2023

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May 14, 2023

This work has been supported by grants from the Social Sciences and Humanities Research Council of Canada. I would like to thank Chris Poullaos, Anne Pezet, Eksa Kilfoyle, Burkard Eberlein and participants at the Guelph University Qualitative Accounting Research Symposium for comments on earlier drafts.

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Abstract

I examine the negotiations among the UK and its colonies to allocate the cost of operating the Eastern Mail Service (UK to India, Hong Kong and Australia) among national post offices benefitting from its service. Four key sets of negotiations are identified during the period 1866 – 1905. I consider how negotiations were affected by the changing institutional context of the postal system and relationships between the UK and its colonies during this period; in particular, the negotiations capture the confrontation between the liberal social and economic philosophies that had risen to prominence within the UK and the existence of empire. The results demonstrate that parties to the negotiations had an intuitive sense of the cost allocations that would be consistent with economic liberalism (and modern “as if” economic theories of cost allocation) but varied from this baseline in favour of settler colonies versus non-settler colonies, and an Imperial centric view of the benefits of the mail network. The emergence of cost allocations approximating current theoretical norms occurred within an emerging institutional context that favoured political independence between nations and liberalized international trade.

The positivist literature focuses on correlations among variables supported by theories that assume that people behave “as if” they were rational, self-interested actors operating with full information (or, more recently, operating with asymmetric or costly information)(Kahneman et al., 1986; Lehtinen, 2013). The problem with “as if” assumptions is that, even where empirical results are consistent with theory, we do not gain insights into the actual mechanisms by which outcomes are achieved. At best, this implies that positivist research may be able to predict outcomes in stable environments but it does not provide process guidance to those who must act to achieve economic outcomes. At worst, positive theories may be misleading by failing to identify the actual mechanisms that drive outcomes (i.e. spurious correlations, equifinality), or reifying social institutions that have adverse consequences.

Recent work in institutional theory has opened the scope of empirical work by demonstrating that the choice in modelling social actions is not between rational economic and irrational models of action. Rather social action may be guided by a broad set of institutional logics (including market logic) that shape social and economic outcomes (Thornton et al., 2015). An important trend in this literature is to trace institutional logics to the level of individual perception and interpretation, and to the institutional work undertaken to create, implement, maintain, resist or undermine institutions (Lawrence et al., 2009). These developments allow institutions to be seen as a contestable space in which actors compete to establish the rules of the game as well as competing within the rules of the game.

In spite of the gains in social theory and the empirical analysis of social action, there remains a reluctance to combine the insights of economic “as if” theorizing and empirical work driven by a broader set of institutional logics. For example, “as if” theorizing may provide a way of understanding whether or not a particular outcome is “economically efficient” but the conditions envisioned in such theories are typically sufficient rather than necessary. This is to say, finding that the outcomes of particular actions are consistent with “as if” theorizing does not validate the assumptions or the mechanisms that those assumptions justify. The institutional logics literature suggests that social and economic actions may be over-determined, i.e. affected by multiple, even paradoxical, institutional logics. That is to say, social outcomes may emerge through a process of equifinality (Gresov and Drazin, 1997; Van den Venn et al., 2013). Focusing on the institutional work that brought about any social or economic outcome allows us to better understand the mechanism that drives economic outcomes.

This paper draws on an empirical example of the development of cost allocation/transfer pricing rules in the UK colonial mail system between 1860 and 1905. It identifies the outcome predicted by “as if” economic models of cost allocation/transfer pricing, compares this with the actual outcome, and examines the institutional work done to resolve the cost allocation issue in this context. The case demonstrates that the allocation method used is largely consistent with the outcome predicted by economic models, but the process of achieving that outcome activates a wide range of institutional logics. This finding is used to explore theoretical and empirical issues in phenomena exhibiting equifinality, i.e. where a single outcome may be predicted by alternative models.

The remainder of the paper is organized as follows. First, I provide an overview of the empirical setting, i.e. cost allocation/transfer pricing in the UK colonial postal system. I then put these cost allocations in the context of the literature on Imperial accounting. This literature raises the possibility of "biased" cost allocations to benefit the center over the periphery in Imperial networks. This "bias" however requires a normative benchmark. I use "as if" economic theories of cost allocation/transfer pricing to establish such a benchmark. The remainder of the paper provides a chronological analysis of three arbitrations of cost allocations within the Imperial Postal System over a forty year period. The outcomes of these arbitrations are compared with the "as if" benchmark to determine biases in the rulings. The discussion brings the findings to bear on questions of how to explore equifinality in accounting theoretically and methodologically.

Empirical Setting

Between 1866 and 1905 the UK Treasury, the UK Imperial Post Office (IPO)[1], and the Colonial Office, representing various Colonial Post Offices, engaged in a protracted series of negotiations, committee hearings and arbitration processes concerning the allocation of the cost of operating the Eastern Mail Service between the UK and its Austral-Asian colonies. The UK had entered into a fixed price contract with the Peninsular and Orient Steam Navigation Company (P&O) to ship mail from Southampton, UK to various colonial destinations through the Mediterranean, Suez Canal and Indian Ocean. The Colonial Post Offices, in turn, could use this service to transport mail both back to the UK and to other colonies along the route. The debate concerned the allocation of the cost of this contract among those who benefitted from the service.

[1] The UK Post Office is referred to in Government papers as either the General Post Office or the Imperial Post Office. In this paper the term "Imperial Post Office" will be used to highlight the distinction between this agency and the Post Offices in individual colonies.

Given the central role of international transportation and communications systems in governing and exploiting colonial territories, this was an important debate that engaged senior members of government over an extended period of time.

I use this setting to contribute to our understanding of the use of accounting within an imperial context. In particular, the paper examines how accounting became entwined in the confrontation between the liberal economic and social philosophies that dominated the UK at this time and the continued existence of a colonial empire. The tension in policy making with regard to the imperial postal system was whether this system should operate regardless of cost because of its ancillary benefits to maintaining the British Empire or whether it needed to operate on a commercial, i.e. economically rational, basis as part of a liberal world economic system (Select Committee, 1866: 286; Daunton, 1985: 166-170; O'Brien, 1988: 186). A key question is whether cost allocation procedures would reinforce the devolution of power envisioned by liberal philosophies and contribute to the social construction of the sovereignty of colonial nations (Biersteker and Weber, 1996), or whether cost-allocation procedures would be used to reinforce imperial control over and exploitation of colonies. In other words, would accounting be caught up in:

> "…that strange, contradictory mutation that occurs in the effect of words when the distance between the places of their "humane" enunciation and the places to which they are addressed is not simply one of miles but of a power whose truth can be spoken of only with liberal ambivalence…" (Mehta, 1999: 14)

If the postal system was simply part of the apparatus of empire, then the UK might impose cost allocations that would push the costs of the postal system onto the colonies to provide an advantage to UK businesses/citizens rather than base allocations on terms consistent with liberal economic and social philosophies that respected the colonies' position as sovereign nations and independent economic agents. This is thus a setting in which the ideals of Victorian liberal economic and social theory were confronted with the reality of colonial relations; a problématique that continues to be of concern in the relationship between international organizations such as the World Bank and IMF and their clients (Annisette, 2004; Goldman, 2005) and in the operation of the American "empire" (Ferguson, 2003, 2004).

The analysis adopts an institutional economics framing and is concerned with the development of the rules that would regulate relations between the UK and its colonies (cf. Ahmed and Scapens, 2003). Cost allocation rules in particular are important as they arise where there are shared resources and hence an ongoing relationship between states but the inherent ambiguity of cost allocation procedures provides opportunities for discretion to be exercised and hence various interests to be enacted. In this setting, compared with cost allocation between units within an organization (e.g. Modell, 2006), the interests of concern are those that are embedded within the global system and the connections between domestic politics and international relations (Curry, 1924).

This context complements the work of Carmona et al (2009) in examining the role of accounting in international relations (cf. Richardson and MacDonald, 2002). While Carmona et al (2009) focuses on the role of accounting in monitoring and enforcing treaties (specifically the Asiento Treaty between the UK and Spain), this paper deals with international agreements that are not formalized through treaties. This type of "soft law" (Abbott and Snidal, 2000) is more common than treaties in regulating international relations (Haftner-Burton, 2012) but we do not yet have insights into what role accounting plays in soft law or how this role evolved over time.

The paper begins by examining the role of accounting in imperial relationships and how accounting might be used to create advantages for the imperial center and for settler versus non-settler colonies. It then identifies the principles that liberal economic theory suggests should be used in the design of cost allocation systems to promote efficient decision-making and distributional equity among independent self-interested agents (i.e. in this case sovereign nations). This approach to cost allocation would be consistent with the liberal philosophies dominant within the UK at this time. The empirical material is presented as a chronology of cost allocation negotiations focused on four key incidents in which recommendations emerged regarding the cost allocation procedures that should be applied. The discussion interprets these incidents drawing attention to the co-evolution of accounting and the international institutional environment (cf. Jacobides and Winter, 2005). The trajectory of development of cost allocation procedures in this setting is shown to depend on and facilitate the: (1) the construction of the post office as an economic activity alienated from the social consequences of that activity, (2) the equalization of power among states brought about by (post) colonial politics, and (3) the development of an international organization (the Universal Postal Union) focused on the development of the international postal system that gave all states access to the system on equal terms. Ultimately, cost allocations reinforced the sovereignty of colonial nations and provided incentives for these nations to support the imperial postal system but not without biases that reflect the continuing role of the UK as the center of an imperial network.

Accounting in an Imperial Context

The existence of a far-flung empire created a need for administrators in the UK to be able to take "action at a distance" (Robson, 1992). This was accomplished through a variety of means of converting the reality on the ground into "inscriptions" that could be used in the Imperial center to monitor and intervene in colonial affairs. These inscriptions ranged from the taking of a Census (first conducted in England in 1841 and soon after in the colonies "to fill up the roll of the English race" [cited in Edwards and Walker, 2007]), to the creation of accounting measures to facilitate land transfers between aboriginals and settlers (Hooper and Kierans, 1997; Neu, 2000), restructure social arrangements (O'Regan, 2003; Davie, 2007), co-opt local leaders (Davie, 2000), and create management control systems for expatriate administrators (Spraakman, 1999).

It is useful to differentiate between the hardware of imperialism, i.e. the imposition of military force, and the software of imperialism (Headrick, 1981; Said, 1993). The software of imperialism is the set of techniques, cultural imperatives and institutions that are imposed on a colony to make it more amenable to rule by the imperial center. Accounting is part of the software of imperialism. There is considerable evidence that as the UK established its empire, accountants and accounting technologies were exported to reinforce the administration of new lands and to protect investments (Johnson and Caygill, 1971; Parker, 1998; Lee, 2007). Accounting allowed imperial policies to be converted into specific actions and accountabilities in the colonies (Neu, 1997) so that the colonies not only faced "the might of armies but also the tyranny of clerks" (O'Regan, 2003: 105).

There is a series of studies that have attempted to assess the costs and benefits of running the Empire and to determine whether or not the British Empire did, in fact, benefit the UK (Davis and Huttenback, 1986; Porter, 1988; O'Brien, 1988; Offer, 1993; Edelstein, 1994; for a colonial perspective see Naoroji, 1887). Offer (1993: 215) refers to this literature as "imperial accountancy". The focus is on the costs of operating the military and other aspects of the hardware of imperialism as reported by the UK versus the returns on investments of UK capital in the colonies and the effect on the consumer and producer prices both at the imperial center and in markets at the periphery. Offer's (1993) work suggests that the answer to the question of whether or not imperialism benefited the UK depends on the time frame used as well as the opportunity set against which investments in the colonies are compared. What is missing from these studies, however, is concern with the procedures by which the costs and benefits of activities are recognized and allocated among states (although concerns about the accounting records of firms were raised).

My concern is with the micro-level use of accounting practices in controlling and distributing costs between the imperial center and the colonies. This issue has not been explicitly addressed in the literature however there are hints at some variations that may be important. O'Brien (1988: 188) notes that the UK Treasury persistently focused on downloading the costs of defense of the Empire to the colonies even during the late Victorian era (although the success of this policy is debatable). There is little evidence however that this policy was extended to other areas of the Imperial infrastructure; O'Brien (1988: 189) suggests that the "settler colonies", in particular, were subsidized by the UK including benefitting from the "Imperial communications system" (which, through this time period, was primarily the postal system although the telegraph was becoming more important).

The distinction between settler and non-settler colonies is a simplification of the variety of forms of colonies that have existed but captures important differences in their institutional structure, political stability and relationship to the Imperial center (Finley, 1976; Brock and Richardson, 2013). Settler colonies are those where emigrants constituted a significant portion of the population and established a permanent home in the colony. Non-settler colonies (sometimes called exploitation colonies) are those where a small non-native population formed a ruling class and typically individuals stayed in the colony for short periods before returning to the UK (Ferro, 1997). These different types of colonies had distinct systems of governance and consequently different financial relationships with the UK including the extent to which the cost of imperial administration and defense was allocated to the colony (Reinsch, 1905: 81-162).

One explanation for the difference in treatment of settler and non-settler colonies was the effect of the American Revolution on British colonial policies. The claim to independence of the US in 1776 grew out of concern over "taxation without representation." The UK was imposing taxes on its colonies in order to support its military presence throughout the world. The colonies however had no say in the amount and nature of taxes imposed. After the American Revolution, and the reaffirmation of the independence of the US during the war of 1812, the UK began to grant concessions to settler colonies in return for loyalty to the Crown (Hall, 1937; Rector, 2006). This issue was less pressing in non-settler colonies that were under military control, than in settler colonies where the military was less visible and representative government existed. Dutt

(1904) provides details of the imposition of UK debts on India and the "tributes" paid to the UK that illustrate the treatment of non-settler colonies. Accounting procedures make the distribution of costs between the Imperial center and colony visible and therefore is a likely site in which the treatment of different colonies will become manifest.

The period of concern in this paper is of particular interest as one of transition in the nature of British imperialism. Specifically, after 1830[2], there was widespread recognition that direct involvement the UK in colonial affairs was creating tensions. Throughout the empire there were occasionally open rebellion; in settler colonies there was pressure for self-governance and for recasting the empire as an "imperial federation" (Curry, 1924: 219-234). At a minimum, commentators such as Bell (1859: 459) suggested, if:

> "… no government, of whatever shade of politics could be prevailed upon to part with such sources of power and influence [i.e. to allow colonial self-rule], at all events let the colonies be governed on principles more consonant to sound philosophy and human reason than those on which our past colonial government has rested."

However, the rhetoric of the "new imperialism" was difficult to implement as liberal philosophies encountered the realities of the colonies and the variation in their cultures and conditions (Mehta, 1999; Pitts, 2005). Reinsch (1905: 88), noting the disputes between the UK and colonies over finances in this period, suggested that "[t]he technical difficulty of apportioning such contributions among the colonies also stands in the way of the achievement of a satisfactory plan". The practices that emerged in relations between

[2] Curry (1924) and others have noted in importance of the "theorists of 1830" in bringing these issues into policy circles.

the UK and its colonies during this period reflected the dilemmas of resolving both technical issues and the tension between empire and liberalism.

My review of the "imperial accountancy" literature leads me to examine the effect of the cost allocation system on the distribution of postal costs between the UK and its colonies, and on the distribution of costs to settler (particularly Australia) versus non-settler colonies (focusing on India) served by the Eastern Mail Service. The assessment of whether cost allocations procedures were "biased", however, can only be made in comparison to a baseline of theoretical cost allocation systems. Given the problématique described above, the baseline that needs to be developed is one consistent with the liberal economic philosophy of the day; this is the task to which I turn in the next section.

Liberalism, Empire and Cost Allocation.

Much scholarship on the relationship between the UK and its colonies in the period under consideration has focused on the apparent contradiction between the liberal economic and social philosophies that were gaining prominence in the UK and the continued existence of Empire. The work of Adam Smith, Edmund Burke and James Mills, for example, were reflected in the 1833 abolition of slavery and the 1840 repeal of the Corn Laws allowing free-trade in grains (i.e. import into the UK without tariff). Yet there is considerable debate whether the liberalism evident in UK domestic policies was applied to the colonies, or, in fact, how the continued existence of an empire could be reconciled with these policies (Mehta, 1999; Pitts, 2005). The allocation of costs between the UK and its colonies provides a concrete setting in which the confrontation between Victorian liberal ideals and colonial realities may be observed.

In order to evaluate the nature of the cost allocation system put in place between the UK and its colonies, I must develop a baseline to understand what this system would look like if it was implemented consistent with an economic liberalism/free trade philosophy. Although formal theories of cost allocation were not developed during this period, the development of economic models of cost allocation after World War II is consistent with the basic principles of economic thought during the late Victorian era, i.e. it is based on the assumption that the best economic decisions arise from interaction between independent agents acting on their own self-interest: Adam Smith's "invisible hand" operating through the use of cost allocations as price signals. As Mehta (1999: 45) observes: "…the world we live in is substantially molded by the triumph of a liberalism with its rationalistic certainties." I identify basic insights from the economic literature on cost allocation as a proxy for the liberal economic principles that might be reflected in colonial cost allocations[3].

Cost allocations have been described as "arbitrary and incorrigible" (Thomas, 1978) but this does not mean that they are not important in decision-making and for controlling managerial behaviour (Zimmerman, 1979). In its pure form, cost allocation represents the division of a fixed or joint cost between multiple parties that benefit from the incurrence of the cost. For example, the cost of information technology investments may be divided among multiple users within a firm even though the cost is fixed. Similarly, in transportation and communications networks, the cost of infrastructure may be allocated among users (Oregon, 2007). These allocations have distributional effects in

[3] The assumption is that acting consistently with liberal economic philosophies would tend to lead in the direction of the procedures predicted by these theories. This is a theoretical baseline and does not imply that actors had knowledge of these models. The predictions sought are therefore very general characteristics of cost allocation systems consistent with liberal economic thought and not precise analytic results.

that they transfer wealth between units and efficiency effects where they affect operating decisions by changing the price of engaging in activities.

Cost allocation problems typically arise within administrative units such as firms or governments, and can be resolved by administrative fiat if necessary. Agency theory suggests, however, that inappropriate allocations can send the wrong signals for decision-making and create incentives for misaligned behaviours (Zimmerman, 1979). These concerns provide incentives for administrators to seek out cost allocation procedures that generate decentralized choices consistent with management preferences regardless of their power to impose costs. When cost allocations involve international business units, often the resolution of cost allocation problems is determined by tax efficiency and currency restrictions rather than operational considerations (United Nations, 2001). Cost allocations allow profit to be recognized in different jurisdictions and there may be advantages to the parent company of realizing profit in one country rather than another. These issues, however, are not of concern in this setting as it predates contemporary concern with international tax regimes and deals, for the most part, with sovereign countries that could not impose direct taxes on each other.

There have been numerous theoretical models developed for cost allocation problems. The usual context assumed is one in which each unit could undertake an investment, or contract for a service, independently but there are cost advantages to jointly engaging in the investment or service. The joint costs/cost savings of the service must then be allocated among each of the participants. This creates a range of possibilities ranging from one party capturing all of the gains from the joint venture to an equal division of the savings among the parties. Although these models were developed long after the decisions analyzed in this paper were made, the logic of the models is consistent with the free trade model being advanced in Victorian society at the time (i.e. economically motivated trade between independent self-interested actors).

The key starting point for identifying rational cost allocations in the academic literature was Shapely (1953) who identified a solution to the problem of sharing the surplus generated in cooperative games that had desirable economic properties. Callen (1978) and Billera *et al* (1981) provide a restatement of Shapely's work in the accounting literature focusing on procedural issues. Lemaire (1984) provides a simplification of these axiomatic approaches that capture the essence of their underlying logic. He suggests two principles that can be applied to any rational allocation scheme:

1. Individual rationality – no party will bear costs greater than those incurred to undertake the activity by itself.
2. Collective rationality – no party should be charged less than its marginal cost for the service as this would require one party to subsidize another.

The bounds provided by Lemaire's (1984) axioms provide a space for possible solutions that have been explored with a variety of game-theory methods. In the context of the allocation of network costs (such as the Eastern Mail Service), studies such as Fishburn (1991), Skorin-Kapovy (1998) and Özener and Ergun (2008) provide characterizations of "fair cost allocation schemes" that presents the individual with a cost that is less than the stand-alone cost of providing the service but at least equal to the marginal cost of that individual using the service. In this situation no individual will leave the network to establish their own supply of the resource so the network will be stable. The literature has not demonstrated specific allocations that work in all circumstances

(Skorin- Kapovy, 1998: 33) so my analysis of the cost allocation procedures put in place for the Eastern Mail Service will be limited to their consistency with broad principles rather than focusing detailed outcomes for individuals within the network.

Specifically, if the cost allocation procedures are consistent with the late Victorian emphasis on free trade (i.e. arm's length contracting) and the role of the colonies as independent economic actors, I expected the allocations will have the following characteristics: the allocation will be based on the costs incurred, all costs will be allocated, the allocation procedures will be monotonic (i.e. greater use of the system will result in more costs allocated), the amount allocated to any unit will be bounded by, at the lower end, the marginal cost of the service and, at the upper end, by the cost to each unit of providing the service on a stand-alone basis. If the cost allocations approach these conditions, the analysis will focus on the process by which this was achieved; if the cost allocations vary from these conditions, the analysis will identify the specific institutional factors that directed cost allocation in the manner observed. In either case, the ultimate purpose is to understand the development of cost allocation procedures in the specific context of colonial relations.

The Royal Mail and the P&O

The flow of international mail between the UK and its Far East colonies (India, Ceylon[4], the Straits Settlements[5], Hong Kong and Australia) in the mid-1800s was routed through the Peninsular and Oriental Steam Navigation Company (P&O). The mail contract was coupled with the transport of passengers and commercial cargo but was a

[4] Ceylon is now known as Sri Lanka.
[5] The Straits Settlements were reorganized in 1946 with Singapore continuing as an independent nation and other settlements being absorbed into Malaysia.

profitable business for the company[6]. The P&O gained the first international mail contract from the UK Royal Mail in 1837 (between the UK and Ireland) and gradually expanded its services until by 1845 it was delivering mail to India and Hong Kong, and, by 1852, to Sydney, Australia. The route from the UK to India and the Orient was known as the Eastern Mail Service. Figure 1 provides a map of the routes followed by the P&O (and competitors) in its Eastern Mail Service.

[Figure 1 about here]

The contract for mail services was signed between the UK Imperial Post Office and P&O. The benefit of this service, however, was realized by both the UK and the Colonies served by the mail service. The UK Treasury, on behalf of the IPO, entered into discussions with the UK Colonial Office[7], which was formally responsible for the administration of the colonies, regarding how the costs of this service should be divided between the UK and the colonies. The allocation of costs between domestic postal services, however, proved problematic as any allocation was "arbitrary and incorrigible" (Thomas, 1978). Over a period of 40 years, this issue was discussed in parliamentary hearings, diplomatic letters, arbitration proceedings and in the public press generating over 1500 pages of reports, transcripts of hearings, letters between actors and submissions by competing interests. Because of the adversarial nature of these processes, the data provides a thorough commentary on the alternatives considered, underlying

[6] A key feature of mail contracts was a requirement for scheduled service rather than, as was typically the case, delaying sailing until the ship's hold was full. This feature was used to justify "subsidies" from government to run the service.

[7] The Colonial Office existed as a separate UK government department from 1854 to 1925 reporting to the Secretary of State for the Colonies. Within the Colonial Office, a separate India Office, funded out of revenues from India, existed from 1858 to 1937. There was also throughout this period a separate UK Foreign Office which dealt with other independent countries. The period with which we are concerned thus operates under a consistent state structure throughout. Hall (1937: 228-230) has argued that the existence of a bureaucracy dedicated to colonial affairs, moderated the UK position and encouraged bargaining over issues affecting the colonies rather than imposition of UK preferences.

assumptions and consequences. The completeness of records could also be tested by examining duplicates of collections held in the archives of different actors.

Imperial Cost Allocation Procedures: A Chronology

One justification for the continued existence of empire in the late Victorian era is rooted in a paternalistic view of liberalism (e.g. in de Tocqueville's and J.S. Mill's defense of the British Empire); people and institutions must develop the capacity to exercise freedom in social and economic affairs prior to being given that freedom (cf. Hindess, 2001; Sullivan, 1983; Ferguson, 2003, 2004). This view calls for an explicitly path dependent approach to understanding and exploring institutional change affecting the relationship between the UK and its colonies. There is of course the question of whether or not the colonies ever achieve the conditions necessary to be granted freedom, and how, and by whom, attaining that status is judged. In the meanwhile there remains

> "…the morally, politically, and rationally justified ambivalence of liberalism for time being remaining imperial. This project is infinitely patient, perhaps even secretly counting on its own extended incompetence, of not getting there and hence permanently remaining in between" (Mehta, 1999: 30).

The empirical work presented below thus takes a chronological approach to presenting the data, taking care to identify the way in which, if at all, commitments in one set of negotiations and changes in the capacities of each party affected the ongoing development of cost allocation procedures.

The chronology of events concerning the allocation of costs to parties involved in the Eastern Mail Service is set out in Table 1. There are four key events: (1) the Report of the Select Committee on East India Communications in 1866; (2) Lord Halifax's arbitration of the dispute between India and the UK over cost allocation in 1876; (3) Lord Morley's arbitration in 1886 that brought cost and revenue allocation issues together; and (4) Lord Balfour's arbitration in 1905 that considered the effects of changes in transportation technology and the introduction of the Universal Postal Union (UPU) on cost allocation procedures, and extended the logic of cost allocation to all colonies using the Eastern Mail Service.

[Table 1 about Here]

From the inception of the Eastern Mail Service, the allocation of costs was based on an assessment of the costs and benefits of the service provided. Initially a broad view of that cost/benefit calculus was adopted:

> "…the principle upon which the cost of the Eastern Mail Service has been divided rests upon the fact that the Service is organized for commercial and political reasons, as well as for postal reasons, and that the intercourse promoted by it is a matter of equal interest to the Mother Country and to the Dependencies with which communication is maintained" (Smith, 1904: para 10, referring to the origins of cost sharing).

The detailed procedures used to operationalize this principle and what should be considered as part of the costs and benefits of the service changed over time as summarized in Table 2. Between 1844 and 1866 the cost of the Eastern Mail Service was divided equally between the UK and India. Mail deliveries to small colonies along the route, such as Gibraltar and Malta, and to points further east of India, including the Straits

Settlements and Hong Kong, were not charged for the service. In 1866 this situation was revisited by a Select Committee on East India Communications.

[Table 2 about Here]

Select Committee on East India Communications, 1866[8].

The Select Committee was convened to examine the costs of providing telegraph and postal service between the UK and its Far Eastern colonies and to consider proposals for changes in each service. In particular, it heard evidence on the subsidies paid by the IPO to the P&O for carrying mail on its scheduled sailings – a recent innovation after the responsibility for international mail transport had been transferred from the Admiralty to the IPO in 1861. It also considered how these costs should be divided among the various colonies benefitting from the service. This was particularly an issue to India which, because of improvements in domestic rail service, wished to withdraw from the use of the service east of Bombay which, it proposed, should be the terminus for all mail between India and the UK. The Indian Post Office asserted that it would be less costly for them to move mail from Bombay by rail to other points in India rather than having the mail taken by ship, as part of the Eastern Mail Service, to Calcutta and other ports along the eastern coast of India.

The overall level of costs was not a particular concern to the committee (in spite of the IPO's advocacy for a purely commercial view of the service)[9]. They reaffirmed the

[8] The committee consisted of Mr. Crawford (Chair), Lord Stanley, Mr. Guilders, Lord Montagu, Mr. Stansfield, Admiral Seymour, Mr. Ayrton, Mr. Turner, Sir Rawlinson, Mr. Baillie, Mr. Weguelin, Sir Bright, Mr. Laird, Mr. Moffat, and Mr. Schreiber (http://hansard.millbanksystems.com/commons/1866/feb/27/select-committee-moved-for-1).

[9] One justification for the subsidies given was that the mail contracts gave the UK the right to use the mail steamers for military purposes in times of war and the refuelling ports maintained for the mail routes were also used by military vessels. This paper will not address the question of the amount paid to P&O but, taking this as given, focus on the allocation of that cost. There were significant challenges to the amount of

importance of the relationship with P&O and defended the subsidies provided to support the Eastern Mail Service, noting that the:

> "…question of profit and loss, within reasonable bounds, is a consideration entitled to little weight in the case of so important a postal service as that between England and India." Select Committee (1866: 7)

Meeker (1905) suggests that the amount charged by shipping companies for mail transport was based on "value of service to the government, and not cost of service to the undertaker." Although by comparison with the subsidies paid by other countries for the transport of international mail, the UK subsidies were among the lowest charged (Berneron-Couvenhes, 2004). In spite of the lack of concern about "profit" and the total costs of the service, the committee was forced to consider the distribution of costs between the UK and colonies because of the differing positions of the IPO and Colonial Post Offices regarding current arrangements.

> "The establishment of the English mail services on a permanent and equitable footing for all the colonies, each paying a proportionate share of the expense, according to the advantages it derived is no doubt one of the most important questions that could engage the attention of our Colonial Governments. But this will never be attained so long as the feeling of jealousy which has been apparent between some of the colonies remains.[10]"

The starting point for the Committee's deliberations was the premise that the interest of the UK in the mail service was equal to the interest of the colonies and hence

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compensation and the process of tendering the contract (e.g. Orient Steam Navigation Company, 1879; Selwin-Ibbetson, 1879).

[10] Sydney Morning Herald November 21 1866 Column 2, Page 3 reprinted from the Brisbane Courier (November 13, 1866) "The ocean mail routes"

the UK would bear 50% of the total cost of the Eastern Mail Service. The focus of the hearings concerned two issues with regard to the share to be paid by the colonies: first, should the apportionment of costs be based on the use of the service versus broader social and political considerations; and, second, should the costs be covered by users through postage rates versus by the general taxpayer through subsidies. Considerable testimony was heard suggesting that the postal service should be considered as a necessary part of maintaining the Empire and funded in like manner:

> "The ability to send dispatches to their servants is as much a matter of defense as a line of battleship is and it would be absurd to expect a line of battleship to pay its own expenses" (Select Committee, 1866: 41)

The argument was also made that the postal service had immense benefits to commerce; trade statistics were produced to demonstrate the flow of goods between the colonies and the UK to support the argument that the UK benefitted greatly from an efficient postal service (Select Committee, 1866: 560).

A key concern was the allocation of cost to India. Between 1854 and 1866 India and the UK shared the cost of the Eastern Mail Service equally. This arrangement had been imposed unilaterally by the UK Treasury on the East India Company against their wishes and continued after the Colonial Office took control of India following the Indian Mutiny in 1857 (Select Committee, 1866: xxv). Other colonies that benefitted from the Eastern Mail Service, including Ceylon, the Straits Settlement, Hong Kong and Australia, paid "sea postage[11]" to the UK to use the service but did not directly contribute towards the subsidies. Originally, India's share of the cost of the Eastern Mail Service east of India was justified based on the use of the system associated with the opium trade

[11] Sea postage was a 1pence levy per letter in addition to normal postage rates.

between India and China. The opium trade however was in decline after the Taiping Rebellion (1850 to 1864) in China. In addition, the development of the railway system within India reduced the need for the Eastern Mail Service to deliver mail at multiple ports around the coast of India.

India argued, on the basis of the declining benefit of the service to the Indian people, that the allocation of cost should be reduced. Countering this argument, the IPO focused on the impact of any change of allocation procedures on the costs attributed to them as a business. An exchange between the Chair of the Committee and Fred Hill, Assistant Secretary of the IPO, captures this framing of the issues:

> "…the Post Office does not consider this a matter of profit and loss, as a private individual does it? – Yes. Then it is a profit and loss department to the Government – Yes. And may we consider the Government then as carriers for the public? – Exactly. Seeking if they can to earn profit out of it? – Yes; at any rate guarding against losing." (Select Committee, 1866: Paragraphs 65-68).

The Committee noted that the focus of the IPO on its own costs was an obstacle to reaching agreement with the Indian Post Office which was concerned with the principle that the allocations reflect the use of the service:

> "Then, in point of fact, the profit and loss principle, which you stated at the commencement of your evidence, stands in the way of the Indian community getting this advantage? – Very much in the way" (Select Committee, 1866: paragraph 208).

The examination continues, citing a statement by Sir Charles Wood (Secretary of State for India) that the postal system supports the growth of a country and hence should not be considered "as merely affecting the charge on Imperial revenues":

> "It has been the perception of the bearing of increased postal communication on the wealth and progress of a country that has induced statesmen of late years to consent to fiscal sacrifices for the purpose of obtaining it. We may infer from that, may we not, that the Indian Office does not share in the profit and loss views of the Post Office? – I presume so; it is a fair inference I think." (paragraph 212)…"We take the simple view that some one must pay for the service; and the question is, whether it shall be paid for by those who are chiefly interested in the communication with India, or whether it shall be paid by the taxpayers generally of this country and India" (paragraph 214).

The Indian Post Office demonstrated that if mail to India was delivered only to Bombay that there would be a large decrease in the miles travelled by Indian mail. This was used to make a claim for reduced cost allocation or barring that, the Indian Post Office would initiate its own transportation between Aden, the terminus of the Suez Canal[12], and Bombay. The IPO however pointed out that the cost of the mail contract with P&O was not based on miles travelled and no savings would be realized if the Indian mail was removed from the ships.

[12] The Suez Canal opened in November 1869 but was under construction at the time of these hearings. Prior to the opening of the canal, mail was carried overland between the Mediterranean and Red Sea requiring separate fleets on each side of Africa or taken around the Cape of Good Hope. The canal dramatically reduced costs and increased the speed of delivery of mail (Orient Steam Navigation Company, 1879).

It was also argued that the cost to India was trivial when compared with the commercial and political benefits received. The IPO recommended that the Indian Post Office increase its postage rate to maintain its payment for the Eastern Mail Service. This possibility was rejected as it "would impose some hardship on a considerable portion of the European community in India and would be very unpopular" (Select Committee, 1866: 285). The Colonial Office further countered that:

> "The government of India have never considered so much the exact amount of the charge laid upon them, as they have had regard to the principles upon which the adjustment has been made" (Select Committee, 1866: para. 2528).

The cases presented by the IPO and Indian Post Office converged on certain basic principles. First, that the division of costs of the Eastern Mail Service should be related to the use of the service by the posts and not ultimately on the economic and political benefit that the posts may facilitate. This was an important distinction that served to create an identity for the post office consistent with liberal views of commercial services. Second, the division of costs had to reflect the contracting alternatives that each post office had open to them. Specifically, on one hand, the opening up of the Indian railways provided a clear case where a portion of the Eastern Mail Service was no longer of use to India and could not logically be charged to them. On the other hand, the Eastern Mail Service existed as a contractual unit and the reduction of India mails would have no impact on costs (i.e. the marginal cost of the India mails was essentially zero in the short-run). The marginal cost was clearly less than the cost of India replacing that service with its own ships or using the railroads. This principle clearly recognizes the sovereignty of

India; i.e. the right to make decisions in their interest even where such action may have an adverse effect on the UK.

Ultimately the Committee recommended that India be relieved of costs that had been attributed to it on the basis of political and commercial benefits (the costs of the Eastern Mail Service east of Bombay). A letter from Treasury (1867) to the Secretary of State for India reaffirmed the basic principle stating: “The principle adopted throughout has been that each proportion of the cost be divided ratably amongst the correspondence for the benefit of which the cost is incurred.” The focus of this statement is the “correspondence” and not the country or individuals who receive that correspondence. By separating the benefits derived by users of the postal service from the direct revenues from postage and the costs of delivery, the Committee simplified future discussions. It also, however, implicitly shifts costs onto the colonies if we assume that the benefits of the postal system were primarily enjoyed by UK investors and administrators maintaining contact with activities in the colonies.

The Select Committee was advisory only and could not direct Treasury or the IPO to adopt any particular set of allocation procedures. In practice, the allocation of postal costs between the UK and its colonies after the release of the 1866 Report was based on three factors: the identity of the colony, the number of shipments and the number of letters. For example, the situation remained that India was the only colony that was charged part of the subsidies paid for the Eastern Mail Service. Under the new schedule, mail from the UK to India was sent every week while mail from the UK to Australia was sent every four weeks. The allocation process first divided the cost by the number of sailings and then within each sailing, divided the cost by the number of letters to and from each destination. By this method the cost of the weekly transit devoted to India was assigned to India separately as an "attributable cost" (Shillinglaw, 1963) and the cost of the monthly shipment was apportioned between India and Australia based on the volume of mail on those ships. The total cost allocated to India by this method was reduced compared with the earlier equal division between the UK and India.

The allocations were based on the flow of letter mail as "the best practical index of the general value of the service to a community" and "because it represents a presumably equal interest whether it is sent or received" (Smith, 1904: 2). This choice of allocation base however shifts costs from settler colonies, which generated nearly equal volumes of mail between the UK and colony, to non-settler colonies where the imbalance of mail was primarily from the UK to the colony (particularly the flow of published material).

The other classes of mail that are ignored by this choice of allocation base are parcels and printed matter[13]. In both cases the net flow was from the UK to the colonies. The choice of letters as a measure of activity thus shifts costs from the UK to the colonies because of the variation of non-measured activities between these two parties. It was noted however that because the subsidies were fixed for the period of the contract, they are not affected by the weight of mail or number of items. In fact, in the long run, the cost per letter was declining because of improved efficiency of transportation (Smith, 1904: 2). In other words, the argument was made that the marginal cost of additional mail was

[13] It was common even within domestic mail systems to provide a low postal rate for printed matter on the basis that such material formed the basis for informed citizens, competitive markets and the moral and cultural development of the nation (Kielbowicz, 1990). The idea that such mail gave greater benefit to the receiver than the loss on the cost of delivery may have been implicit in the choice of allocation base but the decision by the Select Committee to focus on postal cost and benefits alone undermines such arguments.

essentially zero during the contract period. This point was made explicitly with regard to Australian mail carried on ships between the UK and India.

> "If you had not the Australian and Mauritius letters to convey as far as Aden and Galle, you would still have to pay just as much for the Indian letters, would you not? – Exactly. Therefore all you can get out of the Australian and Mauritius letters is to the good in the Indian contract? – Exactly so" (Select Committee, 1866, paragraphs 140-141).

When the contract was renewed, presumably higher volumes of mail would affect the average cost, e.g. because larger ships would be required, which would then be reflected in bids for the next contract period. This effect, however, was disguised by the rapidly decreasing unit cost of transportation brought about by improvements in technology. The opportunity cost of unpriced mail was not evident in the cost data.

The new cost allocation system was still seen by the Indian Post Office as prejudicial and in the late 1870s they renewed the discussion with the Colonial Office and Treasury concerning the allocation of costs. The objection raised by India was that the timing of mail shipments was arbitrary – there was no reason that Australian mail could not be included on the weekly sailing – but the size of the fleet was determined by peak capacity demands (Monteath, 1875: 6). Thus the costs of mail to India on a weekly basis are overstated because of the capacity of ships was based on the larger monthly shipments and the decision to ship monthly to Australia was not under the control of India. They demonstrated that although Australia received more mail than India, India was allocated the higher cost.

This objection reflects violation of two of the axioms of liberal economic cost allocation. First, the allocation of cost is affected by the choice of allocation base (particularly, number of letters versus number of sailings results in very different results). Second, the allocations, at least by some measures of use, do not allocate costs according to the use of the service. These violations were taken by India to reflect unfairness in the system that needed to be addressed.

Contrary to the case with India, all other colonies using the Eastern Mail Service paid to the UK a "sea postage" rate of 1 pence per letter (India paid this in addition to the allocated costs) and a further 1pence towards delivery in the UK. The amount owing by India and the other colonies was offset by a 1pence allowance for delivery of UK mail within their borders. Given the lower labour cost in the colonies compared with the UK, particularly in the non-settler colonies, this arrangement would have generated excess revenues compared with costs in the colonies and, in particular, would have benefitted non-settler colonies.

India also objected to the inclusion in the allocation base of routes that had been included in the P&O subsidy because the shipper claimed a commercial need to make the stops when India had other means of delivering mail between these points (e.g. between Galle, Ceylon, and Calcutta, India[14]). These points were rebutted by the IPO using the total cost of the service without a share being apportioned to other countries, i.e. as a stand alone service, as a baseline (Manners, 1876). In other words, this debate highlighted a contradiction between two of the axioms described above: on one hand, the allocation was "fair" in that it was less than the stand alone cost but, on the other hand,

[14] This point also appears in minutes of a public meeting of merchants and citizens in Bombay reproduced in Selwin-Ibbetson, 1879: 7-18)

the allocation system was not symmetrical and allocated costs in ways that didn't have a *prima facie* relationship to the costs/demands for service generated by each country.

In concluding his examination of the cost allocation procedures and the errors in details and in the application of the principle that had arisen, Monteath (1875:2), the Post Master General of India, states:

> "…the results warrant the conclusion of an arrangement with the view of avoiding more or less the compilation of the voluminous statistics on which the adjustment is based, and the labourious working of them out with so many risks of error both in principle and in detail."

This sentence became the focus of the reply by the Treasury and IPO who proposed:

> "…my Lords see no reason to object to an arrangement such as that proposed therein being carried out – namely, that, instead of the present method of adjustment between the Imperial and Indian Post Offices, a fixed percentage of the gross cost of the service should be agreed upon to regulate the contribution to be made by India…". (Law, 1876)

The question of what this "fixed percentage" should be was turned over to arbitration by Lord Halifax after direct discussions between the parties reached a stalemate.

Lord Halifax's Arbitration, 1876.

In 1876 the basis for cost allocation was reconsidered by Lord Halifax based on personal interviews with the key administrators and written submissions. Lord Halifax had been Secretary of State for India (1859–1866) and Lord Privy Seal (1870–1874). The process was conducted in haste as Monteath, the Director General of the India Post

Office, was in the UK but scheduled to return to India. In coming to a conclusion about this percentage, however, Lord Halifax returned to the basic principles underlying the allocation and their implementation in this case (Halifax, 1876). Lord Halifax suggested an allocation based on the miles travelled weighted by the amount of mail carried but this suggestion was not accepted. In particular, the parties did not want a system that needed to be recalibrated each year and they could not reach agreement on many of the disputed points. This was followed by a series of negotiations which set a fixed payment amount by different colonies based on population and other considerations. India was assigned 25% of the costs of the Eastern Mail Routes.

Lord Halifax calculated in detail the allocation of cost to each of the colonies along the Eastern Mail Service route. This was done in spite of the fact that the costs would only be charged to the UK and India. The IPO reports to Parliament during this period include a statement of the "loss" incurred in providing service to the colonies which did not contribute to the subsidies paid to P&O. The loss, as shown in Table 3, was calculated as each colony's contribution (i.e. zero), plus the sea postage received from the colony less the allocation of cost according to Halifax' formulae. The treatment of India clearly differs from the treatment of other colonies in that India was expected to pay the allocated costs while other colonies were not, even though a calculation of their share was available and reported.

In 1876/77 the Eastern Colonies joined the Universal Postal Union (UPU)[15] and consequently reduced their postal rates to the amount stipulated in the treaty and, also as

[15] The UPU was created in 1874 to simplify the flow of mail between "civilized nations." The treaty required all signatories to adopt a common postage rate and tariff scale, and to allow transit of mail across their country as if all UPU members were part of a single jurisdiction. India joined in 1876; Gibraltar and the "British Indian Ocean Territory" joined in 1877; Australia joined in 1907.

specified by the treaty, kept all postal revenues collected within their borders (see also General Post Office, 1887). India's accession to this treaty included a clause that specifically exempts the relationship between the UK and India from this requirement. In other words, the existing agreement between India and the UK that they would pool revenue from mail traffic between the two countries would continue in force.

Given the changes brought about by membership in the UPU, the UK argued that the colonies should make a contribution towards the subsidies on international mail shipments in lieu of sea postage (which was discontinued under the terms of the UPU treaty). This proposal was not implemented at the time because the application of the cost allocation procedures recommended by Lord Halifax suggested that the Straits Settlements and Hong Kong should pay more than Ceylon. The Secretary of State for the colonies at that time objected to this as Ceylon was "the wealthiest and most populous country" (Imperial Post Office, 1904: 3). This statement may reflect a view of the cost allocation as a tax on the colonies rather than a fee for services received (in essence, he had refocused the cost object from the mail to the country). He proposed an equal payment by each colony but this was rejected. A resolution was reached in 1884, and applied to the 1880-1888 contract period, that Ceylon, the Straits Settlement and Hong Kong would each pay a fixed amount each year based on the application of Lord Halifax's principles to the 1879 data. This compromise continued in force for the 1888-1898 contract with P&O as well.

The provisions of the agreement between the IPO and India were to continue through to the expiry of the contract between the UK and P&O lines in 1880. In 1879, when the new contract was being negotiated, correspondence between India and the UK was undertaken to create a new cost allocation process but by 1885 no agreement on a formulae had been reached so a compromise was put in place with India paying a fixed sum of £68,000/year until the new contract ended in 1887. In 1888 Australia petitioned for a weekly delivery service and a contract was negotiated with both P&O lines and the Orient Shipping Company to provide service running between Ceylon and Australia for a subsidy of £85,000/yr. The Orient Company did not operate between India and the UK but otherwise duplicated the service provided by P&O.

Discussions over cost allocations between India and the UK continued until 1890 when again the matter was resolved by a compromise where India would pay a fixed sum of £40,000/year. Immediately after this compromise was reached, the rate on international postage was reduced by 50% by the IPO. This change was anticipated to result in a great increase in the volume of mails and R.A. Cross, the Secretary of State for India, proposed reopening the discussion on the division of costs and revenues.

H.M. Kisch, the Director General of the India Post Office, brought forward a new proposal with three characteristics:

1. India would agree to give up its claim to one-half of the revenue on mail from Britain; each party would follow the UPU rules of keeping their own postage collected.
2. India's contribution to the loss on the Eastern Mail Service would be set at £59,000/yr
3. India would pay 1pence per letter to the UK to cover the cost of train transit across Europe.

This proposal was accepted by the UK and applied to the contract with P&O in force until 1898. Thus during the period 1866 to 1898 the allocation of costs was based on a negotiated agreement that was not firmly anchored in a set of principles nor in actual data about the costs incurred or the activities used. In each case that a compromise was reached on a fixed amount, however, the amount was based on an assessment of the relative use of the service by each party.

In 1897 India petitioned for an arbitration of the ongoing dispute about the allocation of costs to be applied to the next P&O contract between 1898 and 1905. In this case however it was able to draw on the UPU Treaty provisions to push its position. India suggested that the UK should take full and sole responsibility for its shipping contracts and that the colonies should use this system under the terms provided for in the UPU Treaty. The Treaty allows for a low, fixed rate per kilogram of mail transported over another country's mail system. In all likelihood this would have meant a significant reduction in the payment to the UK from its colonies.

The UPU clause assumes that the party originating mail pays for the cost of delivering the mail to the port of entry of the destination country. The history of the relationship between the P&O line and the UK, however, complicated this because it was not seen as contractually efficient to have P&O negotiate a separate contract with each colony for its mail services. This meant that the UK was acting as a shipper on behalf of other nations but it might not take on this role if it resulted in a loss based on contributions from the colonies based on UPU transit rates.

Lord Morley's Arbitration, 1898

Under the new contract with P&O, the total subsidy for the Eastern Mail Service was reduced by £20,000 per year beginning in 1898. The Parliamentary committee which recommended acceptance of the contract attributed £85,000 to the Australian portion of the route and £245,000 to the rest. This was based on the fact that the addition of the Australia service had originally been contracted at £85,000 and a parallel contract with the Orient Company had been tendered at the same amount for the new contract term. In effect this attributed the full cost savings to the India section of the route and none to the Australia section.

Australia argued that they were entitled to some of the cost savings on the entire contract. India, however, argued that more of the cost of the service should have been attributed to Australia under the original contract. They felt that the original contract reflected the marginal cost of the additional route but, given the service was now being designed to meet the total demand from Australia and India, a larger portion of the costs was due to Australia. Lord Morley, who would become Secretary of State for India in 1905, was asked to arbitrate the issue. The case for the UK was presented by Colonel J.J. Cardin, Controller and Accountant General of the Imperial Post Office, while the case for India was presented by H.M.Kisch, Post Master General of Bengal. Each of the parties also submitted written arguments.

Lord Morley drew upon Lord Halifax's original principles in crafting his recommendations. He suggested that:

1. The route be divided into sections between each port of call
2. The mileage in each section by multiplied by the number of voyages per year through that section to obtain a total of mileage.

3. The total subsidy paid to P&O was then allocated to sections according to the total letter-mileage carried.
4. The UK would pay for ½ of the cost of all sections.
5. The remaining costs were allocated to the colonies based on the number of letters received and sent, and the specific sections that those letters moved through.
6. In the case of mail between India and the UK, he ruled that postage revenue should be pooled and divided equally between the countries. This recognized the discrepancy of non-letter mail flow between the countries which was not captured in the procedures above.

In submissions by the parties to the arbitration, both the denominator and numerator of the allocation process were challenged. The numerator concerned the total costs of providing the service while the denominator concerned the units of activity over which the costs would be allocated. These two components, however, were not independent as some costs were argued to be attributable to specific activities and hence should be allocated to some countries and not others. This meant that the apportionment of total costs between activities was a key point of contestation.

For example, one aspect of the service provided was the speed of passage. This was both a cost of operation and a dimension of the benefit received.

> "The rate of speed is undoubtedly the chief factor considered by contractors is estimating the cost of different services and logically it should be equally considered in apportioning the subsidy" (Colonial Office 1904, paragraph 14).

The argument was made that the cost of coal was a primary driver of cost and that the consumption of coal was driven by the speed of the ship. On the other hand, the ship owners noted that the speed of passage was a key concern for passengers and hence passengers paid more for faster passage. The Treasury argued that the use of coal should be discounted for that proportion used for lighting, heating etc of the passengers quarters and not used directly to maintain speed. This they estimated amounted to about 10% of the coal consumption (no rationale is given for this estimate). They also argued that the additional speed would reduce the time in transit with savings in labour cost and depreciation.

Lord Morley proposed the following solution to the issues raised:

1. He maintained the distinction between the original subsidy for the Eastern Mail Route and the amount for the Australian mail delivery that was added in 1888. This meant that the cost saving on the new contract would only be shared by India and the UK.
2. The allocation of costs would be based only on those portions of the Eastern Mail Route that connected a colony with the UK. Thus India would not be charged for any part of the route to the east of India. Any mail from a colony over the routes that did not connect the colony to the UK would be charged at the UPU rate (i.e. as a marginal cost addition).
3. The allocation of costs was to be based on the proposal from the UK Post Office, i.e. in accordance with the following:
    a. One-half of the cost is charged to the UK

b. The remainder is distributed among the colonies taking into account:
    i. The number of segments of the total route and the distance in each segment
    ii. The proportion of total letters flowing through that segment going to or from a colony.
    iii. The frequency of delivery/number of shipments.

Figure 2 provides an example of the application of this logic to the allocation of costs.

[Figure 2 about here]

Lord Morley's award relieved India of the cost of the Eastern Mail Service for all points east of that country. One consequence of this would have been an increase in the costs to other colonies. This was seen as raising costs to other colonies due to factors beyond their control and as a result "the additional burden has, in each case, been assumed by the United Kingdom" (Imperial Post Office, 1904: 5).

Lord Morley was also presented with evidence that the measure of activity used to allocate costs was flawed. For example, while the UK sent 96,300 lbs of letters and post cards to India in 1896/97 and India sent 83,800 lbs to the UK, the UK sent 1,561,200 lbs of printed material to India while India sent only 259,400 lbs to the UK. The use of letters to allocate costs caused India to bear more of the costs than would be justified by taking all categories of mail into account. India proposed that mails should be shipped according to the UPU transit rates or that, contrary to UPU practice, that postal revenues should be pooled and divided equally between the two countries (as had been the case between 1857 and 1891). Morley recommended pooling revenues (Morley, 1898: 7).

Lord Balfour's Arbitration, 1905.

The final arbitration of the costs of the Eastern Mail Route was heard before Lord Balfour of Burleigh[16] in 1904/5. This hearing concerned the cost allocation to the smaller colonies along the route (e.g., Ceylon, the Straits Settlements and Hong Kong). This case took the resolution of the cost allocation procedures between the UK and India by Lord Morley as a starting point even though the smaller colonies, represented by Alfred Lyttelton, Secretary of State for the Colonies and Mr. Johnson[17], believed that these allocations were unfair and they would have preferred to reopen the entire cost allocation process.

> "The difficulty of deciding the question submitted to me arises in no small degree from the fact that…the Colonial Office does not accept the justice of the principles by which the Australian contribution…and Indian contribution…have been fixed" (Balfour, 1904: Para 11)

At a minimum, the colonies wanted the question of their fair share of the total amount addressed rather than their share of the balance taking into account the settlements with Australia and India. Balfour ultimately ruled that his mandate prevented him from approaching the question in this way and the amount of the Australian contract

[16] Lord Balfour (Alexander Hugh Bruce) had resigned from Cabinet in 1903 in a dispute over UK tariff policies. He was an advocate of free trade and opposed a proposed policy of Imperial preference that would have given colonies greater access to UK markets than other countries.

[17] Although the documents only refer to him as "Mr. Johnson" this is most likely George W. Johnson, Principal Clerk of the Colonial Office with responsibility for the "eastern department." (http://web.ncf.ca/fm120/History/Johnson_Family/GWJohnson(1857-1926).html).

and the amount agreed to by India were taken as given. Balfour did comment, however, that the Australian contract involved two shipping lines and therefore "likely to be done for them at the lowest margin of cost" (Balfour, 1904: 5) while the P&O contract to serve the Eastern colonies was a monopoly (and therefore might bear higher costs). In addition, P&O was unable to provide an apportionment of costs between the two parts of the contract that it had undertaken and would not bid on one separately from the other (Imperial Post Office, 1904: 1). Based on this he decided to treat the two parts of the route as distinct and left the allocation of cost to Australia as is.

The colonies provided extensive examples of alternative allocation systems based primarily on the differences in speed, and hence coal consumption, on different parts of the route. These adjustments lowered the allocation to the colonies where conditions required more careful navigation and increased the allocation to India and Australia by virtue of the higher speeds at which the mail steamers could travel from Suez to each of those destinations. These alternative allocation systems could reduce the cost attributed to the smaller colonies by as much as 56% of the current amount.

In part because of the constraints of the pre-settlement of the India and Australia cost allocations, Balfour concluded:

> "I am afraid I am not able to suggest any principle which would be thoroughly logical having regard to all the difficulties of the case, and I am, therefore, reduced to suggesting an arbitrary figure to be taken as the basis for settlement" (Balfour, 1904: 6).

Furthermore, although he accepted the logic of alternative allocations based on the actual costs of transport (based on the speed of ships and the actual ships used) he rejected this approach since the only source of information would have been the P&O:

> "…the only source from which any accurate division of cost can be obtained is from the Peninsular and Orient Company itself…the company has professed its inability to undertake the task, and it is obvious that if they cannot do it, no one else can make the attempt…" (Balfour, 1904: Para 16)

Ultimately Balfour concludes:

> "I do not feel able to arrive at the cost of one rate of speed as compared with another …it is not possible to make any fair apportionment based on the principle of speed, and I, therefore, reject, as a basis for consideration (this allocation base)" (Balfour, 1904: Para 17)

His settlement imposed the logic of Morley's arbitration to the smaller colonies. The Comptroller and Accountant General of the IPO, R.A. King, who assisted Balfour with the numerical work, recommended that before a new P&O contract was settled, all of the colonies should meet and settle the cost allocation problem (Cavendish, 1905). The principles underlying the cost allocation of the mail route had now become institutionalized. The percentage allocation of cost negotiated under this arbitration was applied to the new contract with P&O the following year and the accounts that remained open were settled on the basis of these amounts.

The range of cost allocations suggested throughout this set of arbitrations in set out in Table 3. The final allocation represents a fixed sum attributed to each colony and paid annually for the entire period of the contract. These amounts are not subject to adjustment based on actual results but throughout the period the principles applied to estimating the fixed amounts allocated are based on the use of the service by each colony. In this manner, the approach approximates a budgeted cost allocation system. A key aspect of the system that allowed adjustments in some periods subject to fixed constraints from prior periods (e.g. the commitments to India and Australia) was that the UK acted as a residual category for allocations: anything that was not specifically allocated to the colonies and accepted by them became a cost of the UK.

[Table 3 about Here]

Discussion:

The case described above informs two literatures: the literature on the role of accounting in the relationship between the UK, as an imperial power, and its colonies; and the literature on the historical development of cost allocation schemes. The period and context examined provides a setting in which the liberal economic and social theories gaining hold in Britain were confronted with the realities of colonial administration (Davidson, 1899). The agreements between countries discussed in this paper were never formalized in treaties but became part of a body of "soft law" that regularized relationships between the UK and its colonies and allowed for a stable postal service within the colonial network. The prolonged negotiation over cost allocation procedures in this case provides an opportunity to examine the process and path by which cost allocation procedures were institutionalized. The evolving nature of the relationship between the imperial center and colonial periphery was instantiated in cost allocation processes.

In order to understand the cost allocation procedures observed, I develop counterfactual expectations of what cost allocation procedures would be consistent with the British zeitgeist of the late Victorian era. I draw on contemporary theory regarding the allocation of common costs but I do not adopt this model in a naïve or instrumental way (Chua and Degeling, 1993) but rather as a reflection of liberal economic and social theory that advocate free trade and social liberties during this period. I use these baselines to understand where and how actual practice with regard to the colonies varied from these expectations.

I examine a setting, the international postal system, in which the cost allocations occurred in a diplomatic context between an Imperial power and its colonies. This context is one in which one might expect that the terms of trade would be set arbitrarily to benefit the Imperial power (e.g. O'Brien, 1988: 188) rather than consistent with the norms of free trade among sovereign nations. The focus is thus on the way that accounting becomes implicated in the confrontation between liberal ideals and colonial realities and in the construction of the sovereignty of colonial nations.

The discussion over cost allocation formulae regarding the Eastern Mail Service was protracted (lasting between 1866 and 1905 when the basic cost allocation principles were institutionalized) and there was considerable disagreement among state agencies – the IPO, the Treasury and the Secretary of State for India -- about how this process should be handled. I show that the direct costs of the international postal system were allocated 50% to the UK. This aspect of the allocation of costs was never seen as controversial by the colonies and remained a constant throughout the period examined. This division of costs is consistent with the broader debates about costing postal services, for example, leading to the UPU Treaty in 1874 (Richardson and Kilfoyle, 2009). The assumption is that each letter will generate a response therefore the flow of mail in each direction should be equal and this justifies an equal division of costs. While this proved roughly true for letter mail between the UK and its colonies, it clearly was not the case of other classes of mail; for example, a six-fold imbalance was noted between the UK and India in the volume of printed matter mailed. The division of cost based on letter mail alone tends to favour the UK and shift more costs onto the colonies.

In addition this assumption is based on a bilateral flow of mail. In this case however the mail is flowing through a multi-point network. In essence the assumption ignores flows between colonies or, equivalently, assumes that these mail flows are a marginal addition to a system designed for flows between the Imperial center and peripheral colonies. The Imperial centric view of the Eastern Mail Service overcharges the UK for the services provided to each participant in the mail network.

The main controversies concerned the allocation of the remaining portion of the cost between different colonies along the Eastern Mail Route from Southampton, UK, via Brindisi, Italy, through the Suez Canal to Bombay, India, onward to Colombo, Ceylon and branching, on one hand, into Singapore and Hong Kong, and on the other hand, into Perth, Adelaide, Melbourne, Sydney and Brisbane in Australia. The case I examine provides evidence on how several specific cost allocation issues were handled in the diplomatic context. These issues included: declining marginal costs, the entry of new users of the service, cost allocation under different market structures, and the mundane costs of developing better cost allocations.

Two general points are important. First, the fact that this issue was settled by negotiation at the highest levels clearly indicates that the UK took its relationship with the eastern colonies seriously and the UK was not inclined to settle the matter simply based on political power. The process acknowledged the legitimate right of colonial nations to safeguard their interests against the interests of the UK. Second, the range of issues brought to arbitration clearly focused on the economics of the postal system and engaged in debate on points that continue to be relevant in the evolution of global communications systems. The existence of the negotiations and the issues that were open to negotiation reinforced the sovereignty of colonial nations and engaged accounting in a way that reinforced sovereign claims.

The issues negotiated in this case reflect changes in technology and international institutions affecting the global communication system. One of the issues in allocating cost was that the technology of transportation was changing rapidly resulting in constant decreases in the average cost of shipping and improved speeds and reliability. When mathematical methods were employed to track the relationship between volumes of mail and costs over time, there typically emerged a negative relationship which undermined empirical bases for allocation: for example, one commentator claimed, incorrectly, that "… it is noticeable that the volumes of mail have no influence on the cost of the service" (Smith, 1904: paragraph 14). This made it difficult to use straightforward, activity based methods to allocate costs (although it is now possible to apply learning curves to such phenomena). An important issue that arose from this was how the UK and colonies should distribute the cost savings from technological change.

The cost allocation procedures that emerged between 1866 and 1905 were also challenged by the changing nature of the users of the service and their capability to provide alternative services. The initial issue that created concern for India was the addition of an extension of the Eastern Mail Service to Australia. This addition meant that there were shared resources (between the UK and India) as well as resources attributable to Australia alone (between India and Australia). The P&O initially bid on a postal contract for the Eastern Mail Service (UK to India, Ceylon and Hong Kong) as a standalone service in 1888 at a cost of £265,000. At the request of the Australian government, this mail service was extended to Australia at an incremental cost of £85,000. In 1898 the contract expired and was rebid. P&O refused to bid on one contract without the other and offered a contract at £330,000 per year, a reduction of £20,000 per year compared with the previous combined cost of the two contracts, and a guarantee of faster service based on improvements in shipping technology. This contract was accepted by the UK Treasury but a dispute emerged among the colonies regarding how the cost savings should be allocated to each to the national post offices benefiting from the service. The P&O was asked to specify the proportion of its revenue it attributed to each stage of the voyage but the company declined saying that it was "impossible to separate the sections as desired" (Balfour, 1904: para.7).

The dispute emerged initially between India and Australia. India believed that more of the cost of the entire voyage should be attributed to Australia while Australia argued that a portion of the cost reduction should be attributed to the Australian leg of the journey using the original incremental contract amount as the baseline. India believed that the addition to the route was being subsidized by the service provided under the original contract. When the total contract was renegotiated at a lower rate reflecting improvements in technology, the amount attributed to the India-to-Australia section was treated as a constant, with all of the gains credited to the UK-to-India leg of the journey. Australia, meanwhile, expressed concern that this did not provide them with a fair share of the gains.

The solution to this problem was to treat the Australian leg of the service as a separable activity but also to act as if the addition of Australia to the contract did not add economies of scale (consistent with Shapely, 1953). This treatment is consistent with the experience of the post office that additional volumes of mail did not add additional costs. In part this experience reflects the fixed fee contract between the post office and the shipper but also, as discussed below, the improvements in technology that allowed the shipper to make lower bids for the contract in successive periods in spite of improved performance and higher loads (i.e. faster trip times, more on-time delivery and larger mail volumes).

The original cost allocation procedures focused on the relationship between the UK and India as the key beneficiaries of improved communications. Smaller colonies that were served along the way were provided with service without cost attribution. Initially, this may have been a reflection of the needs of the fleet for refueling and replenishing. P&O built port facilities specifically to service their fleet in various British colonies and stopped there for purposes other than the delivery of mail. The delivery of mail was truly a marginal activity.

This changed however as transportation technology improved and the endogenous demand for services increased. For example, the shift from sail to coal power extended the range of vessels and made their schedules less dependent on weather and tides. These changes would have allowed mail ships to by-pass some ports if the demand for mail was truly marginal. The other factor however was the increase in the populations and economic prosperity of the colonies which increased the demand for mail service. Under these conditions, the smaller colonies became part of capacity planning exercises and hence became part of the reason for the average cost of services provided and subject to the allocation of those costs. The issue of capacity demands versus actual use was clearly recognized in India's statement on the allocation of costs between itself and Australia.

In spite of the eventual inclusion of the smaller colonies in the cost allocation process, the flow of mail between colonies was not included in the allocation base. These activities continued to be regarded as marginal compared with the core service between the UK and its colonies. Initially the use of this service was paid for by "sea postage" which was added to a letter travelling by steamer between countries. This amounted to about 1pence per letter. After the majority of eastern colonies joined the UPU in 1877 however this tariff was removed and colonies paid the UK "transit dues" based on the UPU Treaty which were again intended to reflect marginal cost.

The final technical issue that arose in this case was the "mundane" costs of operating a cost allocation system versus the benefits achieved (Baldwin, 2007). Mundane costs are the costs of defining, measuring and compensating for transactions between parties. The discussion between the UK and India about the allocation of costs between segments of the total route tried to discuss the actual costs of operating the mail steamers at different speeds. This discussion began to get at the trade-off between the operating costs associated with higher speeds compared with the lower allocation of time-dependent costs due to the higher speed. It was also complicated by the attempt to divide the operating costs among different services provided by the vessel at the same time (some true joint costs, some attributable costs). These discussions were hampered by both the theoretical impossibility of allocating joint costs in a meaningful way and the lack of costing technologies to capture the attributable costs (e.g. the use of fuel for speed versus heating space for passengers is in principle an empirical issue but very difficult to measure).

In addition to the technical issues noted above, the development of cost allocation procedures was affected by the specific transnational context in which the negotiations occurred. First, the cost allocation negotiations were occurring in an era where transnational governance mechanisms were emerging and creating alternative views of how communications flows between countries should be handled. The emergence of the UPU in 1874 embedded international norms for the operation of the international postal system in their Treaty that were contrary to the norms used between the UK and its colonies. The colonies were able to draw upon these norms in negotiations with the UK suggesting that if the UK was unwilling to negotiate, that the UPU terms of transit would become the default. This would have reduced the revenue to the UK but the UK may have then withdrawn its support of the mail routes increasing the total costs of the system to reduce its own costs. The existence of international organizations became a resource on which dependent countries could draw to reinforce their position as a sovereign nation.

Second, the era I examine is the beginning of the independence of the British settler colonies from the UK. The loss of the American colonies in 1776 had a profound effect on UK policies towards its remaining colonies. Canada became an independent nation in 1867; Australia gained independence in 1901[18]. The Indian Mutiny of 1857 resulted in India being removed from control of the East India Company and placed under a British appointed Viceroy and Governor-General and the UK Secretary of State for India. The colonies were beginning to have independence movements and weak forms of self-government that were encouraging local populations to question arrangements between the UK and the colonies (Chua and Poullaos, 2002). The changing relationship between the UK and its colonies was also being played out within the UK state as different branches of the civil service and government acted as agents for specific interests. The discussions between the UK Treasury and the Colonial Office during this period captures a zero sum game with regard to the allocation of the costs of the Eastern Mail Service, i.e. the total cost was fixed, the only issue was who would pay this cost. The disagreements between departments could not be resolved through direct negotiation and resort to arbitration was necessary.

Third, an important aspect of the negotiations was the decision in 1866 to narrow the terms of the debate to strictly postal issues. The Select Committee on East India Communications recognized that an effective communications system between the UK and its colonies served political, commercial and postal purposes. The initial principle established as a basis for the allocation of costs was to be the “benefit received” by each participant. Considered globally, the benefit received would have included the political, military and commercial gains anticipated by the UK. For example, a key benefit to

[18] Individual colonies within Australia achieved self-governing status at different times: New South Wales and Victoria in 1855, South Australia and Tasmania in 1856, Queensland in 1860, and Western Australia in 1890

investors of an effective communications system is the reduction in information asymmetries that must be built into the risk premium on investments. A reliable and fast postal system would have improved capital allocation and returns to UK investors. The committee, however, excluded these types of considerations from the debate leaving the arbitrations in future years to look solely at the direct costs and benefits to the Post Offices affected by the Eastern Mail Service. This refocusing of the debate essentially defines the post office as a commercial venture in its own right and removes explicit consideration of imperial issues from the discussion of cost allocation.

O'Brien (1988: 188) has noted that the UK Treasury was obsessed with ensuring that the colonies paid for their share of public expenses, notably military expenses, but also notes that this policy was only implemented strictly with respect to India. This same policy logic and bias is evident in the case of the Eastern Postal Service where India was the focus of debates for the entire forty year period. O'Brien (1988: 189) recognizes that settler colonies were benefitting from UK subsidization of the postal system:

> "… these affluent dependants on British largess also enjoyed favoured access to loans on the London capital-market, occasional grants in aid, cheap services from the crown agents and subsidies from the imperial communications network."

However, the compromises reached to allow the service to continue do not support a hard-line implementation of the policy. Ongoing compromises to reach fixed-contribution rates from India suggest that India was successful in reducing its share of the costs over this period compared with the proposals being put forward by the IPO and supported by Treasury.

The use of an accounting logic in the disputes between the colony and the imperial center empowered the colonies to challenge and reverse the imposition of Imperial costs on the colonies (cf. O'Regan, 2003). The success of this approach to framing the issues however occurred in a broader context of declining Imperial control over colonies and the rationalization of international trade regulations through international unions such as the UPU and International Telegraphic Communications Union. These international bodies created rules to enhance the volume of service between major commercial trading partners but the rules were also used by colonial countries to advance their position vis-à-vis the more economically developed nations.

From a transaction cost economic perspective, one of the implications of the UPU transit rules was a reduction in the asset specificity of resources devoted to the transportation of mail. The basic tenet of the UPU was that international mail moved as if in a single postal jurisdiction. The mail moved through which ever domestic mail transit system was available and most convenient without further negotiation over access or price. The systems of mail transit using P&O put in place by the UK became part of this system, providing the UK with some additional revenues for third-party country mails but also allowed their colonies access to alternative routes. This meant that there was less incentive for the colonies to enter voluntarily into agreements to share costs and the UK could not maintain an effective monopoly over the supply routes to "hold up" the colonies.

Conclusion:

The Eastern Mail Service between the UK and its Austral-Asian colonies operated using private steamship lines with the UK government providing a “subsidy” to the steamship line in return for carrying the mail. This subsidy was a fixed cost for the period of the contract (subject to certain adjustments related to performance). The problem that plagued the UK Treasury, Imperial Post Office, Colonial Office and colonies over a period of forty years was how the costs of these contracts should be shared among the UK and the colonies. This debate occurred as the UK struggled with the contradiction between the adoption of increasingly liberal economic and social domestic policies while still operating as an imperial power.

The final solution to this cost allocation problem emerged gradually through one Parliamentary review and three arbitration procedures. The total costs were divided equally between the UK and the colonies. The costs were further divided among the colonies in proportion to the trip mileage in those segments of the route between the colony and the UK (i.e. the number of trips times the distance travelled) and the volume of mail going to or from the colonies. This solution is examined in the context of current theories of cost allocation (as a means of operationalizing the liberal economic philosophy dominant in the UK at that time) and our understanding of the use of accounting in managing colonial relationships within the British Empire.

From a technical point-of-view the cost allocation solution developed appears to be sensitive to the changing marginal cost/benefits of postal services to various colonies. Specifically, small colonies that did not generate much mail were treated as marginal players and not included in cost allocation procedures until the end of the period and after the agreements with the two major colonies – India and Australia – had been reached.

The solutions proposed early in the period reflected both the capacity commitments to serve different colonies and the relative use of the service. These behaviours are consistent with theoretical models of cost allocation (Shapely, 1958; Billera et al, 1981). These proposals were ultimately implemented after forty years of negotiation.

The delay in implementing the proposals and biases in the treatment of India versus Australia suggests that the adoption of cost allocation procedures consistent with liberal economic philosophy was initially blocked by political processes. In particular, the evidence shows that the UK state was divided against itself with respect to the treatment of colonies. The Treasury was consistently championing the case for the transfer of resources from the colonies to the UK while the Colonial Office represented the interests of the colonies. During this period, a series of negotiated cost allocations were used instead of the proposed formulae to allow contracts to be tendered and the mail to flow regardless of internal disputes.

By the end of the period, the political environment had changed significantly and a cost allocation formula was adopted and extended to include all colonies using the Eastern Mail Service. The use of cost allocations co-evolved along with the institutional environment in which postal transactions were embedded. The main changes were the rise of colonial independence movements that empowered local governments to press their case with the UK and the emergence of transnational organizations, in this case notably the Universal Postal Union (UPU), which the colonies could use as an authoritative source of policies to counter the preferences of the UK. The policies implemented were a mix of UPU policies for transit of mails across national postal systems for incidental mail flows between colonies and a negotiated allocation process for mail flows between the colonies and the UK. The cost allocation debates and proposals reflect and construct the sovereignty of colonial nations, i.e. their ability and right to act as independent economic actors with respect to the UK. The case provides insights into the role of accounting in the “soft law” that regulates international relations.

Finally, the case demonstrates how traditional economic models can be used as a baseline in institutional analysis. While this baseline is useful in understanding the bias in colonial cost allocations and provides predictions reasonably consistent with the core findings, the case clearly shows that the assumptions underlying these models do not reflect the actual concerns and mechanisms in play. The complex reality of the negotiations resulted in equifinality compared with economic models. But it is only through detailed, process-oriented studies that the actual mechanism by which those outcomes were achieved can be known. Predicting outcomes is not enough.

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Figure 1: Map of Eastern Mail Routes (Circa 1900)

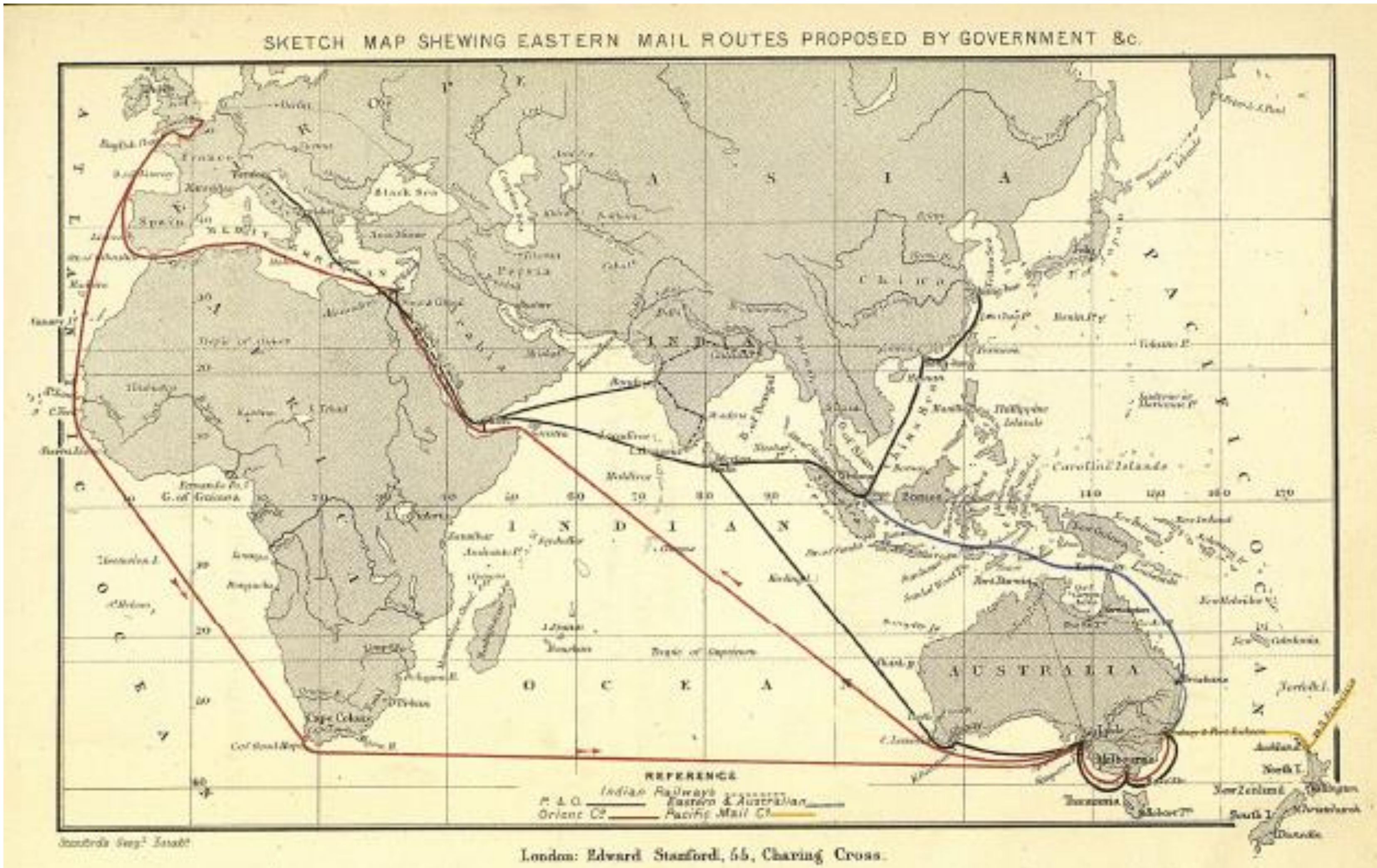

Figure 2: Morley's Eastern Mail Service Award

EASTERN AND AUSTRALIAN MAIL SERVICE.

DIVISION of COST in accordance with the principles embodied in the AWARD of LORD MORLEY.

Section of the Service.	Length of Section.	No. of Voyages per Annum.	Annual Mileage.	Cost of Sections. Gross.	Less Sea Postage credited to Sections under Clause B. of Award.	(Approximate) Net.	Amount payable by India.	Ceylon.	Straits Settlements.	Hong Kong.	Australia.	United Kingdom.	Certain Places in respect of which the Cost is borne by the United Kingdom.
							Amount.	Amount.	Amount.	Amount.	Amount.	Amount.	Amount.
	Miles.	No.	Miles.										
Brindisi and Port Said, Subsection A. ...	930	52	48,360	16,155	—	16,000	7,250	—	70	—	—	8,000	680
Brindisi and Port Said, Subsection B. ...	930	52	48,360	16,156	—	16,000	3,980	440	260	290	2,480	8,000	530
Port Said and Aden, Subsection A. ...	1,395	52	72,540	24,225	—	24,000	11,650	—	110	—	—	12,000	740
Port Said and Aden, Subsection B. ...	1,395	52	72,540	24,225	—	24,000	5,950	650	370	340	3,840	12,000	850
Aden and Bombay	1,664	104	173,056	57,774	52	58,000	29,000	—	—	—	—	29,000	—
Aden and Colombo	2,093	52	108,836	36,329	32	36,000	—	1,850	1,080	1,190	11,620	18,000	2,260
Colombo and Singapore	1,673	52	86,996	29,031	439§	28,500	—	—	3,660	3,530	—	14,250	7,060
Singapore and Hong Kong	1,440	52	74,880	24,981	386§	25,000	—	—	—	5,660	—	12,500	6,840
Hong Kong and Shanghai	853	52	44,356	14,821	174§	15,000	—	—	—	—	—	15,000	—
Colombo and Adelaide...	4,479	52	232,908	77,803	1,917*	76,000	—	—	—	—	38,000	38,000	—
												166,750	18,480
Cost of Sections				321,500	3,000	318,500	57,830	2,940	5,550	11,010	55,940	185,280	
Cost of Sea Sorting				8,500			7,500	—	500	500	—	—	
Subsidy to P. & O. Co.				330,000			65,330	2,940	6,050	11,510	55,940	185,230	
Add :—Share of Incidental Expenses (£6,090 †)							1,105	56	106	210	1,070	3,543	
GROSS AMOUNT payable							66,435	2,996	6,156	11,720	57,010	188,773	
Deduct :—Share of Extra Receipts (£15,000 ‡) for Sea Postage on Foreign Closed Mails							2,722	138	261	517	2.635	8,727	
NET AMOUNT payable							63,713	2,858	5,895	11,203	54,375	180,046	
POOLING ACCOUNT :—Allow one-half of excess collected in the United Kingdom							6,513	320	98	230			
ANNUAL CONTRIBUTION							57,200	2,538	5,797	10,973			

* This figure is a rough estimate, but the correct figure would not materially affect the shares of the Eastern Colonies.
† This figure includes the incidental expenses assigned by G.P.O. to Australian section.
‡ This is the approximate amount from foreign closed mails, including the Australian section.
§ These figures require some correction by including receipts from Australian mails.

Table 1: Chronology of the Eastern Mail Routes Arbitration

Date	Event
1860	Responsibility for ocean mail transit is transferred from the Admiralty to the Imperial Post Office in an effort to improve efficiency. At that point, subsidies to shippers were more than double the postage collected.
<1866	Costs evenly divided between UK and India; mail beyond India not charged to destination post office but is included in the division of cost. Postal revenues are also pooled reflecting the difference in the volume of newspapers and books moving from the UK to India
>1866	Cost allocation restricted to measureable "postal" criteria, eliminating indirect commercial and political considerations
1866	Report of the Select Committee on East India Communications: "The principle adopted through out has been that each portion of the cost be divided rateably amongst the correspondence for the benefit of which the cost is incurred."
1868	Following on the Report of the Select Committee on East India Communications, India is relieved of the previous 50% of cost of onward service between India and China. The arrangement is imposed by the UK without India's consent.
1874	Straits Settlement complains of high postage compared with India, Colonial Office argues that rates should be reduced but the Straits Settlement should pay a portion of the shipping costs
1875	A.M. Monteath (Director General of the Post Office of India) examines accounts and renders recommendations to the Under Secretary of State for India for changes in allocation procedures. He journeys to the UK in 1876 to press his case. The UK GPO agrees to a fixed percentage allocation of costs.
1876	Arbitration before Lord Halifax to determine the fixed percentage of cost to be allocated – rules for yearly adjustments suggested by him were not implemented
1877	UK colonies join the UPU, this reduces their postal rates but Colonial Office rules that they must now contribute to the subsidies of shippers (sharing 50% of subsidy with UK covering the other 50%)
1884	Cost allocation settled including India, Ceylon, Straits Settlement and Hong Kong
1886	Arbitration before Lord Morley. This establishes both a cost allocation basis and a pooling of revenue to account for costs allocated on letter mail but a higher portion of newspapers travelling from the UK to India
Oct. 1896	Contract with P&O agreed with apportionment of costs between UK and colonies set by the Secretary of State but not agreed to by the colonies
1898	The contract is extended to Australia using the P&O line and the Orient Navigation Company. Both companies receive 85,000 per year for the service. This is in addition to a service provided by P&O from the UK to Brindisi for 265,000 per year
Jan. 1903	Lord Morley negotiates a settlement with India regarding the apportionment of past contract costs and a set of principles for allocation of future costs
Feb. 1904	Renegotiation of the P&O Eastern Mail contract for a three year extension
Feb. 1904	UK Treasury rejects extension of previous cost allocation procedures between the UK and colonies
March 1904	Colonial Office calls for arbitration of the cost allocation but limited to future costs only
March 1904	Treasury argues that if the case goes to arbitration then the previous allocations (1896-1904) also have to be reconsidered
Nov. 1904	Case submitted to arbitration by Lord Balfour
Jan. 1905	Balfour's ruling released

Table 2: A Periodization of Cost Allocation Procedures

Costs Attributed to	Pre-1866	1866-1876	1888-1904	>1904
UK	50%	50%	50%	50%
India	50%	50% - allocated costs	50% - allocated costs	50% - allocated costs
Australia	0%	Australia was charged according to the number of shipments and proportion of letter-miles travelled	Australia charged 50% of the incremental cost of adding a weekly service plus an allocation based on its share of letter-miles travelled through segments of the Eastern Mail route used	Australia charged 50% of incremental cost of 1888 addition plus an allocation based on its share of letter-miles travelled through segments of the Eastern Mail route used
Other Colonies	0%	0%	UPU transit rates	UPU transit rates between colonies; Use-weighted cost allocation of mail flows between UK and colony
Cost of flows between colonies using the Eastern Mail Service	0%	0%	UPU transit rates used	UPU transit rates used

Table 3: Cost Allocations to the Imperial and Colonial Post Offices under various assumptions (£)[19]

Method	UK	India	Australia	Ceylon	Straits	Hong Kong	Japan
Pre-1866 Division	165,000	165,000	0	0	0	0	
1869/70[20]	209,729	73,110 56,260 (168,125)	94,438 0 (94,438)	0 4,488 (10,908)	0 4347 (17,979)	0 14,746 (64,008)	0 3459 (15,220)
Lord Halifax compromise 1876	247,500	82,500	0	0	0	0	
1884 Compromise	255,279 (212,779)	60,000	42,500	2,721	6,000	6,000	
Lord Morley 1898	222,546 (180,046)	57,200	51,375	2,588	5,797	10,973	
Lord Morley with speed adjustment 1898	219,367 (176,867)	62,420	54065	2,625	5,345	9,607	
Lord Morley applied to 1901 data	226,644 (184,144)	59,330	42,500	6,055	7,719	12,893	
Lord Balfour 1905	205,370	59,330	42,500	4,700	6,600	11,500	

[19] The UK figure in brackets excludes the Australia extension to the Eastern Mail Service to make previous years comparable.
[20] 1878-79 (348) Return of Cost of Packet Service between United Kingdom and India, Ceylon, Straits Settlements, China, Japan and Australasia, February 1868-79, House of Commons Parliamentary Papers. The three figures presented are, respectively, (1) the contribution to the subsidy, (2) sea postage collected, and (3) amount of total cost of the Eastern Mail Service attributed to each colonial post by the IPO.