rome, because the fertility, richness, moisture, and arability of the soil, which enabled the agricultural lands of the Nile to function as the most productive and reliable of all of the Roman provinces, are the factors that allow Egypt to engage in large-scale cereal agriculture, since it is the Nile River Valley that contains the most floodplains of any area in the entire Mediterranean region.183

180 Semple, Ellen Churchhill, "Geographic Factors in the Ancient Mediterranean Grain Trade." 47.
181 Pliny the Elder. The Natural History. 18.46.
182 Bard, Kathryn A. “The Environmental Background to Pharaonic Civilization.” 53.
183 Bard, Kathryn A. “The Environmental Background to Pharaonic Civilization.” 55.
Geographic location is key to the status of Sicily and Sardinia as one of the three major grain producers and commercial suppliers, of the Roman state, because both of the islands are located just outside of the Mediterranean Climate Region, which establishes both of them as isles of fertile agricultural lands and arable alluvial plains, which naturally grow wheat on a large-scale platform: “This was especially true of wheat. According to the ancient writers, wheat required rich, humid earth, preferably deep-valley alluvium with plenty of ground water, or fertile volcanic soils retentive of moisture, like that about Naples and Syracuse.”184 The position of the island of Sicily, in relation to Italy and the rest of the Mediterranean, is central to the establishment of the senatorial province as an imperial granary, and largescale wheat distributor to the Roman West.185

Location and climate are also vital to the role of the North African provinces, as one of the major grain suppliers to the Roman West, because the majority of the agrarian lands of the region are supported by Roman agricultural infrastructure, so they can increase the overall fertility and production yields of the lands, by using techniques such as irrigation canals, systematic watercourses, and aqueducts for constant water supply to the plains and fields.186 Although the agrarian lands of the North African region are able to produce massive quantities of grain, because of the Roman agricultural infrastructure that increases the richness, fertility, and moisture of the areas, the North African region is also able to produce grain on a commercial scale because of the naturally fertile and lush agronomic region of the Bagradas Valley.187 In addition to the tremendously fruitful territory of the Bagradas valley, the region of North Africa

also contains two other areas, within its four provinces, that are naturally defined as being widely fertile and commercially productive, since their soil and climate are ideal for the growing and farming of grains and other agrarian products.  

Geographic location and climate region are crucial to the existence of the major and commercial grain suppliers of Rome, as they define them as being the leading producers and allow for them to function as the agrarian capitals of the Roman world, but they also are influential to the local and small-scale grain producers of Rome, because they explain why a specific region is classified as a local grain producer and they serve to define why a certain territory has its own economic relationship to Rome.

4.2) Major Producer #1: The Maritime Producers of Sicily and Sardinia

Extensive agrarian lands existed on the islands of Sicily and Sardinia, and they allowed for the commercial and mass production of grain resources by the islands, first for the Carthaginian Empire of North Africa, and then by the Romans after the First, Second, and Third Punic Wars. The full agricultural potential of Sicily was not fulfilled until the island came under Roman control and was relied upon to successfully supply the agrarian economy of the city of Rome, “In 204 B.C. the struggle between Rome and Carthage had ended. The kingdom of Syracuse lost its independence and the grain that Hiero had formerly placed for sale on the eastern market was now in Roman hands.” Grain and Roman military expansion were connected by the Roman acquisition of Sicily and Sardinia, because the maritime region of major

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188 Semple, Ellen Churchhill, “Geographic Factors in the Ancient Mediterranean Grain Trade.” 73.
189 Polybius. The Histories. 1.61-1.63, 54-56.
grain production was only added to Rome through their success in the expansionistic Punic Wars\textsuperscript{193} that were fought and won against Carthage.\textsuperscript{194} The Roman necessity for an increase of grain imports to Italy was influential on the sustainment of the food supply of the city of Rome’s own urban population,\textsuperscript{195} and that served to designate the islands of Sicily and Sardinia as an established mass producer and commercial supplier of grain\textsuperscript{196} for the Roman Republic.\textsuperscript{197} Until the rise of North Africa in the Early Roman Empire,\textsuperscript{198} Sicily was established as the most impactful of all of the commercial grain producers and suppliers that existed within the western half of the Roman Empire, because after the island was taken over by the Romans in 204 BCE, it was regulated so that the Sicilian agricultural resources could not be commercially sold in the eastern markets and could not be distributed outside of the Italian peninsula either, so that only the peoples of Italy and the city of Rome could directly benefit from the Sicilian resources.\textsuperscript{199} The grain surpluses of Sicily and Sardinia made up an entire third of the grain imported to the Roman West during the Roman Republic. Without the surpluses of the maritime wheat producers, the agrarian economy of Rome could not be upheld until it shifted into the internalized villa-economy of the Roman Empire.

The reliance and dependence of the Roman Republic, on the grain of Sicily and Sardinia, for the successful operation of the agrarian economy of Rome, was embodied by the Gracchi brothers of the middle period of the Roman Republic. The older brother Tiberius Gracchus

\textsuperscript{194} Polybius. \textit{The Histories.} 1.11-1.88, 10-76.
\textsuperscript{196} Cicero. \textit{De Imp. Gn. Pomp.} 34; cf.
\textsuperscript{198} Rickman, G.E. “The Grain Trade under the Roman Empire.” 263-264.
established the new grain law of the *Lex Sempronia Agraria* in 134 BCE, as well as created the first agrarian commission of the Roman government, so that the Republic could attempt to deal with the issue of rising unemployment and food shortages in the urban centers of Italy. After the death of Tiberius Gracchus, the younger brother Gaius Gracchus also dealt with the agrarian issue that was facing Rome, by establishing the new grain law of the *Lex Frumentaria* in 123 BCE, which was fundamental because it was the first agrarian law that was similar and comparable to the later developed *annona* system.

In the period of the Roman Republic, Sicily and Sardinia were the most influential and significant of the three major and commercial grain producers of Rome, because they were located the closest to Italy and had been involved in the Roman economy for the longest, and that is why the maritime producers of Sicily and Sardinia were who Pompey Magnus first turned to for grain when Italy and the city of Rome were faced with famine and starvation. The republican reliance on the grain of Sicily and Sardinia was also relevant to the Roman tribune Saturninus, because he was the Roman official who successfully dealt with the revolts of Sicily against the Roman Republic, by establishing the new grain law of the *Lex Appuleia Agraria* in 100 BCE, and stabilizing the grain market of Rome by lowering the prices of the grain even though there was a shortage facing the Western Roman Republic.

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202 Appian. *The Civil Wars*. 1.7-1.8, 4-5.
Roman control over Sicilian and Sardinian grain, and the western monopolization of the distribution of grain from the maritime producers, were both vital to the role of grain in the collapse of the Western Roman society centuries later in the Fifth century CE, because they signified that Italy and the city of Rome were to be largely dependent on the grain surpluses of Sicily and Sardinia until the end of the Roman Republic.\textsuperscript{210} If the entirety of the commercial grain supply of Sicily and Sardinia was not distributed to the Roman West, because of a blockade of the grain producing islands by Sextus Pompey,\textsuperscript{211} the grain markets of Italy and the city of Rome would not be able to replace the missing grain supplies,\textsuperscript{212} by just increasing their grain importation from the other two major grain producers of North Africa and Egypt,\textsuperscript{213} as those grain supplies were also intercepted by Sextus Pompey’s blockade\textsuperscript{214} and served to force the Italian peninsula to fend for itself and survive without commercial grain.\textsuperscript{215} Under the Roman Republic, the necessity for massive grain importation to Rome was representative of how societally contingent the city of Rome was on Sicilian grain surpluses, as well as how dependent the Italian peninsula’s survival was on the direct supply of the Sicilian and Sardinian grain solely to the Roman West.\textsuperscript{216} Republican Rome’s maintainability of the pre-existing agrarian economy was intertwined with the commercial grain producer of Sicily and Sardinia, because by the time of the end of the Roman Republic, and the start of the Roman Empire, the agrarian consumption of Italy and the city of Rome had increased so much that all three of the major and commercial grain producers had to be used in order to provide feasibility to the successful and efficient

\begin{itemize}
\item \textsuperscript{210} Plutarch. \textit{Fall of the Roman Republic. Cicero.6-Cicero.8}, 328-331.
\item \textsuperscript{211} Plutarch. \textit{Roman Lives. Antony.32}, 387-388.
\item \textsuperscript{212} Rickman, G.E. “The Grain Trade under the Roman Empire.” 263-264, 269.
\item \textsuperscript{213} Appian. \textit{The Civil Wars. 5.18}, 288.
\item \textsuperscript{214} Appian. \textit{The Civil Wars. 5.67-5.68}, 313-314.
\item \textsuperscript{215} Garnsey, Peter. \textit{Famine and Food Supply in the Graeco-Roman World: Responses to Risk and Crisis}. 207-208.
\item \textsuperscript{216} Garnsey, Peter. \textit{Famine and Food Supply in the Graeco-Roman World: Responses to Risk and Crisis}. 202.
\end{itemize}
agrarian economy of the new Roman Empire. Additionally, the senatorial province of Sicily was defined as the prominent grain producer of the Roman West, because all of the other grain producing provinces of the west, except for the supplemental Sardinia, were just functioning as local producers for the local and provincial markets of agrarian production. In contrast to the previous example regarding Gaul, it is the province of Sicily that engages in the mass production and exhaustive exportation of Sicilian grain, to both Italy and the city of Rome, by sending their annual tributary tax of grain to the imperial authorities for collection and redistribution to the Roman public as freely distributed annona grain. Under the Roman Republic, the agrarian taxes and tribute of Rome were collected by the publicani, who were the agrarian tax farmers of the Republic that were employed by the magistrates of the provinces to collect the yearly quota of taxes from the various settlements. Sardinia suffered extortionist and corrupt taxes at the hands of the publicani because they manipulated the grain of the island for both personal gain and imperial benefits, by severely exploiting and taking advantage of the rural populations.

Civil disorder and anti-Roman insurgency arose in response to the increase of Rome’s total amount of taxation, and the continuation of the corrupt and unethical taxation of the lower and servile classes, because when the prices of taxes were enlarged for the lower classes there was a reciprocal decrease in the size of the free and taxable population of the Roman economy,

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218 MacMullen, Ramsay. “Late Roman Slavery.” 368.
221 Boatwright, Mary T., Gargola, Daniel J., Lenski, Noel, and Talbert, Richard J.A. The Romans: From Village to Empire – A History of Rome from Earliest Times to the end of the Western Empire. 110-111.
as any economy based off of both a servile labor system and a tax based income system will be unsustainable in the long run.\textsuperscript{226} The prime function of the pre-existing agrarian economy of Sicily and Sardinia was not achievable under the Roman Empire because the increase of imperial taxes, tributes, and rents resulted in the rise of North Africa as the most prominent and productive of the commercial grain producers, as well as the elimination of Sicily and Sardinia from their republican position of preeminent commercial grain producer, since the increase of the taxable incomes of the Roman Empire resulted in their increased reliance on the larger, more extensive, and more proficient region of North Africa. Unsustainability of the Roman society is also influenced by the commercial grain surpluses of the major wheat producer of Sicily and Sardinia because when the military expansion of the Roman Republic could no longer be maintained by the imperial bureaucracy, the internal economy of the Roman Empire had to increase the agrarian taxation of Sicily and Sardinia, in order to maintain the population and uphold the grain markets of the society, which resulted in the rise of Roman inflation, the decrease in the size of the taxable population, and the rise of the institutionalized servile labor system.

4.3) Major Producer #2: The Region of North African

The region of North Africa served as one of the three major grain producers and commercial wheat suppliers of both the Roman Republic and the Roman Empire, after the culmination of the Punic Wars and its official inclusion into the Roman world.\textsuperscript{227} The region of North Africa consisted of the provinces of Africa Proconsularis and Cyrene during the Roman Republic, and also consisted of the additional provinces of Numidia,

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\textsuperscript{226} MacMullen, Ramsay. “Tax-Pressure in the Roman Empire.” 739.
\textsuperscript{227} Appian. The Punic Wars. 27.135.
\end{flushleft}
Libya, and Tripolis during the Roman Empire, which were all located on the northern coast of Africa, in-between Mauretania to the west and Egypt to the East.\textsuperscript{228}

After the successful completion of the Third Punic War in 146 BCE,\textsuperscript{229} the region of North Africa became one of the three most prominent regions of commercial grain production and exportation for all of the Roman Republic, as just the regions of North Africa, and Sicily and Sardinia, sustained the agrarian economy of the Roman West and successfully maintained the populations of Italy,\textsuperscript{230} until the later inclusion of Egypt at the end of the Roman Republic.\textsuperscript{231} North Africa existed as one of the three major and commercial grain producers for the Roman economy, until the end of the Roman Republic and the beginning of the Roman Empire, because it was not until the start of the Roman Empire that Sicily and Sardinia diminished as major grain producers,\textsuperscript{232} and were replaced by the furthered agrarian growth of both North Africa and Egypt.\textsuperscript{233} The commercial grain production of North Africa sustained the agrarian economy of both Italy and the city of Rome, after its inclusion into the Roman Republic in 146 BCE,\textsuperscript{234} because the region consisted of an extensive amount of fertile lands,\textsuperscript{235} and maintained a pre-existing labor system designed for efficient agricultural production.\textsuperscript{236}

In the Roman Republic, the grain surpluses produced by North Africa, for the perishability of the agrarian economies of both Italy and the city of Rome, were

\begin{footnotesize}
\begin{enumerate}
\item \textsuperscript{228} Carter, H.V. “Roman Civilization in North Africa.” 198.
\item \textsuperscript{229} Appian. The Punic Wars. 27.132-27.135.
\item \textsuperscript{230} Temin, Peter. “The Economy of the Early Roman Empire.” 137-138.
\item \textsuperscript{231} Casson, Lionel. "The Grain Trade of the Hellenistic World." 183, 186-187.
\item \textsuperscript{232} Rickman, G.E. "The Grain Trade under the Roman Empire." 263-264.
\item \textsuperscript{233} Casson, Lionel. "The Grain Trade of the Hellenistic World." 187.
\item \textsuperscript{234} Casson, Lionel. “The Role of the State in Rome’s Grain Trade.” 21-27.
\item \textsuperscript{235} Carter, H.V. “Roman Civilization in North Africa.” 202.
\item \textsuperscript{236} Kehoe, Dennis. “Lease Regulations for Imperial Estates in North Africa: Part I.” 194-197.
\end{enumerate}
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influential on the issue of Roman sustainability. North African grain surpluses were connected to the societal viability of Rome because it was in 58 BCE that Clodius Pulcher built upon the pre-existing agrarian laws of the Gracchi brothers, and established the new grain law of the Alimenta. The creation of the Alimenta by Clodius Pulcher was noteworthy because it was the first permanent agrarian law of the Roman government and the agrarian law that would later be adapted to become the agrarian law of the annona. North African grain surpluses were used to uphold the agrarian laws of the Lex Frumentaria and the Alimenta, and the agrarian annona developed from those preceding grain laws of the Roman Republic as well. The first alteration to the Alimenta was enacted by Julius Caesar, when he reformed and decreased the Alimenta of Clodius Pulcher, in order to establish the perpetual agrarian annona of the new Roman economy. After the reforms and alterations were implemented to the Alimenta by Julius Caesar, the ‘Annonae of the City of Rome’ was the first of the annona grain laws to be created by the Roman government. The annona of the city of Rome was the original and foundational annona of the Roman government, and it was established in order to provide sources of subsidized grain to all the Roman citizens of the capital city. The original annona of the city of Rome enhanced the growth of the Roman society, and instead of providing subsidized grain to all of the citizens of the city of

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238 Cristofori, Alessandro. “Grain Distribution in Late Republican Rome.” 149-150.
241 Veyne, Paul. Bread and Circuses: Historical, Sociology, and Political Pluralism. 245.
242 Grant, Michael. A Social History of Greece and Rome. 69-76.
Rome like in the past, the *Prefectus Annonae* had to only provide subsidized grain to specified citizens who met certain qualifications in order to receive the government-supplied aid.\(^{248}\)

Roman grain and military policy are interconnected together by the unsustainability of the military expansion of the Roman Republic, which served to establish why the original *annona* of the city of Rome was altered so that a lesser number of specified citizens would receive the government subsidized grain, since the decrease of successful military expansion\(^{249}\) made it so there was a larger population of Roman citizens that had to receive a smaller amount of subsidized grain. The original *annona* of the city of Rome had its requirements for inclusion into the *annona* altered and changed over the passage of time.\(^{250}\) Changing the requirements for the *annona* of the city of Rome was critical because it provided the set amount of entirely free grain for redistribution, which was supplied by the Prefect of the Annona,\(^{251}\) to new members of the lower-class citizens of the city of Rome.\(^{252}\) Government grain could be freely provided to the appropriate lower-class peoples of the city at no cost whatsoever, instead of being provided to all Roman citizens in the city at subsidized (but not entirely free) prices, because the Romans obtained quantities of grain as tribute and taxes from the major grain producers of Egypt, North Africa, and the maritime region of Sicily and Sardinia.\(^{253}\) Urban populations of the city of Rome and of the Italian Peninsula had

\(^{248}\) Kessler, David and Temin, Peter. "The Organization of the Grain Trade in the Early Roman Empire." 315-316.
\(^{249}\) See Table XIV in Appendix I.
\(^{250}\) Rickman, G.E. "The Grain Trade under the Roman Empire." 262-263.
\(^{251}\) Temin, Peter. "The Grain Trade." 105.
\(^{252}\) Cristofori, Alessandro. "Grain Distribution in Late Republican Rome." 149-150.
steadily increased\textsuperscript{254} and grown in size\textsuperscript{255} until the end of the Second century CE.\textsuperscript{256} Populations within Italy and the city of Rome grew until the Second century CE ended because of the internalized and self-confined agrarian economy developed by the Roman Empire.\textsuperscript{257} Rome’s internalized villa-economy led to the population growth and that influenced the unfeasibility of the Western Roman Empire because the imperial government had to find a way to continue to feed and support the rising impoverished populations\textsuperscript{258} of the lower classes,\textsuperscript{259} as well as the rising disenfranchised population of former small farmers who were forced to sell their lands and migrate to the cities by the increase of Rome’s total tax collection.\textsuperscript{260} The increase of imperial taxation that caused the rise of the disenfranchised population of Rome was due to the fact that the influx of newly defeated populations into the unfree labor markets was diminished in the Roman Empire by the unviability of the military expansion and territorial conquest of the Roman Republic. Surpluses of grain from Egypt and North Africa allowed for the establishment of the \textit{annona} of the city of Rome, and it was military expansion that initially allowed for the use of the \textit{annona} of the city of Rome in the first place, because Egypt and North Africa were taken by Rome through military expansion, with the \textit{annona} of the city of Rome supplied by the internalized economy of Imperial Rome,\textsuperscript{261} and the oppressive system of taxation and tribute\textsuperscript{262} that was upheld by the imperial bureaucracy of the

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\item \textsuperscript{254} MacMullen, Ramsay. “Late Roman Slavery.” 371.
\item \textsuperscript{255} Scheidel, Walter. “A Model of Real Income Growth in Roman Italy.” 340.
\item \textsuperscript{256} See Table XIV in Appendix I.
\item \textsuperscript{257} Scheidel, Walter. “A Model of Real Income Growth in Roman Italy.” 341-342.
\item \textsuperscript{258} See Table V in Appendix I.
\item \textsuperscript{259} See Table VI and Table VII in Appendix I.
\item \textsuperscript{260} Scheidel, Walter. “A Model of Real Income Growth in Roman Italy.” 338-339.
\item \textsuperscript{261} Scheidel, Walter. “A Model of Real Income Growth in Roman Italy.” 334.
\item \textsuperscript{262} NA, \textit{Historia Augusta: The Life of Septimius Severus}. 23.2., 427.
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imperial villa economy. Regarding the original *annona* of the city of Rome, North Africa started out equivalent to Egypt, because they both supplied a third of the total *annona* as tribute to the Roman Empire. As imperial North Africa took over the *annona* system, during the first two centuries CE, it came to supply two-thirds of the publicly distributed grain to Rome, by assuming the place of Sicily and Sardinia and maximizing the grain production of their own region as well. Like its counterpart of North Africa, the Roman province of Egypt was one of the two most preeminent *annona* suppliers, providing tribute payments to the Romans in grain, since imperial control of Egypt allowed for maximized agrarian tribute and taxation by the Roman economy, so that the Roman Empire could take the grain attained from Egypt and then distribute it to the urban poor of the city of Rome.

Military policy is also connected to the original *annona* of the city of Rome because after the widespread expansion of the Republic and the establishment of the extensive slave system of Rome, the imperial government was never able to complete enough successful military expansion to appropriately manage the slave system. Even though the Roman Empire could not maintain the militarily led territorial growth of the Roman Republic, the populations of unfree laborers within the institutionalized servile labor system of imperial Rome were able to be upheld until the collapse of the Western Roman Empire in the Fifth century CE. The populations of unfree laborers were sustained until the end of the Western Roman Empire because although the influx of

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newly defeated populations became an imperial rarity, the resulting stagnation of the slave system led to the growth of the urban lower classes and the non-landowning unfree laborers, which increased the amount of cheap labor needed for the Empire’s successful grain production and tax collection. A shrinking slave system, accompanied by an increase in the amount of cheap labor needed to support and preserve the Roman economy, led to the rise of the impoverished populations so that they could replace the cheap labor of the deteriorating slave system and develop a new servile labor force responsible for completing intensive labor, paying imperial or private rents, and paying imperial taxes and tribute. The growth of the lower classes of non-landowners, and the development of the new servile labor forces of indentured servants and tenant farmers, resulted in the creation of a lower working class that hovered so closely to poverty and deficiency that the imperial government of the Fifth century CE had to provide the imperial aid and welfare of the Roman *annona* just in order to secure the survival of the lower laboring classes of the society. At the end of the Roman Republic and the start of the Roman Empire, North Africa advanced and became the most prominent of the commercial grain producers of the Roman Empire, which was important to the agrarian economy of Imperial Rome because after Augustus established the façade Principate, he reformed the Roman *annona* by decreasing the total amount of annual grain dole recipients, by creating the new government office of the *Prefectus*

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268 West, Louis C. “The Economic Collapse of the Roman Empire.” 103, 105-106.
269 See Table V in Appendix I.
270 See Table IV, Table VI, and Table VII in Appendix I.
272 MacMullen, Ramsay. “Late Roman Slavery.” 381.
Annonaes, and by re-defining the qualifications and requirements that are necessary for an individual to receive the annona.277

After the implementation of the annona of the city of Rome, the Roman government created a new type of annona, which was called the urban annona of Italy,278 designed to serve the same purpose as the original annona of the city of Rome, but at a larger scale and for far more Italian urban centers than just the city of Rome. The urban annona of Italy is then similar to the original annona of the city of Rome because it imported supplies of grain from both Egypt and North Africa as taxes and tribute, and used the same qualifications and requirements to define what people of the urban populations were eligible to receive the annona.279 Although the urban annona of Italy is strikingly similar to the original annona of the city of Rome, the urban annona is also different from the original because the urban annona significantly increases the total amount of grain imported to the Italian peninsula for free distribution, so that the urban annona can supply all six of the major cities of Italy, other than Rome itself, that have urban populations between 100,000 and 300,000 people.280

The agrarian economy of the Roman Empire grew significantly in overall size and scope, from the time of North Africa’s inclusion into the Roman Republic, and by the time of the Emperor Claudius the infrastructure of the agrarian economy and the distribution system of the economy, were both insufficient and deficient for the long-term

278 Erdkamp, Paul P. M. “Beyond the Limits of the 'Consumer City': A Model of the Urban and Rural Economy in the Roman World.” 340-345, 351.
management of the agrarian economy of the Roman Empire. In order to increase the sustainability of the infrastructure of the agrarian economy of Imperial Rome, the Emperor Claudius reformed the shipping system and naval trade network required for the enhanced transportation and distribution of the Roman annona.\textsuperscript{281} Claudius’ reformation of the shipping system of the agrarian annona successfully increased the viability of the Roman economy, and stimulated the production of commercial grain surpluses from North Africa, because the amount of ancient shipwrecks that exist from the Early Roman Empire is much higher than the number of shipwrecks that exist from any other Roman time period,\textsuperscript{282} as well as that the amount of agrarian export harbors increased on the North African coastline during the Early Roman Empire.\textsuperscript{283} North Africa remained the preeminent commercial grain producer for the duration of the Roman Empire, and the pivotal impact of North African grain on the sustainability of both the population of the city of Rome, and the agrarian economy of Rome, was represented by the of Lex Manciana,\textsuperscript{284} which established during the Hadriatic period and governed the management and administration of the imperial estates of North Africa.\textsuperscript{285}

All the vast amounts of wheat, which were extensively exported from North Africa to Italy, were able to be produced and supplied from the region at a cost effective level, because North Africa that engaged in the widespread use of agricultural imperial estates, which used the extremely cost effective system of institutionalized servile labor to work the lands with the unfree labor of indentured servants and tenant farmers who

\textsuperscript{281} Houston, George W. “Ports in Perspective: Some Comparative Materials on Roman Merchant Ships and Ports.” 558-560.
\textsuperscript{282} See Table XII and Table XIII in Appendix I., See Graph I in Appendix II.
\textsuperscript{283} See Table XII and Table XIII in Appendix I.
produced the grain at a very low cost to the estate owner, but then had to pay taxes to the Roman government and rents to the Roman estate owner themselves. The institutional use of imperial estates to produce grain in the provinces of North Africa, is vital to the maintenance of the agrarian system of the region, because it is the use of imperial estates that provides Rome with an economic system that functions with maximum labor efficiency and culminates with maximum profits for the Roman landowners and elites.

Large-scale usage of agricultural imperial estates in North Africa was crucial to the long-term feasibility of the Roman Empire because of their ability to use widespread and proficient institutionalized servile labor. Usage of efficient and prevalent institutionalized servile labor is essential to the extensive use of imperial estates in North Africa because they also collected taxes and rents from the lands and tenants included within the labor system of the imperial estates. The large-scale employment of imperial estates in North Africa was also paramount because it allowed for the Roman estate owners and elites to make immense profits and incomes, especially if the specified agrarian estates had tax exempt status from the Roman Emperor, since it served to further the degradation of the free labor markets and taxable populations of the Roman Empire. The degradation and deterioration of the free labor markets, and the reduction of the overall free civilian populations of the Roman Empire, were due to the increase in the use of institutionalized servile labor forces by the Roman agrarian industry. Rome’s rise in the institutionalized servile labor system stemmed from the decrease of Republican military expansion and the inability to obtain slave labor, since the lack of slave labor markets and the lack of free

286 Frank, R.I. “Ammianus on Roman Taxation.” 80.
288 Huntington, Ellsworth. “Climatic Change and Agricultural Exhaustion as Elements in the Fall of Rome.” 56.
labor markets led to the development of a servile labor force that was defined by elements from both the slave labor system and the free labor system. Societal separation, a divide between the lower-classes and the Roman government, internal disorder, a divide between the lower-classes and the Roman military, civil conflict, and a divide between the success of the empire and the survival of the Roman populace; were all developed and established for Rome by the increase of institutionalized servile labor in North Africa, the decline of the free labor markets of Rome, and the subsequent rise in the size of the unemployed population of the Roman Empire. Indentured servitude became the most integral aspect of the imperial estates of North Africa, as it was the *coloni*, better known as imperial sharecroppers, who came to dominate the servile labor market of the region, and even served to both replace slavery and monopolize the labor markets as being servile. The rise of indentured servitude as the preferred form of servile labor is fundamental to the collapse of the Western Roman Empire in 476 CE, because it is the ascendance of indentured servitude that served to eliminate the free labor markets and ultimately caused the rapid growth in the unemployment of the lower-classes and rural populations of the Roman Empire. Economic opportunities for lower-class freeborn Romans were continuously diminished and their accessibility was severely altered, as the empire advanced further into the Late Empire, because as more and more of the taxation burden was being placed on the backs of the lower-class free citizens, they were not able to both pay their taxes and maintain their own households and local populations. When economically cornered, with their backs against the wall, there was nothing that

291 Frank, R.I. “Ammianus on Roman Taxation.” 82-83.
292 Frank, R.I. “Ammianus on Roman Taxation.” 82.
overtaxed and overextended lower-class citizens could do to survive, unless they decided
to give up their freedoms and sell their property to the Roman elites. Lower-class
Romans relinquished their freedom, and their civilian/citizen status, in order to become
indentured servants or serfs of the large landowners and/or plantation owners. Romans of
lower-status and rural populations frequently gave up their freedoms during the Roman
Empire because the adoption of a servile status allowed them to keep a semi-free legal
status, even though their labor was being exploited and they did not own any property
themselves. The act of becoming an indentured servant or tenant farmer was beneficial
for a lower class Roman, because once they changed their status they did not have to pay
taxes to the state anymore, as well as that they only had to complete their required labor
and pay their rent to their landowner, who in return gave them a house to live in and
provided them with the necessities for survival. Compared to being a free laborer, the
existence of an indentured servant or tenant farmer was much more restricted and
confined, as they could not own their own property, alter their own labor, control the
distribution of their own harvests, dispute or challenge the rent prices they were obligated
to pay, or receive any of the fruits of their own labors as compensation either.293 Rents on
serf type farmers and laborers were a crucial part of Rome’s success in North Africa, and
the other provinces of the Roman Empire, because they contributed to the development
and preservation of Rome as a strictly consumer city, since all the incomes and profits of
the imperial economy were based on the consumption of Rome, whether it was the
consumption of taxes, the consumption of tribute, the consumption of rent payments, the

consumption of unfree labor populations, and/or the consumption of lease payments.\textsuperscript{294} Taxes of the imperial bureaucracy were primarily forced upon the lower-classes and rural farmers of the Roman society, and that was not any different in North Africa, which again instilled the impact on the ‘Fall of Rome’ that was caused by the relationship existing between Roman grain and their unfree labor system.\textsuperscript{295} Under the Roman Empire, the collection of agrarian taxes was carried out by the imperial officials of the \textit{susceptores},\textsuperscript{296} who were the municipal tax collectors,\textsuperscript{297} and the \textit{praepositi},\textsuperscript{298} who were the rural tax collectors.\textsuperscript{299} The \textit{susceptores} and the \textit{praepositi} were both employed to collect the agrarian taxes of their provinces,\textsuperscript{300} by the imperial governors that were placed in charge of those provinces by the emperor, who were the Roman officials of the prefects\textsuperscript{301} and the procurators.\textsuperscript{302} Agrarian tax collection was employed by the procurators\textsuperscript{303} and the prefects\textsuperscript{304} of the Roman Empire, so that they could maximize the total tax collection of the Roman Empire by exploiting the populations of both the municipal and rural areas of the provinces,\textsuperscript{305} instead of just focusing on one or the other like was done under the Republic. The provinces of North Africa actively implemented severe and oppressive agrarian taxes onto the non-servile lower-classes and rural populations, so that the elite and landowning Romans could maximize their incomes by

\begin{itemize}
\item \textsuperscript{294}Erdkamp, Paul P. M. “Beyond the Limits of the ‘Consumer City’. A Model of the Urban and Rural Economy in the Roman World.” 334.
\item \textsuperscript{295}Frank, R.I. “Ammianus on Roman Taxation.” 75.
\item \textsuperscript{296}Frank, R.I. “Ammianus on Roman Taxation.” 73.
\item \textsuperscript{297}MacMullen, Ramsay. “Tax-Pressure in the Roman Empire.” 740, 741, 748, 749.
\item \textsuperscript{298}Frank, R.I. “Ammianus on Roman Taxation.” 73.
\item \textsuperscript{299}Frank, R.I. “Ammianus on Roman Taxation.” 73.
\item \textsuperscript{300}MacMullen, Ramsay. “Tax-Pressure in the Roman Empire.” 740, 741, 748, 749.
\item \textsuperscript{301}Frank, R.I. “Ammianus on Roman Taxation.” 72-74.
\item \textsuperscript{302}Rostovtsef, M. “Pontus, Bithynia and the Bosporus.” 19.
\item \textsuperscript{303}Frank, R.I. “Ammianus on Roman Taxation.” 71.
\item \textsuperscript{304}Frank, R.I. “Ammianus on Roman Taxation.” 77-80.
\item \textsuperscript{305}MacMullen, Ramsay. “Tax-Pressure in the Roman Empire.” 739.
\end{itemize}
obtaining the profits from their taxes, tributes, and rents, “Rural collectors (praepositi) were able to extort money from peasants easily; hence laws strictly forbidding them to acquire property in their districts, one recording a complicated bit of chicanery.”

4.4) Major Producer #3: Egypt the Agrarian Power of the East

Of the three regions that are considered the major wheat producers, as well as the leading grain suppliers, of the Roman Empire, it is Egypt that remains one of the most prominent commercial wheat producers for the duration of Roman rule, as it grows and cultivates either the largest or second largest amounts of grain during both the Roman Republic and Roman Empire. Egypt was arguably the most influential of all of the major grain suppliers and commercial distributors of the Roman economy, because Egypt not only consistently produces the highest or second-highest amount of grain resources for both local and international consumption, but also exports the highest amount of grain away from its borders, to be imported, purchased, and consumed by the Roman citizens of the western and northern areas of the Roman Empire. For the Romans of the Republic, the Hellenistic kingdom of Ptolemaic Egypt was highly desirable because of its immense agrarian wealth, accumulated wealth, and extensive servile labor forces, and that is why the Romans expanded into Egyptian territory and added it to the Roman Empire as an annexed province in 30 BCE. After Augustus had defeated Marc Antony in the Battle of Actium, and had successfully Romanized the new province of Egypt,

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306 Frank, R.I. “Ammianus on Roman Taxation.” 73.
309 Dio, Cassius. The Roman History: The Reign of Augustus. 51.16-51.18, 76-79.
311 Suetonius. The Twelve Caesars. Divus Augustus.18, 52.
he and his successors began exploiting Egypt for its agrarian resources and redefined Egypt primarily as a region of major and commercial grain production for the populations of Italy and the city of Rome itself.\textsuperscript{312} By the time of Augustus and the annexation of Egypt, the agrarian \textit{annona} for the city of Rome had moved past the earlier stages of the \textit{Lex Sempronia},\textsuperscript{313} the \textit{Lex Frumentaria},\textsuperscript{314} and the \textit{Lex Clodia},\textsuperscript{315} and had become so extensive and integral to the Roman economy that a permanent office of the \textit{Prefectus Annonae} was established within the Roman government.\textsuperscript{316}

Augustus considered dismantling and abolishing the agrarian \textit{annona} of Rome, when he was organizing the new Roman government of the Principate, but ultimately he decided that the government institution of the agrarian \textit{annona} was too essential to the success and sustainment of the Roman state to be left out,\textsuperscript{317} which led to his creation of the new imperial official of the \textit{Prefectus Annonae},\textsuperscript{318} his establishment of the new government office of the \textit{annona},\textsuperscript{319} and his decrease of the total amount of \textit{annona} grain recipients.\textsuperscript{320} Classification of Egypt as an imperial province, which is directly under the control of only the emperor himself,\textsuperscript{321} is beneficial for the entire Roman state, but is much more advantageous to the Roman emperor himself, because the emperor obtained the sole authority and solitary management over the most central and pivotal region of the entire empire. Aside from this, the patterns of imperial patronage of such construction

\textsuperscript{312} Suetonius. \textit{The Twelve Caesars. Divus Augustus}.18, 52.
\textsuperscript{313} Cristofori, Alessandro. “Grain Distribution in Late Republican Rome.” 142-146.
\textsuperscript{314} Rickman, G.E. “The Grain Trade under the Roman Empire.” 263, 268.
\textsuperscript{315} Cristofori, Alessandro. “Grain Distribution in Late Republican Rome.” 149-150.
\textsuperscript{316} Temin, Peter. “The Grain Trade.” 105.
\textsuperscript{317} Suetonius. \textit{The Twelve Caesars. Divus Augustus}.42, 67-68.
\textsuperscript{318} Rickman, G.E. “The Grain Trade under the Roman Empire.” 262-263.
\textsuperscript{321} Bowen, Edwin W. “Roman Commerce in the Early Empire.” 205.
programs were dictated by other aspects of the emperor’s position in the Roman world. His ownership of important sources of raw materials, especially marble quarries, gave him obvious opportunities for direct and practical support of building projects; his de facto control of revenue raising made it possible for him to subsidize construction simply by offering tax exemption to communities; and of course his wealth opened up the prospect of intervention and patronage on a scale that was beyond even the richest private individual.322

Egyptian grain and the annona system were also influenced by the Roman Emperor Claudius, who increased the efficiency of the annona system and enhanced the rate of grain distribution across the Roman Empire, by using new laws and reforms to establish an altered agrarian shipping system and an enhanced naval trade network for the empire.323 Agrarian self-sustainability for the city of Rome and the peninsula of Italy had diminished almost entirely by the time of the Emperor Claudius, and that is fundamental to his establishment of a new agrarian shipping system and trade network, because Claudius understood that in order to support the populations of Italy and maintain the successful defense of the city of Rome, the maximum efficiency and the increased productivity of the naval delivery of Egyptian grain to Rome must be ensured.324 After the reign of the Emperor Claudius, there were no significant alterations to the status of Egyptian grain and the Roman annona until the reign of the Emperor Nerva from 96 to 98 CE,325 because it was Nerva who created the new children’s annona of the Roman

323 Suetonius. The Twelve Caesars. Divus Claudius.18-Divus Claudius.19, 190.
324 Suetonius. The Twelve Caesars. Divus Claudius.18-Divus Claudius.19, 190.
The creation of the new children’s *annona* by the Emperor Nerva was so key to the viability of the agrarian economy of Rome because every new type of *annona* that was created served to increase the levels of production for Egyptian grain. New types of *annona* always led to an increase in the grain production and that is notable because the same commercial grain producers as the Roman Republic had to provide the grain surpluses to supply the populations of the Roman Empire, which was increasingly difficult as the steady increase of the Roman population led to the increase of the total of the size of the Roman *annona*. Egypt continued to supply the grain for the children’s *annona* of Rome, after the death of Nerva, and the emperors Trajan, Hadrian, Antoninus Pius, Marcus Aurelius, and Alexander Severus are all confirmed as having exploited the grain of Egypt in order to continue the new children’s *annona*. The children’s *annona* of Italy was decreed as a new type of *annona*, designed to give government aid to specified populations of children from the Italian peninsula, and other regions of the Empire as well.

The children’s *annona* provided the specified populations of children, which were chosen directly by the Roman Emperor himself, with free sources of grain, as well as other aid such as blankets, medicines, and housing. When the Roman Emperors dedicated the children’s *annona* to specified populations and communities they chose to

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327 Ramsay, Hazel G. “Government Relief during the Roman Empire.” 486-487.
328 Ramsay, Hazel G. “Government Relief during the Roman Empire.” 480-483.
329 Ramsay, Hazel G. “Government Relief during the Roman Empire.” 480-481.
330 Ramsay, Hazel G. “Government Relief during the Roman Empire.” 485.
331 Ramsay, Hazel G. “Government Relief during the Roman Empire.” 480.
333 Ramsay, Hazel G. “Government Relief during the Roman Empire.” 484.
designate orphanages, to select from settlements in Italy, to select from settlements in their native province, and to select from communities belonging to the urban centers of Italy. Roman emperors chose to support different institutions, depending on the individual emperor involved and the relationships of that specific emperor, which allowed for the distribution of aid to many more people and many more settlements than could have been reached by either the annona of the city of Rome or the urban annona of Italy.

In addition to the creation of the children’s annona, another new type of annona was created later in the Roman Empire by the Emperor Septimius Severus, who established the new military annona of Rome in 193 CE, so that the commercial grain surpluses of Egypt and North Africa could be used to supplement the local grain surpluses that primarily supplied the Roman military with grain, because the unsustainability of the imperial borders and frontiers made the protection and maintenance of the local surpluses both difficult and problematic.

Last of the different types of annona, the military annona was created and established by the Roman Emperor Septimius Severus in 193 CE, as a type of government aid and social welfare designed to support the military directly. Local grain

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334 Ramsay, Hazel G. “Government Relief during the Roman Empire.” 485.
336 Ramsay, Hazel G. “Government Relief during the Roman Empire.” 481.
338 Ramsay, Hazel G. “Government Relief during the Roman Empire.” 483-484.
341 Ferrill, Arther. The Fall of the Roman Empire: The Military Explanation. 126-132.
342 Frank, R.I. “Ammianus on Roman Taxation.” 71.
producers of the Roman Empire could no longer produce enough grain to feasibly supply their native populations and distribute grain supplies to the Roman military forces located there as well. In order to supplement the local grain supply, the imperial government established the military *annona*, to reallocate grain from the major wheat producers and transport it to the military forces stationed in the regions of lesser local production.\(^{343}\) The Romans acquired the grain for the military *annona* by extracting taxes and tribute from the surpluses of the major grain producers,\(^{344}\) by collecting agrarian taxes from the rural populations of the major grain producers,\(^{345}\) by declaring that all generals in a military command could impose agrarian taxes on the rural populations in their current locations,\(^{346}\) and by using imperial funds to purchase quantities of grain from the major producers to be distributed to the military.\(^{347}\) Local grain producers and commercial grain producers were both involved with the military *annona*,\(^{348}\) and that was why it was such a significant form of government aid, as the Roman Empire took advantage of all the potential grain producers at its disposal in order to defend the provinces of the Roman Empire, especially the frontiers.\(^{349}\)

Agricultural and labor taxes employed by Roman Egypt are critical to the perishability of the Roman villa-economy because they encourage the widespread distribution of large privately owned estates across the fertile lands of Egypt. Employing agrarian estates throughout Egypt was crucial because it served to employ the systems of large-scale indentured servitude into the

\(^{343}\) MacMullen, Ramsay. “Tax-Pressure in the Roman Empire.” 737.
\(^{344}\) Frank, R.I. “Ammianus on Roman Taxation.” 71-74.
\(^{345}\) Frank, R.I. “Ammianus on Roman Taxation.” 73.
\(^{346}\) Frank, R.I. “Ammianus on Roman Taxation.” 70.
\(^{348}\) Frank, R.I. “Ammianus on Roman Taxation.” 71.
society, and diminished the amount of small public farms as well,\textsuperscript{350} which in turn served to increase the unemployed populations, to diminish the free labor market, to decrease the size of the taxable population, and to increase the rate of Roman inflation.\textsuperscript{351} In order to collect the agrarian taxes from imperial Egypt, the prefects\textsuperscript{352} and the procurators\textsuperscript{353} employed their officials of the \textit{susceptores}\textsuperscript{354} and the \textit{praepositi},\textsuperscript{355} who exploited the maximum taxable population of Rome, by collecting taxes from both the municipal populations and the rural populations of the Roman Empire. With the ability to use the \textit{susceptores} to collect the municipal taxes\textsuperscript{356} and the \textit{praepositi} to collect the rural taxes,\textsuperscript{357} the economy of the Roman Empire was able to sustain the shift in the Roman military policy, as well as the steady population increase of the Roman Empire. The taxes implemented in Egypt by the Romans are agrarian in nature, and are much higher and larger in number than those in the provinces of local grain production. Some examples of the types of taxes that were essential to the villa-economy and agrarian economy of Rome were the surplus tax,\textsuperscript{358} harvest tax,\textsuperscript{359} poll tax,\textsuperscript{360} crown tax,\textsuperscript{361} inheritance tax,\textsuperscript{362} land tax,\textsuperscript{363} import/export taxes,\textsuperscript{364} and flat-rate tax.\textsuperscript{365} The implementation of all of the above forms of taxation, and the overall increase of the total amount of Roman taxation, led to the

\textsuperscript{350} Monson, Andrew. “Rule and Revenue in Egypt and Rome: Political Stability and Fiscal Institutions.” 265-266.
\textsuperscript{351} See Table IX, Table X, Table XI, and Table XVII in Appendix I.
\textsuperscript{352} MacMullen, Ramsay. “Tax-Pressure in the Roman Empire.” 749-751.
\textsuperscript{353} Mitchell, Stephen. “Imperial Building in the Eastern Roman Provinces.” 347.
\textsuperscript{354} Frank, R.I. “Ammianus on Roman Taxation.” 73.
\textsuperscript{355} Frank, R.I. “Ammianus on Roman Taxation.” 73.
\textsuperscript{356} MacMullen, Ramsay. “Tax-Pressure in the Roman Empire.” 740, 741, 748, 749.
\textsuperscript{357} Frank, R.I. “Ammianus on Roman Taxation.” 73.
\textsuperscript{358} Bowen, Edwin W. “Roman Commerce in the Early Empire.” 201.
\textsuperscript{359} MacMullen, Ramsay. “Tax-Pressure in the Roman Empire.” 740.
\textsuperscript{360} West, Louis C. “The Economic Collapse of the Roman Empire.” 105.
\textsuperscript{361} MacMullen, Ramsay. “Tax-Pressure in the Roman Empire.” 741.
\textsuperscript{362} MacMullen, Ramsay. “Tax-Pressure in the Roman Empire.” 741.
\textsuperscript{363} MacMullen, Ramsay. “Tax-Pressure in the Roman Empire.” 747.
\textsuperscript{364} West, Louis C. “The Economic Collapse of the Roman Empire.” 105.
\textsuperscript{365} Monson, Andrew. “Rule and Revenue in Egypt and Rome: Political Stability and Fiscal Institutions.” 261.
diminishment of the taxable population of Rome, the increase of the population of unfree servile laborers of Rome, and the furthered increase of taxes on the free populations that remained. While Egypt does provide the Roman state with both taxes and tributes of grain, the Romans were also able to obtain Egyptian agrarian goods through the old-fashioned system of trade and commerce, with grain exchange also taking place with the merchants and markets of Egypt. The agrarian economy of the Western Roman Empire was bolstered by the grain sources that were supplied and exported from Egypt, because the agricultural lands of the province were controlled by the Roman Emperor who used the land to create immense agrarian plantations and massive agricultural estates, which were worked with either large-scale chattel slavery or institutionalized indentured servants from the land tenure system. Extensive grain plantations established in Egypt, by the emperor and the landowning upper-classes in the First century CE, is instrumental in the decisive collapse of the Western Roman Empire in the Fifth century CE, because the widespread usage of grain plantations across Egypt led to the development of widespread unemployment amongst and the decrease of the taxable population of the lower classes of the society. The widespread implementation of massive grain producing estates within Egypt is crucial to the fall of the Western Roman Empire in the Fifth century CE, because it is the largescale use of chattel slavery and indentured servitude on the grain estates, which served to monopolize the agricultural labor industry and minimize the job opportunities of the free rural lower classes, since the increase of Rome’s total taxation and the

366 Frank, R.I. “Ammianus on Roman Taxation.” 73-75.
367 West, Louis C. “The Economic Collapse of the Roman Empire.” 103.
decrease of Rome’s taxable population led to the rise of Roman inflation, the diminishment of the free labor markets, the rise in the price of grain, and the growth of the internalized villa-economy of the Roman Empire. The Roman Empire never could have expanded to the lengths that it did, at the height of its power under the rule of the Emperor Trajan, and never could have sustained the imperial borders until the Western Roman Empire’s fall in 476 CE if it was not for the poor, lower status citizens, servile laborers, and slave laborers of the society. Servile, unfree, and lower status peoples of Rome were inherent to the maintainability of the Roman society because they were the individuals who upheld the Roman economy and supported the Roman military, from the start of the Roman Republic until the collapse of the Western Roman Empire in the Fifth century CE, when the increased size of Rome’s total taxation, and the enhanced reliance on the incomes of the internalized villa-economy, led to the decrease of the of the size of the taxable population, the increase in the price of grain, the growth of Roman inflation, and the rise of inefficiency within the overworked servile labor system of the Roman Empire. The unviability of the labor system of the Roman Empire and the inability to maintain the agrarian economy of the Roman Empire are both reasons as to why the Roman society was negatively influenced by the view of the high status and elite Romans that the lower-class and unfree members of Roman society were to be valued as human resources, which were to be used to complete hard labor, to finish labor intensive work, and to expand the upper class profit margin; at their own expense and no matter the personal cost involved. Fatal degradation of

374 See Table VIII, Table IX, Table X, and Table XI in Appendix I.
375 See Graph II in Appendix II.
377 Gibbon, Edward. The Decline and Fall of the Roman Empire. 11-18, 51-52.
378 West, Louis C. “The Economic Collapse of the Roman Empire.” 103.
379 See Graph II in Appendix II.
380 See Table VIII, Table IX, Table X, and Table XI in Appendix I.
381 Frank, R.I. “Ammianus on Roman Taxation.” 82.
382 Grant, Michael. A Social History of Greece and Rome. 80.
the institutionalized servile labor system of the Western Roman Empire occurred during the Fifth century CE because the decrease of the taxable population of the Roman West, and the intensification of the internalized economy of oppressive taxation, resulted in the lack of a large enough free population to sufficiently pay their agrarian taxes, and purchase enough of the goods produced by the servile labor to feasibly continue the system. Over-manipulation of agrarian laborers, and the incessant mistreatment of agrarian laborers, both serve to explain the unsustainability of the Western Roman Empire, because the treatment of lower status and servile romans as human resources and as living raw materials served to eliminate the free labor markets,\textsuperscript{383} to diminish the taxable population,\textsuperscript{384} and to increase Roman inflation.\textsuperscript{385}

4.5) The Connection between the ‘Fall of Western Rome’ and the Major Grain Producers

The commercial grain producers of the internalized villa-economy of imperial Rome are connected to the collapse of the society of the Western Roman Empire in the 5\textsuperscript{th} century CE because of the issue of Roman societal sustainability. Unsustainability was then connected to the commercial grain producers because the Roman military policy of the Republic was not upheld by the more defensive and conservative military policy developed by the Roman Empire. Societal viability was an issue that was integral to the major and commercial grain producers of Rome because the slave labor system of the Republic was not supported by the more internalized and tax-based economy of the Roman Empire. Rome’s sustainability was also connected to the commercial grain producers because the agrarian economy and slave labor system of the Roman Republic were not compatible with the new system of the Empire and were replaced by the

\textsuperscript{383} See Table II in Appendix I.
\textsuperscript{384} Ramsay, Hazel G. “Government Relief during the Roman Empire.” 479.
\textsuperscript{385} See Table IX, Table X, Table XI, and Table XVII in Appendix I.
institutionalized servile labor system of the Roman Empire. Perishability of the society was again connected to the commercial grain producers of Rome because the free labor markets of the Roman Republic were decreased and eliminated by the increased taxation and rent collection of the internalized villa-economy of the Roman Empire. Additionally, the societal maintainability of Rome was also connected to the commercial grain producers because the taxable populations of the Roman Republic were not preserved by the internalized villa-economy and defensive military policy developed by the Roman Empire. Most importantly, the issue of sustainability was connected to the commercial grain producers of Rome because the same commercial grain producers that served the Roman Republic were not able to indefinitely uphold and support the imperial populations of the Roman Empire, by the end of the Fifth century CE.
Conclusion

The issue of sustainability is responsible for the fall of the city of Rome and the Western Roman Empire in the Fifth century CE. Military policy and grain are two factors that directly influenced the maintainability of the Roman Empire. The free and unfree labor markets of the Roman economy, alongside the establishment of an institutionalized servile labor system, are the two supplemental elements, which informed the military policy and grain production. Creation of a standing army led to the growth of the imperial budget and the rise of the total taxation of the Roman Empire, which negatively influenced the viability of the Roman society. Under the Roman Republic, when territorial expansion and population growth were at a maximum, the Roman Republic established multiple new grain laws in order to meet the needs of the growing Roman populace. These new grain laws impacted the perishability of Imperial Rome by expanding the imperial budget and increasing Roman dependence on grain from the provincial producers, both commercial and local. The total population of the Roman West, moreover, kept rising until the end of the Second century CE; the last republican grain law of the *annona* of the city of Rome was established in response to this growth. This first permanent grain law shaped the unsustainability of the Western Roman Empire by necessitating the growth of the imperial budget, increasing Rome’s reliance on grain from the commercial producers, and expanding Rome’s dependence on the chattel slavery system of the unfree labor market.
Roman military policy was intimately connected to its grain needs and legislation. In order to effectively support the unfree populations of the chattel slave labor system, as well as to obtain the regions of the provincial grain producers in the first place, the military policy of the Roman Republic was one of offensive military expansion and aggressive territorial growth.

In the overextended Roman Empire, however, the Republic’s military expansion could not be sustained, and the Romans instead had to focus on the successful defense of the borders and the optimal management of the internalized economy of oppressive tax and rent collection. Imperial Rome’s military policy shifted from the expansionistic policy of the Roman Republic to a more defensive and conservative strategy. The unmanageability of the Western Roman Empire was thus influenced by the expansionistic military policy of the Roman Republic. For, when military conquest and outward territorial growth could not be feasibly continued any longer, the Roman military stopped being economically beneficial to the Roman Empire. As the influx of new lands, resources, money, and defeated populations into the Roman economy slowed, the Roman military transformed into a dependent consumer of the provincial resources and taxes. Permanent deployment of the military and standing army on the Roman frontiers led to the growth of the imperial budget, the increase of imperial taxation on the lower classes, and the rise of Rome’s reliance on the grain of the commercial producers.

Roman military policy was also deeply enmeshed with population levels and population change. Roman population growth, furthermore, was stimulated and enhanced by the military expansion of the Roman Republic, and it continued to increase until the end of the Second century CE, despite the shift in military policy. In order to maintain the
enlarged populations of the urban centers, the imperial government established the urban *annona* of free and/or subsidized grain distribution.

There were several types of grain subsidies and government aid that responded to challenges in grain distribution while exacerbating its problems. The creation of the urban *annona* of Italy was integral to the viability of the society because the addition of a new type of *annona* served to increase the imperial budget, intensify the total amount of taxation, and increase the dependence on the grain of the commercial producers. The children’s *annona*, introduced under Emperor Nerva, increased the expenses of the imperial budget, but it also enhanced the Roman Emperors ability to reallocate agrarian resources and wealth from one area of the empire to another at will. Imperial reallocation had negative consequences as the areas and populations that were exploited for reallocation were not always repaid or reimbursed by the Roman Emperor, which led to increased debts, a rise in inflation, and the mismanagement of the agrarian markets of the Roman economy.

Western Roman society was also unsustainable by the Fifth century CE because of the establishment of the military *annona*, which was the last new type of *annona* to be created within the Roman Empire, and was a direct result of Rome’s shift from an offensive military policy to a new defensive military policy, since the standing army of the border and frontier legions had to be maintained by the internal surpluses of the Roman provinces, rather than supplying themselves off of the lands and resources of their enemies like had been done under the outward expansion of the Roman Republic. Imperial Rome’s development and deployment of the military *annona* increased the imperial budget, amplified Rome’s reliance on the grain of the local producers, enlarged
Rome’s dependence on the grain of the commercial producers, and increased the total amount of taxation withdrawn from the internal agrarian economy.

The need for larger amounts of cheap grain created a socially unstable labor system. Without the military expansion and territorial growth of the Roman Republic, the slave labor system and direct incomes of the Roman economy were not upheld. The internalized economy developed alongside the new defensive military policy of the Roman Empire, so that the Romans could make up for the loss of the direct surpluses and incomes of successful territorial expansion. Rome’s internalized villa-economy, therefore, had to increase the prices of individual taxes, raise the amount of total taxation, and increase the amount of total rent collection.

The growth of Roman taxation was influential on the unmanageability of the Western Roman Empire in the Fifth century CE because the steady increase of taxation on the same lower-class and rural populations led to a rapid rise in inflation and the decrease of the size of the taxable population of Rome. Rome’s taxable population was reduced with the growth of the villa-economy because the growing populations, who could no longer afford to pay their taxes, had to sell themselves into a servile status and give away their freedoms just in order to survive. High inflation and the decrease of the taxable population of Rome resulted from the internalization of the Roman economy and the establishment of a defensive military policy, because they led to the rise of the institutionalized servile labor system and the growth of the overall servile population of Rome.

The rise of the servile population and labor system was important because the imperial collection of rents and taxes from the servile populations was not enough to
cover the expenses of the increased imperial budget. Unfree labor markets were always upheld for the Roman society because the slave labor system of the Roman Republic was upheld by the influx of defeated populations from successful military expansion and territorial expansion, whereas the institutionalized servile labor system was sustained by the transformation of lower classes and rural populations into indentured servants and tenant farmers.

Rome’s inability to successfully maintain the defensibility of the imperial military policy was also a factor because the failure of the border and frontier legions to stop the Germanic barbarians from invading into Roman territory, and establishing their own settlements, was completely catastrophic. The Romans let the Visigoths into Roman territory after their terrible defeat in the Battle of Aidrienople. The Vandals and the Suebi occupied parts of Gaul and Spain while the Alans and the Burgundians also occupied parts of Gaul and Spain that were located opposite of the former. Genseric’s Vandals occupied and annexed the provinces existing within the commercial grain producing region of North Africa in 435 CE and 442 CE. Germanic barbarians sacked, attacked, and advanced on the city of Rome multiple times. Odoacer of the Ostrogoth foederati entirely took over Roman Italy and officially end the Western Roman Empire by forming the first barbarian Kingdom of Italy in 476 CE.

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386 Ferrill, Arther. The Fall of the Roman Empire: The Military Explanation. 119-125.
387 Ferrill, Arther. The Fall of the Roman Empire: The Military Explanation. 120, 124-125.
388 Ferrill, Arther. The Fall of the Roman Empire: The Military Explanation. 120, 124-125.
389 Ferrill, Arther. The Fall of the Roman Empire: The Military Explanation. 135-140.
391 Boatwright, Mary T., Gargola, Daniel J., Lenski, Noel, and Talbert, Richard J.A. The Romans: From Village to Empire – A History of Rome from Earliest Times to the end of the Western Empire. 500, 503-504.
Societal sustainability, or rather unsustainability, is therefore established as one of the reasons that led to the collapse of the Western Roman Empire in the Fifth century CE. The societal factors of grain and military policy were directly able to influence the internal economy of the Roman Empire, the tax system of the imperial bureaucracy, the institutionalized servile labor system, the size of the imperial budget, the size of the taxable population, the Roman reliance on the grain of the local and commercial producers, and the failure of the defensive military policy to uphold the imperial borders and prevent the barbarian takeover of the Roman West.

In my argument on the issue of societal sustainability there are multiple steps that are involved with the process, although there are some steps that are much more pivotal than others. The first step of my argument is the military expansion of the Roman Republic and it is so integral to the argument that it leads to the following steps of the Roman population growth, the rise of the slave labor system, and the obtainment of the local and commercial grain producers. From there the next major step is the creation of the first grain laws of the Roman Republic, which led to the steps of the increase of Western Rome’s dependence on imported grain and the development of unmaintainable military expansion in the Roman Republic. The next principal and key step of the argument is the shift to the new defensive and protectionist military policy by the Roman Empire, after the culmination of the First century CE, which influenced and led to the step of Rome’s standing army becoming strictly a consumer and a drain on the imperial economy. After that step, the next vital and central step to my argument is the development and establishment of an internalized villa-economy of increased taxation and rent collection, which led to the lesser steps of the rise of the new institutionalized
servile labor system, the decrease of the free labor markets, and the decrease of the size of the total taxable population. At that point, the subsequent major step of my argument is the growth of the lower class populations and the rural impoverished populations, which led to the additional step of the stimulation of the institutionalized servile labor system. From there, the succeeding step that is integral and vital to my argument is the continuation of Roman population growth until the end of the Second century CE, since it led to the supplementary steps of the creation of the new grain laws of the Empire, the increase of Rome’s dependence on imported grain, the increase of Roman taxation, and the rapid upsurge in Roman inflation. Following that step of the argument was the pivotal and critical step of the degradation and decay of the internalized villa-economy of Imperial Rome, which led to the steps of the development of the inability to maintain the Roman military and the establishment of unsustainability for the defense of the imperial borders and frontiers. Lastly, the final and fundamental step of my argument is the fall and collapse of the Western Roman Empire in the Fifth century CE, at the hands of a deteriorated economy and the continuously invading forces of the Germanic barbarians.

In order to complete further research on this topic, one should look more into archaeology, philology, and primary source material. More archaeological evidence would further this research because I only focused on archaeological data in my second chapter on Roman military policy, and sporadically touched upon archaeological evidence referenced within my tables as well. For future research, I believe that some of the most beneficial archaeological data may be regarding Roman famines, droughts, plagues, and yearly weather. Additionally, future research on this topic may be benefitted by archaeological evidence portraying defensive battles of the Roman Empire’s military
policy, as well as depicting the invasions and conquests of the Germanic barbarians into Roman territory. Archaeological evidence could also provide further aid to this topic because a survey of all of the border defenses and fortifications of the Roman Empire would be extremely illuminating, as well as that a survey of all of the shipwrecks of the time period would also be very informational. More philological evidence would serve to further this research because I do not know the languages of Ancient Greek or Latin, and there was a great deal of primary source documents that I was not able to directly analyze and study due to that fact. In regards to the benefits of philological data on further research, I believe the direct translation and analyzation of shipping records, transaction receipts, import/export records, tax records, and grain supply manifests, would be enlightening and informative on the topic. The use of philological evidence may also be paramount to the furthering of this research because I could not find any primary sources on the urban *annona* of the Roman West that were written in English, and that is why a philological search of the original Latin sources on grain and the *annona* systems may prove to be essential to the furthering of the available data. Translating the original Latin sources may also serve to advance the research on this topic because there may be specifics and descriptions from the original Latin copies that are lost and/or simplified in translation. Therefore, I obviously could not consult the original and Latin primary sources while doing my research, which proved to be an issue that I was faced with throughout my research process, as I could only study the English translations of the primary sources and analyze the more indirect information of my extensive collection of secondary sources. Another issue that I was faced with while completing this research was that there was so much information relevant to the topic that it was sometimes hard
to pick and choose what I should focus on and single out, and what I should eliminate and
disregard as immaterial. Arguably the most painstaking issue that I was faced with during
this project was that it was very challenging to entirely uncover and flesh out all the
connections and relationships that existed between the societal factors of grain
production, military policy, and labor markets.
Appendices

Appendix I: Figure List

http://library.artstor.org.resources.library.brandeis.edu/asset/APINTOIG_10313944959.

Figure 2: 176-193 CE; St. Paul: 1589. Column of Marcus Aurelius. Sculpture. 
http://library.artstor.org.resources.library.brandeis.edu/asset/HARTILL_12316311.
Figure 3: attributed to Apollodoros of Damascus. dedicated 113 CE. Column of Trajan, detail of spirals 17, 18, and 19 showing Romans harvesting wheat [bottom], besieged Dacians [center] and a scene of mass suicide [top].

http://library.artstor.org.resources.library.brandeis.edu/asset/SCALA_ARCHIVES_10310840420

Figure 4: c.183-190 A.D. Rome: Column of Marcus Aurelius: frieze: barbarian captives led to execution: det.; Column of Marcus Aurelius.

http://library.artstor.org.resources.library.brandeis.edu/asset/ARTSTOR_103_41822003516810
Figure 5: c.183-190 A.D. Rome: Column of Marcus Aurelius: frieze: Barbarian women taken prisoner: skirmish, Column of Marcus Aurelius.
http://library.artstor.org/resources.library.brandeis.edu/asset/ARTSTOR_103_4182003516943

Figure 6: c.183-190 A.D. Rome: Column of Marcus Aurelius: frieze: Emperor receives the submission of a barbarian group: det.: women and children, Column of Marcus Aurelius.
http://library.artstor.org/resources.library.brandeis.edu/asset/ARTSTOR_103_4182003516539.
Figure 7: c.183-190 A.D. Rome: Column of Marcus Aurelius: frieze: forced migration of barbarian tribe, Column of Marcus Aurelius.  
http://library.artstor.org.resources.library.brandeis.edu/asset/ARTSTOR_103_41822003516455.

Figure 8: c.183-190 A.D. Rome: Column of Marcus Aurelius: frieze: sack of a barbarian village, Column of Marcus Aurelius.  
http://library.artstor.org.resources.library.brandeis.edu/asset/ARTSTOR_103_41822003516257.
Figure 9: c.183-190 A.D. Rome: Column of Marcus Aurelius: frieze: soldiers leading away captive women & cattle, Column of Marcus Aurelius.  
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Figure 10: c.183-190 A.D. Rome: Column of Marcus Aurelius: frieze: supply train: emperor on horseback, Column of Marcus Aurelius.  
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Figure 12: ded. 113 A.D. Rome: Column of Trajan Scene 141: Dacians submit to Trajan.  
http://library.artstor.org/resources.library.brandeis.edu/asset/ARTSTOR_103_418220035
21588

Figure 13: ded. 113 A.D. Rome: Column of Trajan Scene 23: legionaries cutting trees.  
http://library.artstor.org/resources.library.brandeis.edu/asset/ARTSTOR_103_418220035
17396.
Figure 14: ded. 113 A.D. Rome: Column of Trajan Scene 110: legionaries reaping corn. 
http://library.artstor.org.resources.library.brandeis.edu/asset/ARTSTOR_103_41822003521299.
Figure 15: Scenes 29 and 30 are piled upon one another. From a cast now in the Museo della Civiltà Romana, Rome. Compare Cichorius Pl. XXIII, scene 29-30 and Coarelli Pl. 29. Ref: RBU2011.7007 composite, accessed November 28, 2017, www.trajans-column.org/?page_id=107#PhotoSwipe1511963510621

Scenes 29 and 30 are piled upon one another. From the left, Scene 29 begins with fighting and destruction: Auxiliary riders torch a building, others attack Dacians (lower left), some of whom flee with their children. Livestock are killed and left in piles (right foreground). In scene 30 Trajan gestures to a Dacian woman holding her child. Her isolation in the scene and her carriage have led to suggestions that she is a noble Dacian, perhaps even the sister of Decebalus (Lepper/Frere 1988: 76). In any case, Trajan is shown as compassionate, in contrast to the violence that swirls around this scene. Additional Dacian women crowd behind the single figure, guarded by Roman auxiliaries. A ship is in the background, perhaps to represent a scene of deportation of women and children from the field of battle (Coarelli 2000: 73) . . . or to take prime prisoners back to Rome. From a cast now in the Museo della Civiltà Romana, Rome. Compare Cichorius Pl. XXIII, scene 29-30 and Coarelli Pl. 29. Ref: RBU2011.7007 composite. www.trajans-column.org/?page_id=107#PhotoSwipe1511963510621

TRAJAN'S COLUMN LV-LVI/LXXVI (Scene 76): Dacian civilians

Figure 17: Scene 76/LXXVI: From cast 201, now in the Museo della Civiltà Romana, Rome. Compare Cichorius Pl. LVI, scene 76 and Coarelli Pl. 89. Ref: RBU2011.7211, accessed November 28, 2017, www.trajans-column.org/?page_id=107#PhotoSwipe1511963510621

TRAJAN'S COLUMN LVI/LXXVI (Scene 76): Dacian deportation
### Table I.

Table I. Estimates of GDP from the expenditure side

<table>
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<tr>
<th></th>
<th>Hopkins</th>
<th>Goldsmith</th>
<th>Temin</th>
<th>Maddison</th>
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<tbody>
<tr>
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<td>HS 0.444</td>
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<td>Mean annual wheat</td>
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<td>253 kg</td>
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<td>(equivalent) consumption</td>
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<tr>
<td>Allowance for seed</td>
<td>83.3 kg</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>Value of mean annual</td>
<td>HS 153</td>
<td>HS 112</td>
<td>HS 48</td>
<td>HS 112</td>
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<tr>
<td>wheat (equivalent)</td>
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<tr>
<td>production</td>
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<tr>
<td>Mean annual food</td>
<td>-</td>
<td>HS 200</td>
<td>HS 86.4</td>
<td>HS 200</td>
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<td>Mean annual private</td>
<td>-</td>
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<td>HS 151.2</td>
<td>HS 330</td>
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<td>expenditure</td>
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<tr>
<td>Mean annual public and</td>
<td>-</td>
<td>HS 30</td>
<td>HS 15.12</td>
<td>HS 50</td>
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<td>investment expenditure</td>
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<td>Mean annual total</td>
<td>HS 153</td>
<td>HS 380</td>
<td>HS 166.3</td>
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<tr>
<td>Population</td>
<td>54m-60m</td>
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<td>55m</td>
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<td>Minimal aggregate</td>
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<td>HS 9bn</td>
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<tr>
<td>Actual aggregate</td>
<td>&lt;HS 16.5bn</td>
<td>HS (12-)13.5bn</td>
<td>HS 20.9bn</td>
<td>HS 9.15bn</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean total expenditure</td>
<td>HS 225</td>
<td>HS 380</td>
<td>HS 166</td>
<td>HS 380</td>
</tr>
<tr>
<td>(cash)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean total expenditure</td>
<td>491 kg</td>
<td>843 kg</td>
<td>614 kg</td>
<td>843 kg</td>
</tr>
<tr>
<td>(wheat)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table II. Estimates of GDP in wheat equivalent consumption

<table>
<thead>
<tr>
<th></th>
<th>Goldsmith/Maddison Ratios (Adjusted)</th>
<th>‘Bare Bones’ Level (Egypt)</th>
<th>‘Respectability’ Level (Egypt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean annual wheat consumption</td>
<td>175 kg</td>
<td>129 kg</td>
<td>(164 kg)</td>
</tr>
<tr>
<td>Mean annual food expenditure</td>
<td>315 kg</td>
<td>220 kg</td>
<td>-</td>
</tr>
<tr>
<td>Mean annual private expenditure</td>
<td>551.3 kg</td>
<td>335 kg</td>
<td>852 kg</td>
</tr>
<tr>
<td>Mean annual public expenditure</td>
<td>28.6 kg</td>
<td>(28.6 kg)</td>
<td>(28.6 kg)</td>
</tr>
<tr>
<td>Mean annual investment expenditure</td>
<td>40 kg</td>
<td>(25 kg)</td>
<td>(60 kg)</td>
</tr>
<tr>
<td>Mean annual total expenditure</td>
<td>620 kg</td>
<td>390 kg</td>
<td>940 kg</td>
</tr>
<tr>
<td>Population</td>
<td>70m</td>
<td>70m</td>
<td>70m</td>
</tr>
<tr>
<td>Aggregate expenditure</td>
<td>43.4bn kg</td>
<td>27.3bn kg</td>
<td>65.8bn kg</td>
</tr>
<tr>
<td>Cash equivalent: @ HS 2/modius</td>
<td>HS 13.2bn</td>
<td>HS 8.3bn</td>
<td>HS 20.1bn</td>
</tr>
<tr>
<td>Cash equivalent: @ HS 2.5/modius</td>
<td>HS 16.6bn</td>
<td>HS 10.4bn</td>
<td>HS 25.1bn</td>
</tr>
<tr>
<td>Cash equivalent” @ HS 3/modius</td>
<td>HS 19.9bn</td>
<td>HS 12.5bn</td>
<td>HS 30.1bn</td>
</tr>
</tbody>
</table>

Table III. 
Table III. Estimates of GDP from the income side

<table>
<thead>
<tr>
<th></th>
<th>Goldsmith</th>
<th>Temin</th>
<th>Maddison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean daily wage</td>
<td>HS 3.5</td>
<td>HS 1.75</td>
<td></td>
</tr>
<tr>
<td>Working days per year</td>
<td>HS 225</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean annual wage</td>
<td>HS 790</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour participation rate</td>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean labour income per capita</td>
<td>HS 315</td>
<td></td>
<td>HS 280</td>
</tr>
<tr>
<td>Mean non-labour income per capita</td>
<td>HS 65</td>
<td></td>
<td>HS 100</td>
</tr>
<tr>
<td>Total mean income per capita</td>
<td>HS 380</td>
<td></td>
<td>HS 380</td>
</tr>
<tr>
<td>Population</td>
<td>55m</td>
<td></td>
<td>44m</td>
</tr>
<tr>
<td>Aggregate labour income</td>
<td>HS 17.325bn</td>
<td></td>
<td>HS 12.314bn</td>
</tr>
<tr>
<td>Aggregate non-labour income</td>
<td>HS 3.575bn</td>
<td></td>
<td>HS 4.406bn</td>
</tr>
<tr>
<td>Aggregate total income</td>
<td>HS 20.9bn</td>
<td>HS 10.45bn</td>
<td>HS 16.72bn</td>
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</tbody>
</table>

Table IV.

Table IV. Estimate of GDP in wheat equivalent income

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean daily wage</td>
<td>3.7 kg</td>
</tr>
<tr>
<td>Working days per year</td>
<td>225-250</td>
</tr>
<tr>
<td>Mean annual wage</td>
<td>833-925 kg</td>
</tr>
<tr>
<td>Labour participation rate</td>
<td>40 per cent</td>
</tr>
<tr>
<td>Mean labour income per capita</td>
<td>333-370 kg</td>
</tr>
<tr>
<td>Population</td>
<td>70m</td>
</tr>
<tr>
<td>Aggregate labour income</td>
<td>23.3-25.9bn kg</td>
</tr>
<tr>
<td>Aggregate non-labour income (cash)</td>
<td>HS 5bn</td>
</tr>
<tr>
<td>Aggregate non-labour income (wheat): @ HS 2/\textit{modius}</td>
<td>16.4bn kg</td>
</tr>
<tr>
<td>Aggregate non-labour income (wheat): @ HS 2.5/\textit{modius}</td>
<td>13.1bn kg</td>
</tr>
<tr>
<td>Aggregate non-labour income (wheat): @ HS 3/\textit{modius}</td>
<td>10.9bn kg</td>
</tr>
<tr>
<td>Aggregate total income</td>
<td>34.2-42.3bn kg</td>
</tr>
<tr>
<td>Total mean income per capita</td>
<td>489-604 kg</td>
</tr>
<tr>
<td>Aggregate total income in cash: @ HS 2/\textit{modius}</td>
<td>HS 12.1-12.9bn</td>
</tr>
<tr>
<td>Aggregate total income in cash: @ HS 2.5/\textit{modius}</td>
<td>HS 13.9-14.9bn</td>
</tr>
<tr>
<td>Aggregate total income in cash: @ HS 3/\textit{modius}</td>
<td>HS 15.7-16.9bn</td>
</tr>
</tbody>
</table>

Table V.

Table VII. Non-elite income scale

<table>
<thead>
<tr>
<th>Level</th>
<th>Wheat (in kg)</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>3275-3930</td>
<td>8.4-10 times subsistence</td>
</tr>
<tr>
<td>4</td>
<td>2620-3275</td>
<td>6.7-8.4 times subsistence</td>
</tr>
<tr>
<td>3</td>
<td>1965-2620</td>
<td>5-6.7 times subsistence</td>
</tr>
<tr>
<td>2</td>
<td>1310-1965</td>
<td>3.3-5 times subsistence</td>
</tr>
</tbody>
</table>
| 1     | 655-1310     | 1.7 to 3.3 times subsistence  
|       |              | c. 940 kg: ‘respectable’ gross income  
|       |              | c. 850 kg: ‘respectable’ net income  
|       |              | c. 750 kg: some grain fed to livestock  
|       |              | c. 500 kg: supports work animals fed on by-products and grasses |
| 0.75-0.99 | 491-655 | ¼ to 2/3 above subsistence |
| 0.50-0.74 | 327-491 | At or close to subsistence  
|       |              | c. 390 kg: minimal gross subsistence including clothes, fuel, and shelter – Level 0.6  
|       |              | c. 335 kg: minimal net subsistence including clothes, fuel, and shelter |
| 0.25-0.49 | 164-327 | Below subsistence <c. 300 kg: minimal net food subsistence |
| <0.25 | <164 | Starvation level |

Table VI.

Table VIII. Civilian non-elite gross income distribution: ‘pessimistic’ scenario (overall per capita mean – 460 kg of wheat equivalent per year)

<table>
<thead>
<tr>
<th>Level</th>
<th>Wheat (in kg)</th>
<th>Percentage of Population</th>
<th>Mean Per Capita Income</th>
<th>Aggregate Income (in m kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>3275-3930</td>
<td>0.4</td>
<td>3602.5</td>
<td>978</td>
</tr>
<tr>
<td>4</td>
<td>2620-3275</td>
<td>0.6</td>
<td>2947.5</td>
<td>1,201</td>
</tr>
<tr>
<td>3</td>
<td>1965-2620</td>
<td>1</td>
<td>2292.5</td>
<td>1,557</td>
</tr>
<tr>
<td>2</td>
<td>1310-1965</td>
<td>1.5</td>
<td>1637.5</td>
<td>1,668</td>
</tr>
<tr>
<td>1</td>
<td>655-1310</td>
<td>3.5</td>
<td>982.5</td>
<td>2,335</td>
</tr>
<tr>
<td>0.75-0.99</td>
<td>491-655</td>
<td>8</td>
<td>573</td>
<td>3,113</td>
</tr>
<tr>
<td>0.50-0.74</td>
<td>327-491</td>
<td>60</td>
<td>409</td>
<td>16,663</td>
</tr>
<tr>
<td>0.25-0.49</td>
<td>164-327</td>
<td>22</td>
<td>245.5</td>
<td>3,667</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>31,182</td>
</tr>
</tbody>
</table>


Table VII.

Table IX. Civilian non-elite gross income distribution: ‘optimistic’ scenario (overall per capita mean – 575 kg of wheat equivalent per year)

<table>
<thead>
<tr>
<th>Level</th>
<th>Wheat (in kg)</th>
<th>Percentage of Population</th>
<th>Mean Per Capita Income</th>
<th>Aggregate Income (in m kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>3275-3930</td>
<td>0.8</td>
<td>3602.5</td>
<td>1,957</td>
</tr>
<tr>
<td>4</td>
<td>2620-3275</td>
<td>1.2</td>
<td>2947.5</td>
<td>2,402</td>
</tr>
<tr>
<td>3</td>
<td>1965-2620</td>
<td>1.8</td>
<td>2292.5</td>
<td>2,802</td>
</tr>
<tr>
<td>2</td>
<td>1310-1965</td>
<td>2.7</td>
<td>1637.5</td>
<td>3,002</td>
</tr>
<tr>
<td>1</td>
<td>655-1310</td>
<td>6.5</td>
<td>982.5</td>
<td>4,336</td>
</tr>
<tr>
<td>0.75-0.99</td>
<td>491-655</td>
<td>19</td>
<td>573</td>
<td>7,392</td>
</tr>
<tr>
<td>0.50-0.74</td>
<td>327-491</td>
<td>55</td>
<td>409</td>
<td>15,274</td>
</tr>
<tr>
<td>0.25-0.49</td>
<td>164-327</td>
<td>10</td>
<td>245.5</td>
<td>1,667</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>38,832</td>
</tr>
</tbody>
</table>

Table VIII.

Table: Price level and inflation in the Roman Empire

<table>
<thead>
<tr>
<th>Date</th>
<th>Reign of Emperor</th>
<th>Estimated price index (denarii, reign Augustus = 100)</th>
<th>Average inflation per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>27 B.C. – 14 A.D.</td>
<td>Augustus</td>
<td>100</td>
<td>0.7%</td>
</tr>
<tr>
<td>64 A.D.</td>
<td>Nero</td>
<td>75-85</td>
<td>0.7%</td>
</tr>
<tr>
<td>C. 200 A.D.</td>
<td>Septimius Severus</td>
<td>200</td>
<td>0.7%</td>
</tr>
<tr>
<td>C. 215 A.D.</td>
<td>Caracalla</td>
<td>267</td>
<td>0.7%</td>
</tr>
<tr>
<td>C. 250 A.D.</td>
<td>Trajan Decius</td>
<td>300</td>
<td>3.65%</td>
</tr>
<tr>
<td>274 A.D.</td>
<td>Aurelian</td>
<td>700</td>
<td>3.65%</td>
</tr>
<tr>
<td>293 A.D.</td>
<td>Diocletian</td>
<td>1400</td>
<td>22.9%</td>
</tr>
<tr>
<td>301 A.D.</td>
<td>Diocletian</td>
<td>7000</td>
<td>22.9%</td>
</tr>
</tbody>
</table>


Table IX.

<table>
<thead>
<tr>
<th>Period</th>
<th>All Blended incl. wheat</th>
<th>Mediterranean Respectability</th>
<th>Bare Bones</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 to 150</td>
<td>0.2%</td>
<td>0.3%</td>
<td>0.2%</td>
</tr>
<tr>
<td>150 to 200</td>
<td>0.8%</td>
<td>0.7%</td>
<td>0.7%</td>
</tr>
<tr>
<td>200 to 270</td>
<td>1.1%</td>
<td>0.9%</td>
<td>0.7%</td>
</tr>
</tbody>
</table>


Table X.

<table>
<thead>
<tr>
<th>Average Inflation p.a. AD 300 to 350</th>
<th>Inflation p.a.</th>
<th>R^2 coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>16.0%</td>
<td>0.95</td>
</tr>
<tr>
<td>Barley</td>
<td>13.5%</td>
<td>0.84</td>
</tr>
<tr>
<td>Wine</td>
<td>16.3%</td>
<td>0.95</td>
</tr>
<tr>
<td>Donkeys</td>
<td>7.2%</td>
<td>0.37</td>
</tr>
<tr>
<td>Blended including wheat</td>
<td>15.1%</td>
<td>NA</td>
</tr>
</tbody>
</table>

Table XI.

Average inflation rates

<table>
<thead>
<tr>
<th>Period</th>
<th>Wheat n=40</th>
<th>Barley n=24</th>
<th>Wine n=60</th>
<th>Donkeys n=56</th>
<th>Slaves n=25</th>
<th>Blended incl. Wheat n=205</th>
<th>Blended excl. Wheat n=165</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 to 150</td>
<td>0.4%</td>
<td>0.2%</td>
<td>0.2%</td>
<td>0.2%</td>
<td>NA</td>
<td>0.2%</td>
<td>0.2%</td>
</tr>
<tr>
<td>150 to 200</td>
<td>0.7%</td>
<td>0.8%</td>
<td>0.4%</td>
<td>0.8%</td>
<td>0.4%</td>
<td>0.8%</td>
<td>0.8%</td>
</tr>
<tr>
<td>200 to 270</td>
<td>0.0%</td>
<td>1.1%</td>
<td>0.5%</td>
<td>1.2%</td>
<td>0.8%</td>
<td>1.1%</td>
<td>1.2%</td>
</tr>
</tbody>
</table>


Table XII.

Table 5. Evidence of Export Production at Harbors with Artificial Port Structures.

ACW = African Cooking Ware; Amph. = amphora; ARS = African Red Slip Ware

<table>
<thead>
<tr>
<th>Harbor</th>
<th>Fish</th>
<th>Oil</th>
<th>Wine</th>
<th>Amph.</th>
<th>Officials</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa Proconsularis</td>
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<td></td>
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</tr>
<tr>
<td>Acholla</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carpis</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carthage</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>grain, ARS, ACW</td>
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<tr>
<td>Cercina</td>
<td>x</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gigthis</td>
<td>x</td>
<td>x</td>
<td>?</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hadrumetum</td>
<td>x</td>
<td>x</td>
<td>?</td>
<td>x</td>
<td>x</td>
<td>-</td>
</tr>
<tr>
<td>Hippo Regius</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>marble, grain, timber, slaves</td>
</tr>
<tr>
<td>Homs</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lepcis Magna</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>x</td>
<td>slaves?</td>
</tr>
<tr>
<td>Leptiminus</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>ACW</td>
</tr>
<tr>
<td>Mahdia</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Meninx</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>wool, slaves</td>
</tr>
<tr>
<td>Misua</td>
<td>x</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
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<td>x</td>
<td>x</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Oea</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>-</td>
<td>ACW?</td>
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<tr>
<td>Ras Segala</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>-</td>
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<tr>
<td>City</td>
<td>ACW</td>
<td>Site Description</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>--------------</td>
<td>-----</td>
<td>-----------------------</td>
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</tr>
<tr>
<td>Sabratha</td>
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<td>Thabraca</td>
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<td>Mauretania Caesariensis</td>
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<td>Iol</td>
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<td>Caesarea</td>
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<td>Ras el Meskouta</td>
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<td>Thalefsa</td>
<td>-</td>
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Table XIII.
Table 6. Evidence of Export Production at Harbors with Possible Artificial Port Structures.

<table>
<thead>
<tr>
<th>Harbor</th>
<th>Fish</th>
<th>Oil</th>
<th>Wine</th>
<th>Amph.</th>
<th>Officials</th>
<th>Other</th>
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</thead>
<tbody>
<tr>
<td>Africa Proconsularis</td>
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<tr>
<td>Rusicade/Stora</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>grain, marble</td>
</tr>
<tr>
<td>Hippo Diarrhytus</td>
<td>x</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Utica</td>
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<td>-</td>
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<td>x</td>
<td>grain</td>
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<td>x</td>
<td>x</td>
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<td>Clipea</td>
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<td>x</td>
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<tr>
<td>Villa dell'Odeon Maritima</td>
<td>?</td>
<td>x</td>
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<td>Mauretania Caesariensis</td>
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<td></td>
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<td>Euesperides/Bernice</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>silphium, wool?</td>
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<tr>
<td>Haniya</td>
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Table XIV.

Table 2.1. Population of Roman Empire ca. AD 165

<table>
<thead>
<tr>
<th>Region</th>
<th>Population (mil.)</th>
<th>Density (per km$^2$)</th>
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</thead>
<tbody>
<tr>
<td>Italy (w/ islands)</td>
<td>14</td>
<td>45</td>
</tr>
<tr>
<td>Iberia</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Gaul &amp; Germany</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Britain</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>Danubian provinces</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Greek peninsula</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>Anatolia</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Levant</td>
<td>6</td>
<td>43</td>
</tr>
<tr>
<td>Egypt</td>
<td>5</td>
<td>167</td>
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<tr>
<td>North Africa</td>
<td>8</td>
<td>19</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>75</strong></td>
<td><strong>20</strong></td>
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Table XV.

<table>
<thead>
<tr>
<th></th>
<th>Mediterranean</th>
<th>Black Sea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal Configuration</td>
<td>Broken up; widely distributed islands; high proportion of sea within sight of land features</td>
<td>Smooth; almost no islands; majority of the sea out of sight of the coasts</td>
</tr>
<tr>
<td>Hinterland Interface</td>
<td>Few major river systems provide extensive access</td>
<td>Large river systems provide access to extensive catchments; extensive coastal deltas</td>
</tr>
<tr>
<td>Topography</td>
<td>Coastal mountains frequent (north and east); severe desert conditions along south limit communications</td>
<td>Coastal mountains (south and east); steppe desert along north ties in with extensive Eurasian zone</td>
</tr>
<tr>
<td>Climate</td>
<td>Predominantly arid; pockets of higher rainfall in mountainous areas; marginal agriculture</td>
<td>North: Continental climate sustains extensive grain production; south: subtropical supports fruit, nut, olive production</td>
</tr>
<tr>
<td>Risk of Crop Failure</td>
<td>Frequent (1–2/decade)</td>
<td>Infrequent (&lt; 1/generation)</td>
</tr>
<tr>
<td>Nonagricultural Resources</td>
<td>Clustered distribution of mineral and wood resources; extensive distribution of fish</td>
<td>Extensive distribution of mineral and wood resources; seasonal migration patterns create strong patterning in fish distribution</td>
</tr>
<tr>
<td>Demography</td>
<td>Coastal lowlands densely settled; highlands sparsely settled</td>
<td>Low population density except for Asian and European bosphoroi</td>
</tr>
</tbody>
</table>

**Table XVI.**

<table>
<thead>
<tr>
<th></th>
<th>Man days for Wall building</th>
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<tbody>
<tr>
<td>Stone Base</td>
<td>60,000</td>
</tr>
<tr>
<td>Military Way</td>
<td>60,000</td>
</tr>
<tr>
<td>Fortlets</td>
<td>50,000</td>
</tr>
<tr>
<td>Turf superstructure</td>
<td>1,250,000</td>
</tr>
<tr>
<td>Timber breastwork</td>
<td>60,000</td>
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<tr>
<td>Ditch</td>
<td>250,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,730,000 man days</strong></td>
</tr>
</tbody>
</table>

Appendix III: Graphs

Graph I.

Fig. I. Number of Dated Ancient Shipwrecks in Mediterranean Waters

Graph II.

Figure 3.10. Wheat Prices (drachmai/artaba)

Bibliography


Charlesworth, M.P. *Trade Routes and Commerce of the Roman Empire* (Chicago: Ares Publishers Inc., 1926), 1-287.


