The Calculus of Conquests
The Decline and Fall of the Returns to Roman Expansion

R. Morris Coats and Gary M. Pecquet

During the Republican period, Rome expanded from a small city-state to a massive empire that circumscribed the Mediterranean. Upon achieving this dominance, civil wars erupted, ending with the establishment of an emperor, and the new emperor instituted sweeping changes that curtailed the incentives for additional conquests. Can public-choice economics help to explain the institutional evolution of Roman history? Perhaps the first to recognize the role that increasing costs and declining benefits played in shaping Roman history was Edward Gibbon ([1776] 1984). He, however, undoubtedly drew his analysis from the statements of Caesar Augustus himself, who likened conquests to fishing with a golden fishhook, where the expected payoff had to be measured against the risk (Starr 1982, 19).

In *The Decline and Fall of the Roman Empire*, Gibbon wrote:

> The seven first centuries were filled with a rapid succession of triumphs; but it was reserved for Augustus to relinquish the ambitious design of subduing the whole earth, and to introduce a spirit of moderation into the public councils. Inclined to peace by his temper and situation, it was easy for him to discover that Rome, in her present exalted situation, had much less to hope than to fear from the chance of arms; and that, in the prosecution of remote wars, *the undertaking became every day more difficult, the event*

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> *more doubtful, and the possession more precarious, and less beneficial.* ([1776] 1984, 1, emphasis added)

Gibbon presented a marginal economic analysis of territorial expansion, a theory of the "optimal" level of conquests, a century before the establishment of marginal analysis in economics.

Almost all necessary ingredients of a modern economic theory of conquests are included here in Gibbon's description, with rising marginal costs of conquests, falling marginal benefits, and even falling probabilities of success.[1] The rising marginal costs and the falling marginal benefits arose primarily from the world's natural heterogeneity and the logistical problems of conquest and control at greater distances from the home base. The potential conquests were at different distances from Rome, had different amounts and types of wealth to be taken, and had varying degrees of military capability. With wars fought for gain, the first countries to be invaded were those with great wealth, those nearby, and those that were relatively weak. Once these countries were defeated, the remaining countries were obviously less profitable.

Although Gibbon's calculus of conquests presents an excellent explanation of the end of Rome's expansion, he falls short in two important respects. He does not elaborate on the ways in which the costs and benefits were perceived within a single mind—that is, he does not elaborate in regard to who in particular reaped the benefits and bore the costs. He also does not mention how some losses and gains fell on innocent third parties to the decision and hence were not perceived within a single mind. As Ronald Wintrobe notes, the marginal payoff to political leaders may diverge substantially from that of the general population, with the political leaders in the position as a residual claimant who pays the citizen-soldier a sufficient sum to obtain the soldier's voluntary service (1998, 84).

Using more recent research and modern economic tools, we can fill the missing gaps in Gibbon's analysis. In this article, we analyze the institutional structure and describe the decision-making process and the assignment of benefits and costs from warfare. We show that during the republican period the costs and benefits of conquests for the politician-generals diverged from those of the general Roman citizens and those of the wider regional population. The familiar approach of analyzing social as opposed to private costs and benefits helps to explain Roman expansion and the very costly transitional civil wars.

After the gains from additional conquests declined during the first century B.C., Rome endured numerous bloody civil wars that decimated the aristocracy. Mancur Olson (1993) and Martin Mcguire (in Mcguire and Olson 1996) have suggested that modern authoritarian states have emerged when leaders of groups of roving bandits

1. Joseph Tainter employs the concept of diminishing returns to territorial expansion and incorporates Mancur Olson's (1982) theme by describing the role that entitlements, bureaucracy, and increasing fiscal burdens played in the western Roman Empire's ultimate downfall in the fifth century A.D. (1988, 148–52).

impose constraints on their followers in order to establish dictatorial rule and maximize the present value of future tax revenue.

The rulers nonetheless often face constraints that prevent their simple maximization of the present value of the expected tax stream. Margeret Levi explains how transactions costs, agency costs, and compliance costs can restrict tax exploiters' options (1988, 10–47).[2] Gordon Tullock (1974, 1987) discusses how rulers might respond to the dangers of coup d'états. Wintrobe has described "the dictator's dilemma" as the "set of circumstances in which there are gains from exchange (between the dictator and his subjects) but in which promises or obligations are not enforceable." He argues that the distribution of political rents to a dictator's subjects helps him overcome his dilemma in much the same way that the wage premiums associated with "efficiency wages" help employers enforce agreements with workers to do good jobs (1998, 84, 25–33). Of course, punishment or repression also serves the same purpose.

In certain circumstances, dictators may permit political rent seeking in order to cultivate a following of loyal supporters, but political rent seeking can become a two-edged sword because it also permits potential rivals to grow. When the dictator becomes the richest private citizen, he may rely on his ability to purchase a disproportionate number of troops privately and pay them an efficiency wage to ensure their loyalty instead of relying on political rents to sustain supporters among potential rivals. Augustus, following his victory at Actium, paid off his loyal troops with cash bonuses and private land grants (Frank 1940, 2–4, 14–15), instituted tax cuts by curbing tax-farming abuses, and protected private-property rights. These actions enriched supporters and potential rivals (senators) alike, but it also redirected efforts away from politics and toward commercial pursuits, which do not involve raising private armies or the kinds of political connections and skills needed to overthrow the ruler.

The Roman Method of Warfare and the Incentives from the Institutional Structure

Institutions and Warfare

In ancient times, the rules of warfare were quite simple: "To the victors belong the spoils." Defeated foes' movable property as well as thousands of captives became spoils of war that belonged to the conquering generals, who typically shared liberally with their troops. Hundreds of thousands of prisoners were sold in Italian slave markets. The Roman Senate administered the conquered territories and the remaining inhabitants on behalf of the republic. In practice, the Senate farmed out

2. David Friedman (1974) and David Wittman (2000) have developed models that rely on transaction costs to explain the sizes and shapes of nations.

tax collections from the foreign provinces, and both the tax collectors and Roman officials engaged in wholesale extortion (Levy 1967, 60–65).

Roman institutions determined the disposition of spoils and rewarded the abilities that enabled Rome to excel in warfare. Conquering generals had sole discretion over the disposition of the movable booty, but the discipline of continuous dealings induced them to distribute most proceeds from battle to the troops, much as customers tip waiters and employers use profit-sharing plans in modern business enterprises (Shatzman 1972). Each participant in a victorious campaign earned a share of the booty, and extra shares rewarded acts of bravery and military prowess in battle. The Senate gained title to the immovable property in the conquered provinces and farmed out tax collection. Ordinary noncombatant citizens received passive income in the form of pre-election bribes from spoils-seeking candidates for public office, which amounted to rental fees paid to common citizen-shareholders for the right to lead the legions in battle.

Rome's Constitution gave its legions an important advantage over its neighbors' troops: it established the Roman military as an ongoing concern with a corporate-like structure that included voting rights based on contributed capita. The bulk of the military spoils were shared among generals, the legions in the field, and the quasi-shareholding voters in the form of electoral bribery. Roman politicians competed by bribing voters for the right to extract spoils and heavy taxes from noncitizens. Roman institutions ensured an expectation of de facto property rights for generals and soldiers to share in the spoils of war. These institutions outlived any monarch or foreign neighbor.

Historian Karl Loewenstein attributes Roman military prowess to the ordinary troops' skills and discipline. "What made Rome the military nation par excellence were the famed Roman legions. What made Rome militarily invincible was the discipline, the stamina, the better training and equipment of the legions under the command of lower-rank hoary professionals, regardless of whether they consisted, as they did for many centuries, of the sturdy farmer-soldiers or, later, of dedicated professional mercenaries. Rome's battles were won by the infantry" (1973, 60). Roman armies frequently defeated much larger forces because of their superior organization, training, and discipline.

Table 1 displays the Roman corporate military machine's amazing success. Tenney Frank (1933) compiled some very rough estimates of the Roman budgets from 200 to 167 B.C.[3] These figures show that military activity brought in about

3. Table 1 presents historian Tenney Frank's (1933) estimates of the revenues and expenditures made by the Roman Republic over a period of forty-three years. These figures as well as other quantitative data throughout this article can be taken only as very rough approximations. Very few ancient budgetary records survived the centuries. Many of these figures depend on references made in surviving commentaries, and extrapolations were often made in estimating both revenues and expenditures. More recent historians, such as Chester Starr (1982), may have more original documents to work with, but the element of reasonable guesswork remains very large. We hope that the quantitative data employed here will help the reader to appreciate the relative magnitudes of budgetary components without insisting on modern standards of statistical data collection.

Table 1
The Roman Budget, 200–157 B.C.

Line	Item	Denarii*
	Revenue	
1	Booty	109,500,000
2	Indemnities**	152,100,000
3	Provincial Tithes	130,000,000
4	Spanish Mines	50,000,000
5	Citizen Tax (Abolished 167 B.C.)	60,000,000
6	Public Land Rents in Italy	63,000,000
7	Other Taxes and Duties	46,000,000
8	**Total**	**610,600,000**
	Expenses	
9	Army	300,000,000
10	Food for Allies	64,000,000
11	Transport	50,000,000
12	Navy	58,500,000
13	Public Buildings	20,000,000
14	Super Taxes Repaid	22,500,000
15	Other (Administrative Etc.)	40,000,000
16	**Total Expenses**	**555,000,000**
Difference		55,600,000***

*Throughout this article, the Roman silver denarius (*d*) is used as a standard of account. The average daily pay for a common laborer was between two-thirds and three-fourths of a denarius. The Romans did not substantially debase the denarius until the post-Augustan period.
**Indemnities were tributes or reparations paid by nations defeated in war in lieu of being occupied and looted.
***According to Tenney Frank, the treasury contained 25,500,000 *d*, and the remaining 30,100,000 *d* could not be accounted for; however, he acknowledges that 22,500,000 *d* repaid debts in 187 B.C (1933, 141).
Source: Frank 1933, 145.

72 percent of the Roman state's revenue during this period. In 167 B.C., the tax on Roman citizens was abolished, and military activity was responsible thereafter for an even larger share of Rome's revenues. (Even these impressive revenues omit the greater part of booty that was not returned to the Senate but shared by victorious generals and their troops.) Frank's figures also indicate that 85 percent of the Roman state's expenditures went for military purposes. War was certainly the Roman state's core business.

The Decreasing Returns to Roman Corporate Warfare

From the perspective of the Roman corporate entity and its citizen-owners, the returns to warfare inevitably declined, as Gibbon indicated. From the standpoint of the military exploiters, warfare is an extractive industry and hence subject to increasing costs. The spoils of war declined, and the costs of longer campaigns and administering more distant provinces increased.

Benefits declined as the available supply of rich, weak neighbors became exhausted. The cost of a Roman conquest included three elements: (1) the comparatively small fixed cost of equipment and weapons, (2) the troops' mortality risk, and (3) the opportunity cost of the soldiers' time—the latter two variable elements that depended on the enemy's nature and the conflict's duration. The marginal cost of conquests tended to increase as adversaries became more formidable and as military campaigns occurred at greater distances from Rome. As campaigns involved a higher mortality risk, lasted longer, and required more troops to overcome adversaries, the opportunity cost in man-hours increased.

Costs and Benefits for Soldiers and the Supply of Soldiers

The remuneration of Roman troops included a regular stipend plus a share of the expected booty. Citizen-soldiers had to be compensated for the opportunity cost of military campaigns, including the mortality risk of battle and the value of the forgone labor during the time spent in the military. Moreover, the troops had to purchase their own food, clothing, weapons, and equipment out of their stipend and sometimes fell into debt, but successful campaigns frequently rewarded them with a lucrative share of the spoils. Legionnaires often repaid their debts and merged into the middle class, and others continued to reenlist up to the prescribed maximum of sixteen years (Keppie 1984, 53).

During the early days of Roman expansion, typical military campaigns lasted only a few months and did not interfere with the agricultural cycle. The opportunity cost of otherwise seasonally unemployed labor was nearly zero. During the First Punic War (264–241 B.C.), military campaigns began to last for years at a time, and following the Second Punic War in 201 B.C., the acquisition of foreign provinces required troops to serve on garrison duty for indefinite tours of duty until either the military commander or the Senate dismissed them (Rich 1983, 289). Rural Romans meanwhile migrated to the city, and the agricultural cycle ceased to influence the opportunity cost of their labor. Wages of free nonfarmworkers were about three-fourths of a denarius (*d*) per day or about 270 *d* on an annualized basis (about twice the regular base pay for soldiers).

The mortality risk varied, depending on the opposing forces, but on average this risk remained low when Roman troops were fighting non-Romans. From the end of the Second Punic War in 201 until 151 B.C., during an average year only

1.68 percent of the active Roman and allied troops died in battle.[4] Military service overall offered a risky but lucrative return to the participating troops—if the campaigns were relatively brief (Harris 1979, 101).

Throughout the second century B.C., the basic pay of citizen-soldier infantrymen remained at 120 *d* per annum. This stipend fell woefully below the unskilled worker's wage (between two-thirds and three-quarters of a denarius per diem) during that period. As successive conquests tended to require larger armies, the professional army replaced the citizen-soldiers. By 123 B.C., the state had begun to provide for the cost of clothing soldiers (Botsford 1968, 382).

By 100 B.C., Marius had begun to raise armies from propertyless volunteers by promising them a share of veterans' land benefits upon dismissal and retirement from active service (Yakobson 1999, 158). The veteran's land benefit amounted to a soldier's retirement plan. However, the value of the promised land itself varied widely from place to place and over time. Italian land was worth much more than similar land in the depopulated provinces, but the prices of land are generally unavailable. The land benefit typically was to be paid upon the soldier's retirement from service, after twelve years and up to the maximum of sixteen years of service. During short wars, however, large numbers of troops might be rapidly demobilized after battle. Veterans' land benefits constituted a primitive form of deficit finance because the land promised to veterans upon retirement would be confiscated from yet to be determined landowners. Figure 1 shows the Roman soldier's base compensation.

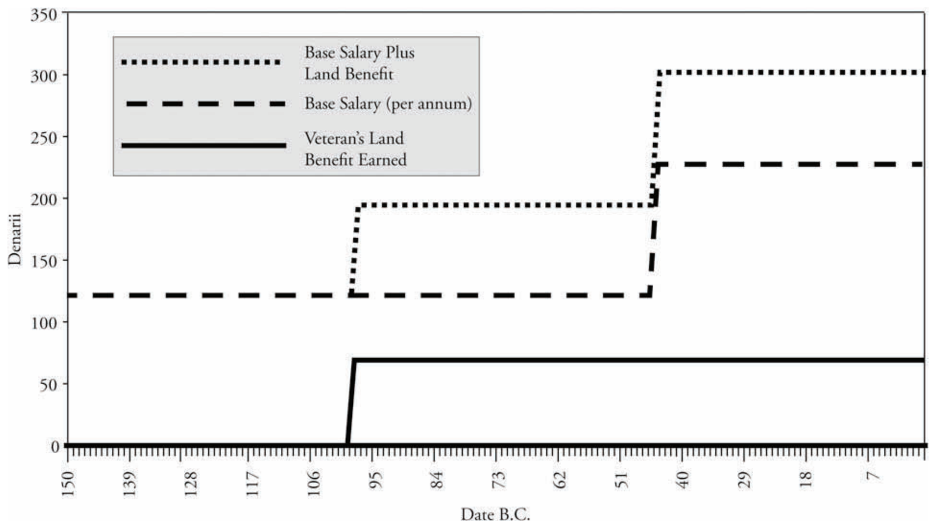
During the Roman Civil War of the late 40s, Julius Caesar increased the infantryman's annual salary to 225 *d* (Frank 1933, 334), and it remained there until Augustus's reign (Frank 1940, 4). Shares of booty and the later bonuses paid to retain troops before major engagements far exceeded the basic pay scales.

The size of the armies also contributed to the increasing cost of Roman warfare. Frank estimated that from 150 to 90 B.C., eight legions operated on average (1933, 225). By 103 B.C., Marius had begun to raise private armies; perhaps twelve active legions were fielded from 103 to 85 B.C. After Romans began to fight other Romans, the sizes of armies and costs of battle increased dramatically. In 86 B.C., Sulla marched on Rome with about thirty thousand men, and two hundred thousand were allied with Marius and the Democrats (Oman 1957). By the beginning of the Civil War between Caesar and Pompey in 51 B.C., the combined strength of the two armies had fallen to twenty-three legions (Frank 1933, 333). But Caesar expanded his army to fifty-two legions to defeat a few provincial uprisings during 47–45 B.C. Total combined legions exceeded seventy. At the time of Caesar's assassination in 44 B.C., only thirty-seven legions remained active (Frank 1933, 333; Keppie 1983, 23).

Figure 2 adjusts the number of legions by factors to account for military pay and the normal understaffing of legions caused by attrition at five thousand men. It shows

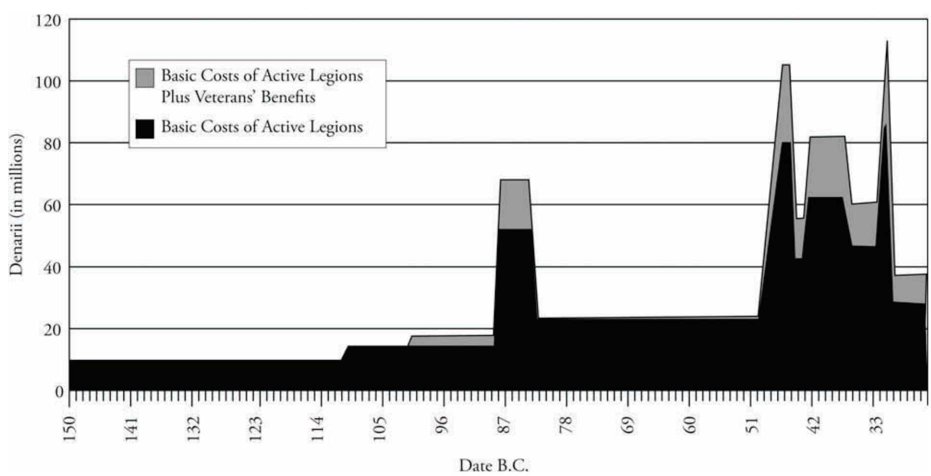
4. An average of 1,800 Romans and allies died from war losses during an average year between 201 and 151 B.C. (Frank 1933, 110). Nonbattlefield losses are not included.

Figure 1
A Roman Soldier's Base Pay and Retirement Benefit



military expenditures increasing three to four times from 150 to 100 B.C. and by another five to ten times during the civil wars. But this estimate grossly understates the costs of the Roman civil wars. In addition to offering regular pay and veteran's land benefits, Roman generals promised numerous bonuses during the civil war

Figure 2
The Annual Costs of Maintaining Active Legions
(Excluding Bonuses)



period. These bonuses, paid or promised at the point of battle, significantly exceeded the regular pay. Such bonuses may be compared to those offered in a baseball players' strike just prior to the World Series after the teams have already made television and marketing commitments. Roman legionnaires were thus able to extract much of the "surplus" from Roman warfare.

Roman Public Choice

Ultimate electoral sovereignty under the Roman system sprang from two electoral assemblies: the Comitia Centuriata and the Comitia Tributa (hereafter referred to as the Centuriate and the Tribute, respectively). These two bodies elected the governing magistrates, passed legislation, and held judicial proceedings. Laws passed by the two assemblies could not be vetoed, but either assembly could repeal the other's action.

The Centuriate functioned as a Roman electoral college; it met each year to elect the chief magistrates, including the consuls and proconsuls (governors). Voters were organized into wealth-based, weighted electoral units called "centuries." Each century cast one vote as a unit. Wealthier Romans were placed into smaller centuries, and they voted first in a sequential voting system, which gave them a greater weight in the electoral process. Wealthy citizens also provided better weapons and equipment during military service. The weighted voting system in the Centuriate roughly matched contributed capital with voting strength, much as shareholder elections in modern corporations do.

The Tribute became the primary legislative body. It divided Roman voters into thirty-five legislative voting districts called "tribes." Eighteen tribes were needed to enact binding laws. Senators could place proposed laws and constitutional amendments before either the Centuriate or the Tribute, but by the second century B.C. the Tribute had become the preferred body because it was less expensive to bribe voters in the Tribute rather than to bargain for votes among the wealthier centuries (Loewenstein 1973, 99–119).

The Senate was not an elected assembly but provided a permanent administrative body that controlled the budget, oversaw the provinces, and conducted policy debates. The Senate consisted of ex officio office holders.

To prevent political usurpation, most of the elected Roman magistrates served only one-year terms. The two consuls served as joint executive officers of the republic for one-year terms (Loewenstein 1973, 54). The proconsuls (provincial governors) typically served five-year terms, which gave them considerable independence from the Senate. Ten tribunes elected by the Tribute could veto Senate legislation. Even most military officers were elected (Loewenstein 1973, 43).

Throughout the republican period, fifteen laws were enacted to curtail illegal campaign practices, including one that restricted canvassing. The civic duty of voting was supposed to be done without pay, but by the second century B.C. officeholding had become very lucrative and vote buying an openly accepted election practice (Loewenstein 1973, 126).

The Roman Electorate

The Roman electorate consisted of two types of voters: active legionnaires (voters who expected to serve in battle) and inactive (retired) legionnaires. Through the ballot, the electorate revealed its demand for Rome's ongoing military expansion over several centuries.

The expected net benefit of a conquest for a Roman voter who expected to serve in battle can be thought of as that soldier's gain from serving in the legions plus his expected share of any public good the military campaign provided (defense of Rome, public buildings and public games financed from booty, and the value of conquered territory and future provincial tithes paid into the senatorial treasury) plus any direct bribes received from politicians and the voter's share of indirect voter bribery received from related political campaigns.

The expected net benefit of a conquest for a Roman voter who did not expect to serve in battle was the same as the soldier's expected net benefit without the soldier's gain. That is, the benefits for nonsoldiers resulted from the public benefits of warfare, primarily defense against invasion, a personal share of any public goods financed with booty, and the direct and indirect election bribes paid to influence their votes. Romans seeking to lead in battle or rule over conquered provinces competed for elective office. Roman election campaigns provided direct and indirect bribes to Roman voters that included electoral patronage, free banquets, and the infamous games. Most of the Roman architecture and other public monuments were probably financed from booty. Former veterans and other nonsoldiers received these forms of passive income as shareholders in the great Roman military enterprise.

The Politician-General and Net Spoils Maximization

During the Roman Republic, politician-generals (consuls and proconsuls) acted as military entrepreneurs, attracting troops to their ventures with promises of pay, booty, and, as a retirement benefit, land. Politician-generals competed for public office, seeking the opportunity to reap the benefits of corrupt rule in the provinces and the booty from new military conquests. As consul or proconsul, a military-entrepreneur could put his ambitious plans into action. Political campaigns provided bidding markets for these offices, where the competitive political process dissipated many of the rents from office holding.

The net gain from elective office was the difference between any military gains and the cost of obtaining political office. The cost of obtaining office involved direct and indirect bribery or influence costs, which increased with both the number of voters and the number of competitors. The gain from a military campaign was the expected booty from the military campaign plus any subsidy received by the general from the senate. The cost of the military operation was the pay and booty shared with the soldiers, along with the risk cost of injury to or death of the politician-general himself.

To win the election in the first place, the politician-general had to spend at least the amount spent by the second-highest bidder. With more candidates, the second-highest bid was likely to be higher. Ceteris paribus, then, the cost of a political campaign increased whenever *(a)* expected returns from office—that is, the prospects of spoils—increased; *(b)* the number of candidates increased; and *(c)* the cost of raising armies decreased.

Roman politicians financed expensive election campaigns for the opportunity to acquire booty from risky military expeditions or to share in the returns from tax extortion in the provinces. And just as present-day businesses borrow whenever the expected rate of return exceeds the interest rate, so did the Roman military entrepreneurs. As Cicero wrote, "Follow me to the Campus [the voting place]. . . . Bribery is flaring up. . . . This shall be a sign unto you. . . . Interest has gone up from four to eight per cent" (qtd. in Lintott 1990, 8). Historian Jean-Phillipe Levy described the situation bluntly: "Roman magistrates, ruined financially by the demagogic expenses of their electoral campaign . . . went off to recover their fortunes in some province, to the detriment of the inhabitants" (1967, 64–65).[5]

Social Costs and Benefits of Conquests and Administration of Conquered Lands

Tax Farming in the Provinces: A Tragedy of the Commons

Before the Punic wars, the Romans accepted defeated peoples into an Italian federation and did not exact tribute. The acquisition of Sicily in 242 B.C. required permanent Roman garrisons, so the Romans imposed a tithe on its first foreign province (Frank 1933, 68). A Roman ally, King Hiero of Sicily, required each locality to keep economic statistics on acreage under cultivation, seeds planted, and crops produced. The rights to collect the Sicilian tithe were contracted out to the highest bidder, but contractual clauses stipulated that the tax farmers could be sued for collection abuses under an eightfold restitution clause, and the local Sicilian authorities carefully monitored tax collection (Scramuzza 1937, 237–38). Tax farmers, called "publicans" in the New Testament, placed bids for the right to collect certain taxes during a five-year period.

5. For example, in 61 B.C. the wealthy Crassus advanced Julius Caesar 5,000,000 *d* for Caesar's forthcoming Spanish campaign. Caesar made himself the surety or collateral for the loan (Frank 1933, 401). Caesar entered Spain heavily in debt for 6,250,000 *d*. The booty from these wars cleared him of debt. In the subsequent campaigns against Gaul in 59–50 B.C., he seized so much gold that the market price in Rome fell by one-sixth. He sold more than 400,000 captives into slavery. None of these funds was deposited in the public treasury (Frank 1933, 325).

The winner of these bids paid the Roman treasury in advance and could then assess and collect the actual taxes. If actual tax collections exceeded the initial investment plus the fees of the tax agents, the costs of converting foreign taxes back into Roman currency, and the opportunity cost of capital, then the publicans made a profit.

The Romans adopted tax farming for three reasons. First, publicans performed the function of bankers by advancing revenue to the government before actually collecting the taxes (Levi 1988, 74–81). Second, tax farming reduced the Roman bureaucracy's costs (Fowler 1916, 16; Hill 1952, 52; Badian 1983) because the Roman government did not have a comparative advantage in tax administration, but rather in military expansion.

Tax farming also performed a third function: the maximization of Rome's tax collections. After Roman armies killed and enslaved many people in the foreign provinces, the subsequent taxing authorities often had little to tax. By farming out tax collection, the Romans relied on the private companies' expertise in determining their province's maximum tax-bearing capacity. The publicans behaved much like Internal Revenue Service agents on commission—only worse because the Asian provinces had neither the constraining influences of a tax code nor a census.

During the first century B.C., the systematic tax-farming exploitation broke down as governor-generals began to chisel on the "tax-farming cartel" by establishing independent tax-collecting mechanisms. Successive governors of Cilicia, Lentulus Spinther and Appius Claudius, pocketed the funds for quartering troops in the province, requiring the locals to billet the men without compensation. The governors also threatened to billet troops in certain cities and then sold exemptions to those cities. Local aristocrats were used to circumvent the official tax farmers (Frank 1933, 397; Badian 1983, 113). When Cicero became governor after Appius, he found the province bankrupt. The cities owed the publicans five years in back taxes and accrued interest payments of as much as 48 percent. After the governors had "tapped out" the province, little remained for the publicans to collect (Badian 1983, 114).

The provincial revenues enabled generals to raise private armies and prosecute wars independent of Senate control. Provincial war chests financed the bloody civil wars that spelled the republic's doom.

The Social Cost of Roman Warfare

The concept of "social cost" ordinarily includes the costs that private parties impose on third parties without compensation. In the case of warfare, the social costs may exceed the value of the wealth transfer once the losers' full cost is included in the calculations. For our purposes here, it is helpful to develop two concepts of social costs. Global social cost refers to the global externalities the Roman conquests imposed on citizens and foreigners alike. However, if the Roman Empire is viewed as a corporate entity, a different concept of social cost applies. By considering only the costs and benefits to Roman corporate citizens, corporate social cost shows how the

Roman state's institutional incentives established private incentives that were inconsistent with fellow Romans' long-term interest.

An analysis of global social costs recognizes that the returns from warfare added nothing to regional productive output. The Roman war machine transferred enormous resources from its neighbors to itself, and the excess burdens were enormous. War is a particularly inefficient way to transfer resources. The net global excess burden (waste) associated with the Roman military acquisitions included the following:

1. An obvious part of the excess burden consisted of the losses of life and property as a direct result of warfare.
2. The ongoing Roman warfare impeded the natural flow of international trade, producing tarifflike welfare losses.
3. The rent-seeking cost of warfare consisted chiefly of the opportunity costs of the labor and capital invested in the military. (If Roman troops had worked their farms or held jobs in the trading professions instead of serving as legionnaires, the total output in the Mediterranean would have been greater. Foreign and allied troops also contributed to the opportunity costs of warfare.)
4. The Romans forcibly removed and sold hundreds of thousands of captives at Roman slave markets. This action dislocated the regional labor supply. Stripping the provinces of people and relocating those people on the crowded Italian Peninsula produced a disparity in regional marginal productivities.
5. Tax farming in the provinces generated huge excess burdens, which increased greatly with the tax rate.

The global social costs did not enter into the Romans' calculus of conquest, however. Neither the Senate nor the politician-generals nor the aspiring soldiers even considered the costs imposed on foreigners. During the early days of Roman expansion, the politician-generals were motivated simply to capture the expected booty after deducting the costs of labor (soldiers' stipends plus a share of the booty).

As the returns from conquest began to fall, soldiers bore the increasing cost of military campaigns, and Roman expansion probably would have ceased sometime during the second century B.C. if changes in the institutional structure had not enabled further conquests to be made. Around 100 B.C., Marius established a veteran's benefit that military recruits expected to receive upon retirement. This benefit offset expected declines in bonus pay and thus increased the available supply of troops. Because these retirement lands often came at the expense of Roman landowners, the veteran's benefit constituted a corporate social cost that subsidized conquest beyond the corporate optimum.

As the territory under Roman control expanded, the Senate gradually lost the ability to administer the tax collection from foreign provinces. As governor-generals circumvented the legal tax-farming companies, the returns to the Senate from additional conquests became dubious. The Senate's loss, however, was the politician-general's gain. The expected returns from public office increased the candidate's demand for public office, and electoral bribes increased during the republic's waning years. The corporate benefit of conquests fell while the private benefit increased. Roman institutions subsidized territorial expansion, and the Senate's lack of control over provincial revenues fostered the financing of costly and destabilizing civil wars.

External Benefits of Roman Expansion

Did Roman conquests provide any global or corporate public goods? The Romans cleared the sea of pirates and ended tribal warfare within the provinces. Pre-Roman Gaul and Spain, for example, had endured continual tribal warfare (Arnold 1971, 33–36). The Romans also facilitated trade through road construction, a common currency, and a common legal system. The inhabitants of the Mediterranean, however, could not reap these benefits until the Roman conquests became complete and the Roman civil wars ended with the consolidation of power by Augustus in 27 B.C.

Declining Returns from Foreign Conquests and the Emerging Civil Wars

The conquests by Pompey and Julius Caesar exhausted the supply of wealthy neighbors to conquer profitably (except for Egypt) by the middle of the first century B.C. However, the diminished prospects for seizing foreign booty did not alter the Roman politicians and generals' modus operandi. Voters still expected campaign bribes, and politicians paid increasing campaign costs. How could the Roman politicians repay their campaign debts? As noted earlier, veteran's benefits and the politician-generals' control of provincial revenues continued to subsidize private warfare. As the prospects of foreign conquest diminished, the politician-generals turned on each other for the prize of Rome itself.

The civil wars brought no additional lands or tax revenues to Rome. Roman soldiers' mortality rate soared as the war machine turned on itself. The mortality rate also increased among the Roman aristocracy, who found it costly to remain neutral in a setting where soldiers were partially paid with proscribed land.

The value of the prize of Roman rule was whatever the military entrepreneurs (those with a chance of winning Rome) thought Rome would be worth after the civil wars and after any institutional changes they would make. Of course, the value of Roman rule was subject to the winner's curse. Just as Roman politician-generals competed for office by bribing voters directly and indirectly so that the winner had to pay approximately the value that the second-highest bidder would pay, Roman generals fighting in a civil war competed for Rome by bidding for soldiers up to the point at which they had sufficient numerical superiority over the second-highest bidder.

The Roman Civil Wars

In 59 B.C., each member of the first triumvirate—Julius Caesar, Gaius Pompey, and Licinius Crassus—raised separate armies and governed different provinces. According to the balance-of-power theory (Hume 1956; Tullock 1974, 129–38), any two of the triumvirs could defeat the third. This balance fell apart, however, after the Parthians defeated and killed Crassus in 53 B.C. The remaining two triumvirs then engaged each other in the first of three ruinous civil wars. Caesar began the civil war by marching on Rome in 49 B.C. At first, both he and Pompey had difficulty in raising additional legions. Occupational hazards increased when Romans fought other Romans. Caesar entered Greece with twelve legions to Pompey's eleven. Caesar increased the regular pay of his troops from 120 to 225 *d* per year to raise additional legions (Frank 1933, 333–34).

Military historians have often discussed the armaments and tactics in the various battles of the Roman civil wars, but the crucial battles were in fact the bidding wars to pay the soldiers. Prior to the civil wars, bidding wars with foreign generals were improbable because the Romans were expected to win, and the language barrier increased the costs of negotiation. However, when Roman legions opposed Roman legions, the troops on both sides frequently gathered before battle and compared their terms of remuneration, leading the generals to bid for troops at the point of battle (Frank 1933, 334).

As ruler, Caesar sought to eliminate potential rivals and the rent-seeking activities that fed them. In 48 B.C., he ended the provincial tax-farming contracts in the East. He reduced by one-third the Asian tithe owed to Rome and made local communities (not the provinces as a whole) responsible for collecting and returning this tithe to Rome.[6] In 44 B.C., Julius Caesar's assassination halted his fiscal reforms, and two more rounds of civil wars ensued.

Following the assassination, a new triumvirate (Antony, Octavian, and Lepidus) avenged Caesar's death in a second civil war against the conspirators (Brutus and Cassius). At the point of battle, Roman legions went to the highest bidder, so a fund-raising war preceded the actual battle. The triumvirs proscribed (executed) three hundred senators (half of the Senate membership) and another two thousand equestrians in order to sell their lands to fill the war chest. Sulla and Caesar had previously killed political opponents and distributed their lands to their legions, but the triumvirs deliberately used proscriptions as a fiscal device. They calculated a proscription quota needed to raise the necessary funds, and each triumvir prepared a list of enemies, troublemakers, and wealthy neutrals used to fill that quota. Besides spending from the out-of-pocket war chest, the triumvirs raised their legions by promising

6. Marc Antony addressed the Asian provinces following Caesar's death: "When the publicans who farmed these taxes . . . wronged you . . . Gaius Caesar remitted to you one-third of what you had paid and . . . turned over to you the collection of the taxes from the cultivators of the soil" (qtd. in Goffart 1974, 17).

them choice Italian real estate, "[n]ineteen cities for nineteen legions" (Frank 1933, 321). Frank describes the impact of Rome's fiscal implosion: "Real estate had come to be considered a dangerous possession, ready funds were being hidden or hoarded, money was scarce and interest rates rose" (1940, 18).

In equally brutal fashion, the conspirators raised their own war chest in the eastern provinces. The provinces controlled by Brutus and Cassius normally paid only 50 million *d* per year. The conspirators demanded ten years' worth of tribute to be paid in two, and if this exaction happened to be too heavy and the cities refused, the cities (such as Rhodes and Tarsus) were seized and looted (Frank 1933, 341).

At Philippi, Brutus and Cassius paid huge bonus bribes in order to retain and encourage their troops. Before the first battle, each soldier in the eighty-thousand-man army received 1,500 *d* (more than five years' regular pay). Before the second battle, when fewer troops remained, Brutus paid each man another 1,000 *d*. The conspirators paid about 180 million *d* in battlefield bonuses on behalf of a losing cause. The victors undoubtedly appropriated most of these funds after the battle (Frank 1933, 335). Antony and Octavian, for their part, promised their troops a battlefield bonus of 5,000 *d* per man, but how much of this amount they actually paid is not known. This bonus would have exhausted the war chest, and in 40 B.C. both Antony and Octavian faced an angry mob of colonized veterans who sought the promised bonus (Keepie 1983, 41).

Following the triumvirs victory at Philippi, the demobilization of troops required the payment of veteran's land benefits to the victorious legions. Octavian and Antony had promised "[n]ineteen cities for nineteen legions." Taxes produced only a small fraction of the amount needed to acquire these lands. Most of the necessary lands were acquired by proscriptions (Frank 1933, 314). Communities that showed any sympathy for the cause of Brutus or that for any reason had offended any of the triumvirs were brutally deprived of all or part of their land, which was then allocated to the Philippi veterans (Frank 1933, 321).

Following the triumvirs victory over the conspirators, Octavian fought Antony and Cleopatra for mastery of Rome in the final civil war. In 31 B.C., Octavian's general, Agrippa, avoided a pitched land battle by striking a decisive naval blow at Actium. Although each side had about twenty to twenty-five legions, or one hundred thousand men, on the scene, the naval forces were much smaller. Octavian outnumbered Antony by eight to four in naval legions (Keppie 1983, 27–28). The naval victory at Actium enabled Octavian to purchase most of Antony's land-based legions without incurring the need to pay huge battlefield bonuses (Keppie 1983, 27).

Octavian became the undisputed winner and honored the financial commitments to his troops with the booty seized from Egypt. The battle of Actium brought about the first Roman emperor as well as the end of the civil wars. Interest rates fell to 4 percent, and property values doubled (Frank 1940, 19; Homer and Sylla 1991, 43). Caesar Augustus ushered in a new age that included peace, protection of private property, free trade, and unprecedented prosperity.

Egypt's wealth enabled Octavian to become a balanced-budget winner. If Cleopatra had exhausted Egypt's wealth by purchasing additional troops before Actium, the winner might not have been able to meet the commitments to pay his troops, and subsequent rounds of warfare might have dissipated the booty, resulting in the empire's collapse. The potential for the public-choice paradox of cycling (Gehrlein 1983), where the potential of changing coalitions and alliances leads from one dispute to the next in a potentially endless fashion, seems to have placed a threshold on the establishment of historical empires.

The Emperor's Decision to Conquer

Upon consolidating his power in 27 B.C., Octavian took the title "Caesar Augustus" and became the first emperor of Rome. He took steps that limited potential rivals in order to consolidate his power, and these measures permanently changed the calculus of conquests. With rivalry limited, Augustus could take a longer view and seek to maximize his own long-run wealth.

The strong pro-republican sentiment that had been responsible for Julius Caesar's assassination also constrained Augustus. Augustus survived at least five assassination attempts (Starr 1982, 78). He therefore retained the form of the republic, although he dominated the political machinery behind the scenes. In 27 B.C., the new Caesar announced, "I had terminated the civil wars[;] having attained supreme power in all matters of universal consent, I transferred the Republic from my rule to the authority of the Senate and the Roman people" (qtd. in Rowell 1962, 55). The reins of government had been returned officially to the Senate, but the real power remained tightly in Augustus's grip. A "grateful" Senate granted special ten-year gubernatorial powers to Augustus over the militarized provinces that required large garrisons, including Syria and Gaul, which bordered hostile neighbors, as well as northern Spain, which had not yet been pacified (Rowell 1962, 56).

The conquered province of Egypt became Augustus's permanent personal possession by right of conquest. He maintained higher taxes in Egypt, the richest of the provinces, than in the rest of the empire—under the Senate's nominal authority. He took special care to fence off his personal Egyptian estate: he prohibited senators from visiting Egypt without his permission, because they might stir up trouble (Milne 1952, 145). Augustan policies isolated the Egyptian economy by preventing the denarius from circulating in Egypt. The Romans imposed on Egypt the tetradrachm, a fiat currency worth about four times its metallic content (Milne 1927, 6; Johnson 1936, 427–28, 433). Currency control reduced Egyptian capital mobility and increased the cost of migration for propertied Egyptians.

The remaining provinces, with their comparatively small numbers of Roman troops, remained subject to the Senate's administration, as in republican times (Rowell 1962, 55). The budget of the provinces that the Senate administered, as opposed to the emperor's imperial or personal budget, was called the "Aerarium."

Although in theory the Senate still controlled the Aerarium, the public treasury often proved to be insufficient, and Augustus frequently supplemented the Aerarium with his own personal funds. During his forty-year reign, Augustus's imperial treasury contributed about seven years' worth of government revenue to Rome (Brunt 1966, 88). The early emperors' financial largesse gave them an edge over other influential politicians in the event of a power struggle (Webber and Wildavsky 1986, 124).

Augustus's imperial treasury officially consisted of Egyptian booty and the Egyptian annual tributes in addition to his considerable inheritance from Julius Caesar. Moreover, he controlled the revenues from the provinces directly under his control. It is doubtful that these funds normally returned to Rome—even though they were officially under the Senate's administration (Frank 1940, 18). This relationship served Augustus in two ways: by making the Senate fiscally dependent on his imperial revenues and by providing the emperor a certain war chest in the event of a showdown with potential rivals.[7] Later during his rule, Augustus established a special Aerarium Militare specifically to pay all soldiers' wages and pensions (Webber and Wildavsky 1986, 123). This third Aerarium centralized the army's funding sources—in effect, purchasing control of the army for the emperor's exclusive use. Augustus endowed the Aerarium Militare, but two new taxes were soon earmarked to maintain the fund (Arnold 1971, 115).

Augustus wanted primarily to reduce the number of potential rivals. The chief potential rivals were the senators, provincial governors, tax farmers, and generals. A general dispatched to conquer distant lands might gain fame and fortune from the conquest and would be in a better position to return to Rome with an army bolstered by mercenaries financed by captured booty and therefore better equipped to challenge the emperor. Augustus sought to redirect Roman entrepreneurship away from military and political rent seeking and toward commercial pursuits, thus eliminating the rivals' proving grounds and cultivating supporters in the private sector. By his reforms, he not only improved his own survival chances as emperor, but also set up a property-rights structure throughout the empire that was more compatible with economic prosperity, increasing the returns to business investment relative to political investment.

In the beginning, Augustus may have wanted to restrict the size of the senatorial budget relative to his personal revenues. This motive may account for the comparatively low taxes that he demanded from most of the empire relative to the tribute from his Egyptian property. Yet because the Senate always remained under his close, watchful eye in Rome, the greater dangers lurked in the provinces.

7. There always were overlapping funds and functions between the Aerarium and the imperial budgets. Augustus actually possessed the revenues from the special provinces under his direct supervision—even though these revenues were officially under the Senate's control (Frank 1940, 18). It is doubtful that these funds were returned to Rome. The emperor frequently helped the Aerarium to meet its obligations to support the military, the dole, and most public works (Frank 1940, 14–45).

Power can usurp wealth through rent seeking, but sustaining these rents against further rent seekers is problematic (Tullock 1967). A wise rent-seeking winner, such as Augustus, might seek to curtail further rent seeking by instituting stabilizing policies that bring about the rule of law. A coup d'état and the measures to suppress such a coup may be regarded as wasteful competition for the dictator's power and wealth—the ultimate rent-seeking game. Provincial officials were not allowed to raise taxes or armies without authorization, nor were provincial officials even supposed to communicate with each other (Starr 1982, 73). In the event of a potential foreign invasion, the failure to cooperate might lead to difficulties, but these restrictions rendered the organization of a coup much more difficult.

Augustus followed Julius Caesar's lead by eliminating province-wide tax farming. He decentralized tax collection by making local communities directly responsible to Rome. Municipal officials would find it more difficult to organize an opposing coalition than a provincial magistrate would. The notorious provincial tax farmers had normally dealt directly with the communities, not with individuals (Goffart 1974, 17). The Caesarian–Augustan tax-farming reforms eliminated the middleman.

Each municipality had a formal charter with civic rights and obligations for members and a recognized code of laws and institutions to manage civic affairs (Reynolds 1988, 15). Magistrates were elected, and city councils composed of former magistrates and leading citizens served for life terms (Reynolds 1988, 25–26). Local municipal authorities apparently had some discretion over the manner in which they could raise the tax revenues for which they were responsible.[8] They could adjust tax rates, make assessments, and provide local public goods in addition to raising the mandatory taxes due to Rome.[9] The local communities might have set up their own tax-collection bureaucracy or contracted out the collection to tax farmers. Publicans might have continued to be hired, but now they contracted with local governments rather than with the distant Roman Senate, and local people were in a better position to supervise tax collection.

The local public goods included temples, statues, fountains, games, public baths, public water supply, and so forth. Charles Tiebout (1956) notes that local governments have a relatively mobile tax base. If they overtax the locals, dissatisfied taxpayers may leave. The competitive pressure between communities for taxable people limits some of the worst abuses by local magistrates and publicans.[10]

8. Walter Goffart discusses local communities' role in Roman tax collection (1974, 6–21). He infers from the sources' silence that local councils exercised latitude in the manner that they assessed and collected the taxes due to Rome (11). In any case, the many public statues, fountains, and so forth that have survived the ages attest that local public goods were well financed.

9. Because local taxes might reduce a municipality's ability to meet its primary obligations to Rome, proposed local tax increases became subject to investigation and approval by Roman officials after Augustus's time (Reynolds 1988, 35).

10. Jeremy Edwards and Michael Keen (1996) specifically consider the role of mobility in reducing corruption and economic waste.

In order to assess properly the taxes owed to Rome and to prevent local abuses whereby political slush funds might be established, Augustus introduced a tax code with judicial oversight. Two criteria were adopted for tax assessments: a wealth tax of one percent on all assessed property (for example, land, houses, slaves, and ships) and a flat poll tax based on periodic censuses to be paid by every adult (Hammond 1946, 85; Jones 1974, 164–66; Starr 1982, 77). Augustus required periodic censuses and conducted surveys of rural landholdings. These direct taxes became the major sources of revenue outside of Egypt.[11]

Augustus instituted significant legal reforms, including a system of judicial review, which placed important curbs on the abuses by magistrates and tax collection in the provinces. On criminal matters, the emperor assumed judicial oversight. Prosecuting attorneys received a percentage of the fines and funds they recovered for the treasury (Frank 1940, 27). The profit motive helped to check the widespread misuses of public funds. Augustus also licensed certain legal experts to develop legal theory (Starr 1982, 81). Roman jurisprudence gradually adopted the Stoic tradition of natural law that right and wrong are not arbitrary fashions but rooted in nature and therefore binding on all mankind. This tradition eventually produced a uniform set of legal principles throughout the empire (Pipes 1999, 10–13). Augustus's legal and tax reforms increased the provinces' capitalized value.

Augustus reined in the military. He decided against further invasions of Britain and Parthia (Starr 1982, 19). He pacified northern Spain and conquered some of the Germanic lands to the north, actions that may have been defensive in nature (Starr 1982, 19). But the key to the military reforms lay in the establishment of imperial control over military finance and direction. No longer could provincial generals take offensive initiatives without the emperor's approval. The days of Caesarian military entrepreneurs were over. The "golden fishhook" that Augustus did not wish to risk seems to have been his personal control over the empire.

The Augustan curbs on rent seeking worked almost too well. Roman aristocrats during the republican period had expected fame and fortune through public office and military service. After the institution of the Augustan reforms, the costly campaigns for public office soon disappeared. In fact, it became difficult for Augustus to find an adequate supply of competent generals and officers. One Roman knight even cut the thumbs off his sons to gain their exemption from military duty. Augustus filled key military posts with family members (Starr 1982, 27).

The administrative costs of governing the vast empire remained low at least until the time of Commodus, about A.D. 180. During the second century, only about 150 Roman aristocrats were sent to administer the provinces. In similar circumstances, the Chinese dispatched 4,000 officials (Hopkins 1980, 121). Employing

11. The indirect taxes during the early empire included a 2.5 percent customs tax, a 5 percent inheritance and manumissions taxes, a 4 percent tax on the sale of slaves, and a one percent tax on auction sales (Starr 1982, 78).

rough assumptions about the population, the cost of the military, and the proportion of military to nonmilitary state expenditures, Chester Starr estimates the annual burden of the Roman state's expenditure during the first two centuries A.D. at about 3.5 percent of national income. This burden compares favorably to the British state budget in 1688, which required 5.33 percent of national income. Even after Starr's estimates of expenditures are adjusted to take into account high collection costs, the estimated Roman tax burden increases to only 5 percent of national income, a low tax burden by ancient or modern standards (Starr 1982).

The establishment of the rule of law throughout the Roman provinces dried up the source of funding for potential rivals among the provincial generals—the fiscal basis for the civil wars. In reducing the prospects for potential rivals, Augustus internalized the external costs that had plagued the late republic.

Conclusions

The extractive nature of Rome's for-profit war industry assured diminishing returns to the corporate Roman state. Even if the returns from warfare were monopolized by a single entity, such as the Roman state, the returns from warfare would eventually approach the maximum sustainable taxing capacity described by the Laffer curve. Declining marginal benefits and increasing marginal costs limited the return on military expansion. The increasing marginal costs of conquests had become apparent by the second century B.C. Military campaigns lasted longer and reached ever farther from Rome. Longer, more distant campaigns increased the cost of military exploitation by increasing the cost of raising armies and extracting revenues from foreigners.

Even though the marginal costs of conquests rose while the marginal benefits of conquests fell over time, these developments were not apparent to a single decision maker. The Roman system of deficit finance (veteran's benefits) and the loosening senatorial control over the returns from foreign provinces pushed the extent of military conquest beyond an optimal stopping point for the Roman corporate state. The cost-and-benefit parameters faced by individual politician-generals did not coincide with those of the Roman Republic as a whole. This disconnect fostered costly civil wars for control of Rome itself. These wars might easily have continued in ruinous cycling fashion but for Octavian's undisputed victory at Actium and the capture of sufficient spoils to compensate his troops.

Caesar Augustus remained constrained by strong republican sentiments. These constraints and his desire to eliminate potential rivals motivated the Augustan reforms. Under the empire, the costs of conquests to the emperor increased because victorious generals might march back with newfound riches and military strength, which increased the risk of the emperor's being overthrown. Augustus also restricted the provincial administrators' powers, not only making it less likely that they would be able to organize a coup, but also making these jobs, like those of the generals under the emperor, less desirable.

Through other reforms, such as the reduction of tax rates and the establishment of the rule of law in the provinces, the benefits of rent-seeking conquests fell while the benefits of maintaining the empire increased. The immediate high gains to conquering generals and early provincial rulers were replaced by higher long-term gains to the empire, many of which might not accrue to the current emperor, but to his successors. By reducing the gains of conquering generals and the gains of provincial rule (the source for war chests that financed the civil wars), potential rivals had more difficulty in amassing the funds required to challenge the emperor.

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