

The Agency Problem of Empire: British Mechanisms for Constraining Governor Behavior

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Abstract:

Significant work has been done focusing on the extensive agency problems in companies. However, little has been said about identical problems in the governance of empire. This article extends the work of Carlos, which examines the agency problem within British chartered companies, and investigates the mechanisms the British Colonial Office put in place to mitigate the serious agency problem inherent in their use of governors who were incredibly distant, both geographically and in terms of communication time. This article uses a novel data set of governor salary from 1864 through 1911 as well as the exogenous extension of the telegraph network to examine whether an efficiency wage was employed or whether a specific form of residual claimancy was preferred. In the end, it is found that the central strategy employed was one of residual claimancy.

JEL: O10, O12, P48, L14, N40

Keywords: economic development, political economy, colonialism, agency problem.

Introduction

At the height of its power the sun truly never set upon the British Empire. During the 19th century alone, Britain added around 10 million square miles to the Empire and by 1900 Britain controlled roughly 20 percent of the world's landmass and dominated the sea lanes. The Empire has been both lauded for its role in disseminating global goods, food, culture and people and vilified as the destructive force behind the death and decline of once powerful civilizations. In recent years, the role of the British in establishing institutions within their colonies has come to the fore as a means of explaining differential economic growth rates in the present. The existence of a colonial legacy has been well established, with the historical record pointing to a systematic difference role of colonial powers in the creation of durable institutions (See, for example, Acemoglu, Johnson, and Robinson, 2004).

Despite the wide range of geographies and peoples that comprised the British Empire there was some degree of consistency. How was it that the authorities in London were able to impose this relative uniformity, despite the immense variation in local conditions, but more importantly, in light of the lengthy and difficult communication methods to them? In the face of communication problems, how did officials of the Colonial Office, charged by Parliament with maintaining the Empire, mitigate the principal/agent problem that existed in such a far flung colonial¹ network.

This paper addresses this issue using salary data collected from archival records and primary accounts and historical records to compare two contending mechanisms for agency problem mitigation: an efficiency wage and a relocation of residual claimancy to the external territories.

The paper is structured as follows. First, a discussion of the nature and consequences of agency problems generally. Second, the establishment that the structure of bureaucratic rivalry that effectively rendered the Colonial Office Secretary the residual claimant for the effective administration of the empire. Third, an examination of the mechanisms used by contemporaneous private parties with consideration for which of these were available to the Office. Fourth, a further discussion of the two primary mechanisms available to the Colonial

¹ While the Empire was comprised of colonies, dominions, and protectorates, the term colonial is used throughout for the sake of simplicity.

Office—payment of an efficiency wage and cession of claimancy—in light of the peculiar circumstances of empire. Fifth, presentation of data and use of an exogenous shift in communication technology (the telegraph) to demonstrate that cession was the primary mitigation mechanism. Sixth and finally, a conclusion and a consideration of the ramifications for general institutional transference and durability of the results presented here.

The Agency Problem

Anytime one individual employs another to act in their stead a principal/agent problem comes into existence. There is a positive risk that the employed (agent) will fail to act in the best interest of the employer (principal) or even act in direct opposition to the principal's interests. A principal/agent (or agency) problem is mitigated to the extent that an agent's incentives are brought into line with the principal's.²

The primary factor determining the severity of an agency problem is the difficulty of observing the behavior of the agent. If the behavior is immediately observable the agency problem is very small since it is easier to correct the behavior. If, however, the behavior can go unnoticed for a significant period of time, or if the behavior can only be observed at significant cost to the principal, an agency problem is more severe.

Since there are large benefits for individuals to employ others to act on their behalf the world is replete with agency problems. The examples of principal/agent problems that are most often tendered, like problems of externalities, are invariably those where attempts to mitigate these problems have failed. Like problems of externalities, where the issue is to what extent can the problem be or has the problem been internalized, the relevant question when it comes to agency problems is to what extent have the problems been mitigated.

The British Empire was replete with severe agency problems, foremost among them being the problem between the governors of the various territories under British control and the governors'

² In some cases this failure to act or action in opposition to principal interests will occur because of simple error or miscalculation. These instances would not be considered primarily a result of a principal/agent problem but rather of the natural uncertainty in the world as principals would surely err from time to time as well.

masters in London at the Colonial Office.³ That such problems existed should be logically apparent but can be illustrated by an historical instance of the failure of the mechanisms put in place to mitigate these problems, that of Sir Bartle Frere and his subordinate, Mr. Theophilus Shepstone.

The Zulu War

In 1878, the British governor of the Cape, Sir Bartle Frere, in what is now South Africa, conspired to start a war in the area. Why he did this is not fully established. It is possible he was looking to expand his sphere of control by extending the borders of his colony. It is also possible that he was hoping for a reward if he succeeded as the history of the Empire has many cases where insubordination was rewarded with promotion when the insubordination resulted in success. It is also quite possible that he was responding to pressure from local colonists who were hoping for cheap land. In the end his motivations were almost certainly some mixture of all of these. He and another colonial bureaucrat, Sir Theophilus Shepstone, falsified their reports to London to cast the situation on the ground in a rather different light than what it was (James, 1994).

In their reports they claimed that the neighboring ruler of the Zulu, Cetshwayo, was a military threat to the Natal region. They also asserted that he had a significant standing army and that attack on Natal was imminent. In point of fact, Cetshwayo exhibited no hostile overtones to Natal, or its white settlers. His army was more of a militia than a standing force, and was only called up in times of emergency.

Nonetheless, these officials' reports were acted upon beginning January 1879. The war began with the rout of 1,200 British troops and their native counterparts, but ended with the final defeat of the Zulu in July of that year at Ulundi. The Zulu had been vanquished, albeit unnecessarily, for they had never shown signs of menacing Natal and every sign of being willing to peacefully coexist with the settlers.

3 While the Indian Office faced similar difficulties, the Colonial Office administered the majority of the Empire and is therefore the most relevant unit for consideration.

While the exact number of lives lost in this endeavor are unclear although what numbers there are point to a high cost. There were the British soldiers who died: of the original 1,200 at the original engagement, nearly all were killed and winning the war required 17,00 reinforcements, a portion of which died in the conflict. There was a much larger number of Zulus. They lost over 5,000 men at Isandlwana, the site of the initial engagement, and many more subsequently in headlong charges against rifles. Then there were British civilians and missionaries who died in Zulu attacks.

Along with the human cost, the British government spent £4.9 million in waging the war (James, 1994, p. 258). This was an immense amount for the period. To give some sense of magnitude, British imports into the Cape were £2 million in 1871 and £7.7 million in 1891.

After the dust settled, Shepstone and Frere were recalled to London. It was clear that the powers that be were none too pleased with their antics. Clearly, governor misbehavior (for this was not just a mistake on Frere's part but clear malfeasance) could be costly. This is just one example of the difficulties faced in effectively managing an empire upon which the sun never set, a vignette of how incentives for the agents weren't always in accord with the wishes of those at the top of the empire's hierarchy. A variety of governors, including the relatively famous Sir. Raffles, were recalled to London at various times and a number were sacked completely.

Malfeasance was so endemic to the early colonial system that one historian evaluated the appointment of Sir Henry Morgan to Jamaica in as "presumably on the principle of setting a thief to catch a thief." (Hall, 1937, p. 87) Yet the empire did not crumble under its own weight.

Bureaucratic Incentives: Is this truly an agency-problem?

It is clear from the historical record that a problem existed. It is evident that the outcomes of such a problem could be severe. However, it has yet to be established that a principal/agent framework is entirely appropriate. In commercial ventures, with clear outcome variables and a clearly identifiable residual claimant such a framework is readily applicable. However, these conditions often do not hold in the public sector. While governors were clearly agents, the missing piece is the principal.

This is primarily because in the case of the British Empire there is no immediately identifiable group of principals, no isolated and clearly enumerated body that would seek to align the agents' (governors) incentives with their own interests. Use of a principal/agent framework requires some parties that correspond to the private principals (stockholders) in the same way that colonial governors correspond to the agents operating at significant geographic remove.

First, there was contemporaneous recognition of the agency problem can be seen with the Reform Act of 1832 and even more in that of 1867 which dictated the pension structure for governors and the historical records indicate a high level of concern in London over how to constrain governor behavior. Further evidence of contemporaneous recognition can be found in the writing of Sydney Smith Bell, Supreme Court Judge for Cape Colony. Writing in 1859, he stated:

“If it be difficult in the mother country to wean individuals from the pursuit of their selfish individual interests to the consideration of a public grievance, so as to form a body large enough to justify the resolutions being called the voice of the people, without which the minister would not be bound to treat, as he would not be justified in treating any matter as a grievance, contrary to his own opinion on the subject. If there be a difficulty to accomplish this in the mother country, where the community have the parliament and the government under their eyes, how much more difficult must it be in scantily-inhabited colonies, at the distance of thousands of miles from the home government, to warm up the scattered population, however crying the grievances may have been, to make complaints which cannot reach government until the expiry of months, and which cannot be answered until the expiry of as many more.” (Bell, 1859, p. 371)

Moreover, in the Parliamentary structure of Britain at the height of empire (the nineteenth century) there were significant checks in place and stark bureaucratic rivalry between divisions. While the Colonial, India and Foreign Offices were responsible to Parliament for their respective territories, the heads of these offices had strong incentives to ensure their effective management. The responsible offices reported annually to Parliament and MPs could make life very uncomfortable for them. Moreover, the British Exchequer or treasury department was

responsible to Parliament for the finances of the entire empire and, thereby, the expenses of each office. The individuals heading Treasury could, and did, make political hay by calling into question outlays in the territories and questioning the judgment of whichever office was responsible.

The main currency within Whitehall was political prestige. Prestige controlled advancement to plum posts as well as serving to elevate individuals in the highly class conscious society of the time. Prestige and particularly the risk that embarrassment posed can be seen in the fact that Bell the titles of two of the twenty three chapters in his treatise specifically on the topic of embarrassment⁴ the Colonial, India and Foreign Secretaries as well as their staffs, were effectively rendered residual claimants for the colonies.

In the case of colonial administration, there were often no hard production targets to meet, a fact that can be viewed as due either to the wide variety of unrelated and at times conflicting responsibilities (multitasking) given to colonial governors, or to the lack of cohesive groups of principals to carefully monitor the governors (agents) or both. There were, nonetheless, successive and progressive attempts to mitigate the agency problem.

For these reasons the use of a principal/agent framework, with those in charge of the relevant office as proximal principals, is applicable for evaluating the management and structure of the British Empire.

Contemporaneous Strategies

Before continuing it is useful to examine what means other groups of roughly the same period and facing a similar agency problem employed.

⁴ “Chapter XII: Cause of the embarrassment which occurred in the government of such of our present colonies as were founded previous to the declaration of American Independence” and “Chapter XIV: Embarrassment to the minister and dissatisfaction of the colonists, in the mode of administering all our colonies.”

The Hudson Bay Company

The Hudson Bay Company was established in 1670 with a monopoly on trade in and around, not surprisingly, the Hudson Bay in North America. The main goal was the acquisition of furs which were in high demand in the European market for a host of different uses.

The stockholders in London were well aware that there existed a serious agency problem and that those running the trading posts might well not look out for their interests. Mainly at issue was the very real possibility of agents engaging in trading on their own behalf while their costs of living, transport, etc., were subsidized by the principals. Thus, the agents might not exert as much effort on behalf of the principals as the principals would like—or as much as was contracted for.

Even more problematic, the agents might well trade for the best furs themselves leaving the company with lower quality pelts. In the worst case scenario for the stockholders, the agents might acquire the best furs with company resources (usually trade goods--beads, metal goods like knives and such, and provisions) and at relatively high cost and then take these high quality furs for themselves, substituting low quality pelts that the agents acquired with their own resources.

The principals of the Hudson Bay company were aware of the problem sought to mitigate this issue in a variety of ways. At times they banned private trade but enforcing this ban proved problematic. They sought to use the formal contract structure by paying high salaries for their agents thus rendering dismissal more painful. They required their employees to take an oath, thus tapping into a common cultural idea of honesty and integrity although this proved largely unreliable. At times they required agents to post bonds that would be forfeit upon demonstration (or in some cases, suspicion) of malfeasance. They also instituted rigorous accounting procedures and inspected all cargo entering and exiting the bay, in an effort to reduce the flow of private trading goods in and illicit furs out--in short, by instituting monitoring structures. Finally, the principals sought to establish social structure, primarily by hiring individuals with a common culture--by the end, almost the entire body of employees were Orkneymen (Carlos, 1990). It

should be noted here that the agency problem faced by the Hudson Bay Company, while severe, was limited to a relatively homogenous geographic area and to a single product line.

The Royal Africa Company

Established in 1660, primarily to engage in the West African slave trade, the Royal Africa Company (RAC) faced similar problems to the Hudson's Bay Company. They sought to overcome them in much the same way. The RAC, however, had the additional difficulty of ensuring the "appropriate" (according to profit maximization) treatment of cargo (slaves) by their captains. It also had the problems of ensuring that the cargo was not sold behind the company's back at the destination in the Indies.

Formal contracts were used and an efficiency wage was paid (Carlos, 1996). The RAC, however, relied much more heavily upon bonds posted by their agents. Seldom was this an actual cash bond up front. Rather, individuals, usually not related to the agent, would legally state in a public forum that they would pay a specified amount in the event of malfeasance on the part of the agent. These bonds were usually quite high, often amounting to as much as ten times the annual salary of the agent (Carlos, 1996).

The Company also sought to control shipping in and out of the area. Supported as they were by the Royal Navy, they had fair success in this and regularly searched vessels for illicit slaves and trade goods. Ship captains were issued specific, written regulations regarding their shipboard conduct vis-à-vis slaves and were in some cases paid a piece-rate at the point of disembarkation.

The RAC was less successful than the Hudson's Bay Company and that this was largely because of the incidence of disease in West Africa. Almost none of their agents renewed their two to three year contracts. Mortality was high and this continuous turnover effectively precluded either the establishment of a bonding common culture or long-term economic incentives from coming into play. Part of the underwhelming performance of the RAC can also be attributed to their inability to effectively mitigate the agency problem.

The Dutch East India Company

In the early days of the European expansion on the Indian subcontinent, the Dutch East India Company (*Vereenigde Oost-Indische Compagnie*, or VOC) was the preeminent power. From

1600-1672 the VOC was highly profitable. Through an elaborate system of restrictions on agents activities and shipping similar to those put into place by the Hudson Bay Company, the principals of the VOC tried to combat private trade by the agents (effectively agents selling of VOC resources for personal gain). Eventually, however, competition from the English India Company eroded the VOC principals' ability to mitigate their agency problem with the result that the power of the VOC waned and the VOC was largely irrelevant by the end of the seventeenth century (Adams, 1996). This is an instance where an inability to mitigate a principal/agent relationship led directly to corporate demise.

Mitigation Mechanisms

Returning to the British Empire, is evident that a principal/agent relationship existed between the Colonial Office Secretary as proxy-principal and extraterritorial governors as agents. That a concomitant agency problem was present is also be obvious. The experience with Sir Bartle Frere highlights the extreme consequences that could arise if this problem was not effectively mitigated.

What means did the administrative bodies came up with to constrain the governors? What powerful mechanisms were found for mitigating the agency problem that so beset and bedeviled private organizations that found themselves in a similar situation?

The Colonial Office did not have at their disposal the full range of strategies used by private groups. The Office could in theory have required bonds but this would have significantly limited the pool of prospective employees, many of whom, at least in the latter half of the nineteenth century, were second sons with little ready cash behind them. In a sense, the Office did require a reputational bond by *gazetting* new governors (publishing their appointments in the press) thus making an ignominious return somewhat painful in class conscious England but this is unlikely to have been a sufficient mechanism. Creation of a common culture was doubtless important. A sense of what was and was not done (or of what was considered "cricket") surely played some role but this was a general mechanism that could not be tailored to specific territories. This would have needed to be bolstered by other mechanisms. When it came to controls on shipping, the main concern for the Colonial Office was misuse of resources within a territory rather than

their illicit removal from the territory. This rendered restrictions and supervision of cargoes unlikely to mitigate the agency problem.

Of the strategies employed by private organizations, then, only payment of an efficiency wage was likely to have been sufficiently flexible and powerful to allow an effective mitigation on a territory by territory basis. In addition to the private mechanisms employed the Office had an additional option: cession of residual claimancy to local inhabitants. These then are two contending mechanisms: an efficiency wage and cession of residual claimancy to those in situ.⁵ This are examined in turn below.

Efficiency wages

Using an efficiency wage involves paying agents more than their opportunity cost, thus rendering the threat of dismissal painful. In the event that an agent performs poorly or is found guilty of malfeasance, dismissal results in an agent foregoing the future stream of earnings above their next best alternative. When communication lags are long, or observation is deferred, an efficiency wage (or more accurately, the spread between the wage paid and the next best alternative) needs to be even larger but can, and should, narrow as communication and observation become easier.⁶

An efficiency wage is in a sense a means to render a Beckerian punishment feasible when flogging, imprisonment, or asset forfeiture are not feasible or enforceable. Employees tend to be loth to sign contracts to this effect and courts are reticent to enforce them (though somewhat less so in the colonial period). Withdrawal of the extra emolument served as the punishment and severity of punishment was determined by the size of the efficiency wage. Thus, as the likelihood of detection or the lag between the act, detection

⁵ While there were other mechanisms that could have been used, the establishment of common culture among them, most required a long time horizon and were not sufficiently flexible to be adapted to the different severities of agency problem in different territories.

⁶ A corollary is that an efficiency wage can be smaller in instances where unemployment is rife taking into account a discounted outside alternative (the probability of a job times the wage).

of the act, and punishment for the act (inversely proportional to length of communication time) increased the size of the punishment (the efficiency wage) could fall.

The downside of using an efficiency wage is that it is expensive. Paying all agents more than they can make elsewhere adds up. There are also clearly information problems—adjusting them according to changes in the likelihood of detecting malfeasance will necessarily be imperfect.

Stated more formally:

$$F = f(P, S)$$

where F is the optimal penalty or fine, P is the probability of detection and S is the severity of the malfeasance, $F_p' < 0$ and $F_s' > 0$.

The fine itself will be the NPV of the spread between the wage paid and the next best outside opportunity, or $W_e - W_0$, here termed B for whatever the number of years that an individual could expect to serve if they did not misbehave (n). Speed of communication would determine the length of time after detection that an individual would continue to serve in their position and continue to receive their salary (x). In other words:

$$F = B \left[\frac{1 - (1 - i)^{-n}}{i} \right] - B \left[\frac{1 - (1 - i)^{-x}}{i} \right]$$

Here, $F_n' > 0$, $F_B' > 0$, and $F_x' < 0$, meaning that increasing the efficiency wage would increase the NPV and thereby the penalty. Increasing the expected career length (contingent on good behavior) would increase the fine. Finally, increasing the lag between behavior and termination would decrease the fine. This lag is itself primarily a function of communication technology or speed (T) and bureaucratic expeditiousness (E):

$$x = f(T, E)$$

where $xT' < 0$ and $xE' < 0$. Increasing communication speed or bureaucratic expeditiousness would necessarily decrease the lag.

The upshot is that speeding up communication would decrease the lag which would, in turn, increase the fine. Assuming a constant optimal fine, the efficiency wage or bonus necessary to deter a given severity of malfeasance (assuming no increases in detection ability) would fall with an improvement in communication technology.⁷ These implications are testable and are examined after the next section.

Cession of Residual Claimancy

An alternate way of addressing the agency problem is rather more straightforward: cede residual claimancy to individuals more able to detect the malfeasance. In the case of the geographic separation particular to the British Empire, the individuals to whom residual claimancy (henceforth referred to as the proxy-principals as opposed to the original or primary-principals) would be most effective would be to those geographically closer to the agent—in most instances, to individuals within the colony or territory itself. While this strategy may seem odd at first glance, it is seen everyday in normal life. Every sign posted that states “Purchase Free if no Receipt Given” is employing this strategy by granting customers an interest in effectively monitoring that an entrepreneur’s agents register all transactions.

The precise manner in which to do this and the particular individuals to whom to cede claimancy pose their own problems. Cession must occur in such a way or to such people as to align the incentives the proxy-principals with those of the primary-principals. It must therefore be possible first to identify eligible proxy-principals and second, to align the incentives faced by these individuals with those of the primary-principal.

⁷ It should be noted here that F is the value of the maximum fine that could be imposed. Punishment for less severe malfeasance could be meted out by delaying a recall to London or even by putting a governor on half-pay for a period (which automatically happened in certain situations when governors were physically absent from a colony).

If, on the other hand, the agency problem stayed roughly constant over time (or even decreased with improvements in communication) why would the Colonial Office have ceded increasing claimancy and thereby relinquished a measure of control? The answer to this can be found in the S term in the equation determining the optimal fine. Recall:

$$F = f(P, S)$$

where S is the severity of the malfeasance. While cession obviates the use of a fine, the right side of the equation still has analytical relevance. The more severe a breach of conduct, the greater the desire of the Colonial Office to eliminate or prevent it. This severity was itself a function of the embarrassment or loss of prestige the malfeasance would bring to the Colonial Office. This embarrassment was a function of the cost the malfeasance would impose on the exchequer (C) and the more direct form of embarrassment posed by cabinet officials and members of parliament asking questions and demanding answers of the Colonial Office (E).

$$S = f(C, E)$$

Here, $S_C' > 0$ and $S_E' > 0$. Part of what determined the embarrassment (E) was the number of individuals in place affected by the malfeasance who would be capable of pressuring Whitehall through communications with their member of parliament. As the number of local inhabitants rose (U), and as the speed of communications also rose (T), these communications would increase *ceteris paribus*.

$$E = f(U, T)$$

The result was that as more people settled and as speed of communication rose the embarrassment from a given level of misbehavior on the part of the governor also increased. ($E_U' > 0$ and $E_T' > 0$). As the local population increased and as communication networks improved as well, both the feasibility of using cession and the pressure to mitigate the agency problem increased. The larger portion of

the local European inhabitants with an intention to settle in a territory, the greater also were the incentives for these individuals to monitor the governors.

Application to Empire

There are two pieces necessary for using a fine to effectively mitigate malfeasance: first, the act of observing the behavior itself and, second, the delay between the behavior and the observation. Improvements in communications technology themselves would not yield a greater likelihood observing the malfeasance. They would, however, move forward the point at which action to remedy the malfeasance could occur if observation were possible. Thus, more rapid communication would dampen the consequences of malfeasance and thereby diminish the importance an efficiency wage could play. It follows, therefore, that, even without any increased ability to detect the behavior, communications improvements should reduce reliance upon an efficiency wage as a mitigation mechanism.

Detection

The first question is whether there is evidence that the Colonial Office even made any attempts to verify the reports of their agents. As noted above, increased rapidity of communication would shorten the time inconsistency problem but would not solve issues of incompetence (the information conveyed by the agent to London would be equally mistaken) nor malfeasance (the agent would alter their report to hide their errant behavior).

There were a number of options open to the Colonial Office on this front. First, the office could employ monitors to go to the colony and survey the governors. Of course, this would be subject to the same shortcomings as those that littered the governor's position. Monitoring the monitors, in other words, would also be problematic. While some triangulation would be possible this would incur considerable expense for an organization seeking to minimize outlays.

It would also be feasible to perform random checks by sending members of the London office to the colony to evaluate governor behavior. This also would have been expensive but likely less so than maintaining a constant presence there. This would minimize the likelihood of collusion but would also yield less information for the Colonial Office.

Alternately, the Office could permit anyone in the colony to submit a report to London complaining of malingering or malicious governance. This would likely catch the most flagrant and egregious abuses of office but would provide little insight into the general abilities and performance of a governor in their role as enforcer of institutions and as crusaders against rent seeking. Add to this the not insignificant risk of collusion between governor and governed and this would be unlikely to be the only recourse necessary.

Speed

During the nineteenth century communications technology improved dramatically within the British Empire. This resulted in a significant decrease in the time between malfeasance commission and communication to London (should detection be possible). Given an optimal fine for a given ability to detect malfeasance and severity of the action, a decrease in the length of roundtrip communication would reduce the size of the benefit necessary to effectively deter such behavior in the future.

Up to the end of the 1800s, communication with the colonies was difficult, lengthy and uncertain. In 1857, the *Dane* began regular mail service between London and Table Bay in what is now South Africa. It was viewed as significant when the voyage was completed in 44 days (Gann, 1978). This means, at a minimum, a nearly 3 month round trip for inquiries and commands between colonies and London. In other areas, before the advent and wide application of steam power for international shipping, prevailing winds and seasonal conditions required a full two years for round trip communication with territories on the Indian subcontinent (Headrick, 1988). The distance and length of communication therefore left considerable room for the governors to pursue their own interests, even at the expense of London's desires or orders.

This problem was so acute that by the time news of the Sepoy Rebellion of 1857 reached London, the uprising had been effectively put down. The rebellion lasted from 10 May 1857 to 20 June 1858.

Starting with the adoption of steam power, communication times between London and the pieces of the Empire began to fall dramatically. As an example, steam reduced transatlantic trips by over two-thirds starting in the 1840s (Campante and Glaeser, 2009). This decrease in

communication time, however, was gradual and arguably endogenous. An expensive if effective means of transporting the mails, steam power was reserved for routes and territories deemed more important (or possibly more conducive to severe malfeasance). It is difficult, therefore, to examine whether or not an efficiency wage was used by looking at the adoption of steam as there are too many other factors in play.

The advent and extension of telegraph networks are, however, a different story altogether. Beginning with the first stable transatlantic line in 1866, the world was slowly encircled with the red lines that indicated British telegraph networks. With the possible exception of India, these lines were not extended based on the importance of a colony or territory. Instead, they were driven by the material realities of the telegraph itself. Ships were loaded up with large spools of heavy copper cable encased in gutta percha (a natural latex and insulating material derived from the gutta percha tree), metal shielding, and hemp. These ships left England stringing out this cable and connecting those areas along the way. It was neither possible nor desirable to run a line directly to a particular territory.⁸ While the decision to run a telegraph line at all was endogenous, the choice of the order in which to connect territories was not. Moreover, the extension of a line took considerable time and could not, therefore, be effectively undertaken as a means of ameliorating a problem with a particular agent. As an example, the Pacific cable connecting Australia to Canada took six years from proposal to coming on line (Davis and Huttenback, 1988).

The telegraph was a profound change. Governor General Dalhousie, writing in 1854 about the domestic telegraph network within India stated “The post takes ten days between the two places [Calcutta and Bombay]. Thus in less than one day the Government made communications which, before the telegraph was, would have occupied a whole *month*—what a political reinforcement is

⁸ As mentioned earlier, the exception was India where a variety of treaties and contracts were initially devised to connect the subcontinent, first through the Ottoman land network and eventually through the Suez with a wholly British network. It should be noted that the early attempts using the Turkish networks were thoroughly unsatisfactory due to translation problems and delays.

this!” (From a letter to George Couper dated 9 December 1854 and quoted in Headrick, 1988, p. 97, *Italics and emphasis from the original*).

As stated earlier, the size of the fine available directly related to their ability to monitor and this ability to monitor is clearly tied to the communication technology available. While communication technology alone would not have precluded the crisis precipitated by Frere, it was a necessary piece for effectively mitigating the problem using an efficiency wage.

Ceding Residual Claimancy

What then of the other the other mitigation mechanism available to the Office? Cession of full claimancy would naturally eliminate the issue entirely for the primary-principal, eliminating the principal/agent relationship entirely for those in London. However, this was not a feasible option as it would also effectively remove the territory from constituting any effective part of the Empire, in the process violating the mandate of the Colonial Office (yielding embarrassment and thereby a diminution of prestige for the Office Head) and additionally erode the sphere of control and budget enjoyed by the head of the Colonial Office. Partial cession, however, could most certainly be attempted.

To use cession effectively the new resident claimant would of necessity be given some ability to punish and reward an agent. They would also need to be granted access to the information necessary to make a decision about an agent’s probity and behavior. In the colonial case, this was most easily undertaken by granting control over some sphere of domestic policy to the local populace. The extreme example of this took the form of “Responsible Government.” Contrary to the modern use of the term, in the context of the British Empire, this meant granting control of some government policies to those in residence of the territory. The voting requirements varied, with the electorate being variously restricted to the wealthy, to men, to British citizens and so forth. Control was invariably limited to domestic policy and even this was circumscribed in many instances. At the extreme, responsible government was akin to independence—with the exception of foreign policy. However, cession was a question of degree rather than a binary state. At the one end lay an advisory council with no real power and at the other elected assemblies that formed and chose all policies implemented within the bounds of a territory. Such assemblies

were able to require testimony and information from the governor (though this was seldom granted in person) and could request and, in some cases choose, a specific governor.

Cession would introduce its own concomitant difficulties. Effective implementation would require that those to whom claimancy was ceded had similar desires as those of the Colonial Office—that this strategy not introduce an acute incentive-incompatibility problem. The claimant in situ would need to desire roughly what the previous claimant in London did—or at least a sufficient subset that the Empire retained some uniformity. Moreover, the electorate could not be made so large that the standard free-rider problem in providing good government became too severe.

Which of these two courses, an efficiency wage or cession of claimancy, was more desirable depended primarily on two things: the pecuniary cost of an efficiency wage, and the availability of a local populace with compatible incentives. While it was certainly in the interest of the Colonial Office to push as much of the cost of administering the territories off-balance (making cession a more attractive option) there was a risk that once granted power, the desires of the local populace would prove less similar to those of London than thought. It was also possible that these desires would change over time. There was a period, in some territories of indeterminate length, in which cession was simply impossible due to the lack of a suitable local populace. Once a critical mass of like-minded inhabitants was attained, responsible government became possible. It was almost certain, however, that the incentives of settlers in areas of cession and those of the Colonial Office would eventually diverge.

The Data

In determining whether the Colonial Office relied more upon payment of an efficiency wage or upon cession of claimancy requires recourse to the historical record—which is thankfully sufficient to address both strategies. The British were wonderfully assiduous record keepers to the extent that some portions of the Colonial Office List (the annual report of the Office to Parliament) records the amount spent on bullets for the jailers. Governor salaries can be obtained through reference to this report and there is no shortage of tomes that record the limits placed upon and privileges granted to elected assemblies in the territories.

The Colonial Office List

The data used here to examine the extent of use of an efficiency wage are contained in the Colonial Office list while the examination of communication networks is drawn more generally from the historical record. Lists generally were activity reports presented to parliament, usually on an annual basis and subsequently published by the Royal Stationers. They include the Home List (the budget and activities of the monarch), the Naval List, the Foreign Office List and, until recently, the Colonial Office List.⁹

This latter list is the source of much the data examined here. The Colonial Office data were used because of they comprised the majority of the territories in the British Empire, with the exception of India which was administered after 1857 by the Indian Office. The Colonial Office list included such information as all funds dispersed within a colony (and thus specifies the salaries paid to governors and other bureaucrats), general disposition of the territory, information on treaties or other notable agreements and changes to an area's legal status. There is significant variation in the extent of reporting between colonies, with some listing the bare minimum of information and others providing extensive reporting and analysis. This variation is particularly acute in the first two years in which the List was published (1862-1863) with all territories reporting the most essential figures reliably only by 1864. As a result, the data relied upon for this analysis was collected from the volumes 1864-1910. In the same way that the start date was selected for the reliability of the data, the end date was selected because of the unique characteristics of the war period.

Efficiency Wage

The first place to start the examination is with a general prediction of the model outlined earlier. If such a strategy was used, the wage should have increased the smaller the expected total career in the service—the variable n —something that would vary directly along with mortality rates. Was there then, systematic variation between high and low mortality countries in governor pay? At first blush there clearly was although in the wrong direction. There is a sizable negative correlation between mortality and governor salary (-0.2235 by the Acemoglu data and -0.2010 by that of Albouy) that strongly supports the prospect of systematic variation based upon the

⁹ The was also at some points termed the Colonial Office and Dominions List.

mortality rate among settlers—governors in low mortality areas were paid more rather than less. Controlling for a variety of variables there remains a sizable and significant inverse relationship between mortality rates and governor salary. The pay differential between colonies was significant, the differential between governors and lower officials was also high, and governors' salaries were, on average significantly higher than similar government employees in Britain in the period.

A counter to this line of reasoning is that the pay differential was hardship pay, with salary decreasing as the non-pecuniary attractiveness of a posting increases. This hardship explanation is not, however, born out in an examination of the historical record.

In terms of lodgings, the higher the salary the more sumptuous and comfortable the accommodations usually were. The Nigeria posting had among the most lavish accommodations and the highest pay in Africa, despite having similar incidence of disease as other African territories. The same can be seen in other regions as well. This does not, of course, speak to whether the salaries higher than the domestic equivalent but only to the distribution within the colonial service.

Table 1: Comparison of Salaries by Continent (All Ranks)

	In £ Sterling (1910)			
	Mean Salary	Minimum	Max	Standard Deviation
Asia	6,014	4,314	9,600	1,408
Australasia	4,434	300	10,000	2,438
Europe	3,795	500	5,485	1,618
Latin America	3,248	1,798	5,000	1,262
Africa	2,840	450	8,000	1,786
North America	2,744	1,400	10,270	2,488
Caribbean	1,917	200	7,000	1,598

According to Table 1, on the other hand, higher pay did, broadly speaking, accompany harsher living conditions. The colonies in Europe exhibit high salaries, something that hardship pay is

clearly not in line with. At first glance North America and the Caribbean seem far down the ranking, in part supporting the hardship pay proposition.

Table 2: Comparison of Salaries by Continent (Top Rank)

	£ Sterling (1910)			
	Mean Salary	Minimum	Max	Standard Deviation
Asia	6,022	4,314	9,600	1,410
North America	5,769	1,438	10,270	3,742
Australasia	4,836	300	10,000	2,340
Europe	3,912	500	5,485	1,750
Latin America	3,771	1,798	5,000	1,369
Africa	3,358	450	8,000	1,888
Caribbean	3,117	400	7,000	1,522

However, these areas had a much higher number of lieutenant governors and other administrators of lower rank represented in the data set. Comparing the top group alone, like with like, provides table 2. Here, with the possible exception of Asia, we see a rank ordering and a magnitude of salary that points very clearly in the opposite direction from a story of hardship pay or a compensating differential as well as the payment of an efficiency wage.

Insofar as attractiveness of locale for a governor matches attractiveness for settlers (and in most cases this was the case) this belies the prediction of an efficiency wage strategy: the more attractive posts paid more rather than less.

Furthermore, a fixed effects model by governor to control for governor quality, is presented in table 3. Here, total tenure is the total length of time an individual has served with the Colonial Office. Rank Group is a dummy to control for the title of the position. This variable has a value of 1 for full-fledged governors and 0 for everything else. From these results it can be seen that settler mortality (and presumably governor mortality) had a negative impact upon governor salary. This is again the opposite of what the efficiency wage model predicts.

Table 3: Mortality and Governor

Dependent variable: governor salary (in 1910 £)		
Mortality (AJR)	-0.48** (0.10)	
Mortality (Albouy)		-0.35** (0.10)
Total Tenure	34.45** (7.69)	35.26** (7.70)
Rank Group	2620.66** (74.55)	2617.10** (74.82)
R ²	0.35	0.35
Observations	2581	2581

***Significant at the 95% confidence interval*

There are difficulties, however, with using a point observation (and one of debateable quality at that) as the main means of investigating the application of this strategy. For an additional check it is time to turn to a discontinuous, and exogenous, shift in communication technology.

Telegraph

A major shift in communication technology came with the advent of the electric telegraph. While the optical telegraph, or semaphore, began life in Europe with 1792, it shaped life little for those living in territories outside of Europe. During cloudy weather and at night it was unusable. Despite proposals to extend the range of the optical telegraph using repeating ships at intervals across bodies of water the expense involved was deemed too great. Moreover, even on land the operation of a multitude of repeating stations made this a very costly means of communication. The original French line, for example, required 556 stations, staffed with full-time operators, to cover 4,800 kilometers. This expense priced the semaphore beyond the reach of all but a very few. While it did speed communication dramatically in Europe it never spread very far and was not, in the end, a very disruptive technology. The electric telegraph was another case entirely.

The first commercial telegraph line was opened in 1839 in England. Samuel Morse, inventor of the eponymous code, laid the first line in the United States. Telegraph networks were extended gradually, starting with the first stable transatlantic cable connection to Canada in 1866. India was connected to London in 1870 and Australia 1872. Marine cables were laid gradually and in geographic succession, meaning that the date of telegraphic connection was unlikely to be endogenous. Specific colonies were not connected for reasons other than that their location was next on the line from London. The extensive telegraph network led the efficiency wage necessary to maintain the optimal fine to shrink, with turnaround time for communication falling from months to days.

If the bureaucracy was responsive to changes in the underlying conditions like mortality rates, then this dramatic fall in communication lags, which significantly improved the time inconsistency problem, should have had a negative impact on governor salary. This impact is estimated using a fixed effects model by colony, with the governors' salary as the dependent variable.

Table 4: Salary and Telegraph

	Full Sample (1)	Full Governors Only (2)	Full Sample (3)	Full Governors Only (4)
Dependent variable: governor salary (in 1910 £)				
Telegraph	-34.40 (30.07)	-20.08 (44.25)		
Tenure (Total)	21.79** (2.92)	25.83** (3.91)	20.94** (2.88)	25.50** (3.89)
New Governor			7.17 (29.15)	4.04 (43.28)
R ²	0.02	0.01	0.03	0.01
Number of Observations	2581	1539	2581	1539

**Significant at the 95% confidence interval

Notes: Standard errors in parentheses

The coefficient on the variable for connection via telegraph to London (0 before connection and 1 upon connection) has the expected sign predicted if an efficiency wage was used but it is far from statistically significant. As a robustness check, the coefficient on total tenure is positive and significant which is precisely what one would expect: the longer an individual worked for the bureaucracy the more that they made. The result for the telegraph variable is even stronger evidence that an efficiency wage was not the strategy pursued.

Cession

Having discarded the widespread use of an efficiency wage as a mechanism, what of the use of cession? While it would be possible to use connection to the telegraph network as an instrument to examine the use of cession to the territories it would not prove fruitful. The speed of communication would not affect the control that the local population held over the governors.

If this was, indeed, a primary mechanism for mitigating the agency problem of empire, why might it not be used from the outset? As noted above, the success of this mechanism relied upon having individuals *in situ* with incentives that were either roughly similar to those of the Colonial Office, or that could be brought into line at relatively low cost. The history of the British Empire indicates that this population increased over time.

In the early days of a colony or territory, most of the individuals present were merchants or individuals looking to extract wealth. Enough people eventually moved to some of these territories with the aim of settling and living there. The productive and extractive institutional structures of Acemoglu et al. were never present at the first moment. Rather, institutions evolved in light of the population that eventually comprised a territory and in response to the local resource and geographic conditions. It was unclear *ex ante* which areas would be conducive to settlement and therefore which areas would have a population with desires close enough or plastic enough to conform to those of the Colonial Office. Cession of claimancy, was not, therefore an immediately feasible mechanism in most cases but needed to be extended based upon the availability of such a population.

While it is readily apparent why an increase in settler population would increase the incentive for the Colonial Office to mitigate the agency problem, it may be less obvious why the feasibility of using cession also increased along with this shift in the population.

The interests of a population comprised primarily of people looking to make a quick pound were to transfer resources as quickly as possible and at lowest cost (not necessarily concomitant goals). If they were granted control over domestic policy, repression of the indigenous population might well be the norm with an accompanying increase in the likelihood of unrest or revolt. Revolt often meant that the British military would need to be called in and this was invariably accompanied by embarrassing questions raised in Whitehall and the Colonial Office being raked over the coals. Thus, cession without settlement was unlikely to effectively mitigate the agency problem but could, instead, exacerbate it.

When the local European inhabitants had a longer term perspective, however, they generally had an interest in ensuring peace and, if not tranquility, then at least stability. An even hand on the tiller in terms of domestic policy was clearly in the interest of the Colonial Office and greater confidence could be placed in the inhabitants forming an effective check on the governor.

In the early stages of incorporation into the Empire, local European inhabitants were given almost no input on governor behavior or the policies enacted in a territory. Purely advisory councils were put in place in some of the early settlements—for example, in became the United States—but these had little effective power. Even these councils' existence is evidence of the aptness of the explanation above as these territories included the highest number of individuals with an intent to establish long term residence. In territories with little or no settler population, the governor had no real limits on their sphere of control.

Over time this began to change. Starting in 1848, when Nova Scotia was granted full responsible government—meaning full control over domestic policy—cession of claimancy was extended to a number of areas, each with a large settler population. In 1849 it was the turn of the Province of Canada, followed by Prince Edward Island (1851), New Brunswick (1854), Newfoundland, New South Wales and Victoria (1855), New Zealand, South Australia and Tasmania (1856), Queensland (1859), Cape Colony (1872), Western Australia (1890), Natal (1893), Transvaal

(1906), Orange River Colony (1907), Malta (1921) and finally Southern Rhodesia (1923). These territories all had sizable settler populations relative to the others in the Empire. The resident European population in areas like Gold Coast were not, on the other hand, granted much say over domestic policy prior to independence. It is also useful to note that a failed rebellion (as in Canada in 1837) was often followed by an extension of greater control for the local citizenry. The Colonial Office abhorred rebellions, both because they yielded the embarrassment discussed above and because a successful rebellion could mean an exit of the territory from the Empire entirely—and the American experience was never far from the Office's mind.

Problems with Cession

One of the drawbacks of cession of residual claimancy through extension of responsible government was that the newly minted claimants interest might eventually diverge. Over time they might well use their power to drive policy in directions opposed to the interests of the Office. They might capture the agent and bend the agent to the locals' wishes rather than those of the Office. While the head of the Colonial Office often had a longer time horizon than the typical elected official (tenure as head often lasted as long as twenty years) this appears to have been an acceptable risk, although one that was realized in the end. Better to have a territory remain a constituent part of Empire and enact marginally undesirable policy than to have it exit the Empire entirely or to be in outright revolt.

In the end, local elites eventually did capture the Office's agents. This can be seen in the fact that governors repeatedly favored the extension of loans to the colonies at below market rates, were reluctant to insist that these loans be repaid, and even argued that the colonists should not be made to contribute to the cost of defending their territory (Davis and Huttenback, 1988). Davis and Huttenback conclude that "...the British taxpayer paid and the colonies benefited" (1988, p. 161). Furthermore, the records of Colonial Office officials are replete with discussion of the appropriate degree of cession, and efforts to limit the extent to which the local populace could co-opt domestic policy. In many instances a seat on the legislative body was reserved for a representative selected by the Crown and possessed of full veto power. Moreover, even in territories without such a representative the Crown reserved the right of veto over all legislation though this was seldom exercised.

Conclusion

The agency problem inherent in the structure of empire was certainly present and severe and a principal/agent framework is an appropriate framework for analysis. A similar problem posed serious difficulties for contemporary private organizations like the Dutch East India company and the Hudson Bay company. These private groups devoted considerable resources to combatting this problem. The Colonial Office was no less assiduous in seeking to overcome this issue though with mixed success. Of the two primary strategies available to the Office, payment of an efficiency wage and cession of residual claimancy, only the latter appears to have been adopted by the Office.

While it is not possible to fully distinguish between a compensating differential paid for the risk of death in high mortality areas and an initial efficiency wage paid to ensure compliance, it is apparent that whatever was the case at the time of connection to telegraph networks was not adjusted in response to changing conditions, rendering it unlikely that this was viewed as a viable strategy by the Colonial Office.

Cession of residual claimancy was, however, actively pursued. While Office officials were well aware of the risks posed by such a strategy, it was the primary mechanism available to these officials and therefore the one actively pursued, with significant ramifications for institutional development in the territories.

This result is in accord with other work (Acemoglu, Johnson, and Robinson, 2004) on the role of colonial institutions and settler mortality. However, this line of inquiry provides an analytical structure that is incentive compatible for all parties to explain why institutional quality diverged. While individuals who settled in areas had an incentive to implement good governance, this decision could not be taken in isolation. Policy was promulgated at the discretion of Whitehall and by the individual responsible to the British Parliament for the effective maintenance of the colonies—in this instance, the head of the Colonial Office. This paper provides evidence that it was in the interest of this official to cede control over a wide swathe of policy to local European inhabitants in areas with large settler populations and not in those with itinerant merchants or others with an interest in extracting resources—mitigation of an agency problem.

Work still needs to be done comparing other colonial powers before wider conclusions can be drawn. The degree of similarity in incentives faced by those responsible for the French Empire and the ways in which they diverged will be of primary interest. The ability to distinguish between a compensating differential and an early attempt to use an efficiency wage will also be aided by reference to the salaries paid to the resident heads of chartered companies. Nevertheless, the agency problem of empire and an explanation of the incentives for all parties in the colonial experience is essential for any explanation of institutional change.

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