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Thème : “Accounting in markets, hierarchies and networks: the role of accounting in transnational governance, the case of postal markets”

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Accounting in markets, hierarchies and networks: the role of accounting in transnational governance, the case of postal markets.

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Abstract

Neo-institutional economics suggests that governance structures emerge to reduce transaction costs and opportunism. We use this framework to examine the changing role of accounting in the development of the international postal system leading to the emergence of the Universal Postal Union in 1875. We collect a sample of bilateral postal treaties and examine the revenue and cost sharing practices of post offices between 1840 and 1875 to understand the issues facing the efficient operation of the international mail system. The rules instituted by the UPU are then compared with these issues to identify how the UPU affected the transaction costs and opportunism present in the international postal system. Our results refine a key assumption of several studies that management accounting information emerges to replace market price information as transactions are shifted from markets to hierarchies or networks by introducing the distinctions between mundane and opportunistic transaction costs and between financial and technological transactions.
The fundamental insight of neo-institutional economics, and transaction cost economics (TCE) in particular, is that markets, hierarchies, and other means of governing transactions and allocating resources, are based on rules created to allow transactions to be completed efficiently and to control problems associated with asset-specificity, opportunism and bounded rationality (Williamson, 1975; Mantzavinios, 2001). This theory has been used in the accounting literature to suggest that management accounting information arose to replace market prices as transactions were internalized in firms (Johnson, 1983; Kaplan, 1984; Spraakman and Davidson, 1998) and that management accounting information plays a key role in coordinating networks of organizations (Dekker, 2004; Cooper and Slagmulder, 2004; Hakansson and Lind, 2004).

In this paper we explore the effect of a change in governance structure on the use of accounting information. We identify a setting, the international postal market, in which we are able to trace changes in the use of accounting as transactions were restructured from market exchanges to bilateral treaties/contracts between national postal providers and, finally, to a network of national postal providers operating as the Universal Postal Union (UPU). The focus on an international market involving state agencies provides the additional benefit that national government regulations had no effect on the structure of the market, i.e. it is extra-territorial and therefore not subject to legal intervention (Keohane, 1982, 1984). The changes in the use of accounting were voluntarily adopted to improve the efficiency of the international postal market and were self-enforcing. In addition, the physical transfer of mail between countries mirrors the linear production technology on which TCE is premised (Baldwin, 2007). This setting thus provides a theoretically appropriate frame within which to explore predictions about the role of management accounting information in markets, hierarchies and networks from a transaction cost economics perspective.

The UPU was created in 1875 as a venue for national postal operators to negotiate the terms under which mail would be exchanged between nations and the revenues from postage would be divided among those involved in providing the service from the sender in one country along the value chain to the final recipient in another country. The UPU also served as a data clearing house to ensure that information about mail volumes and other factors affecting postal service were shared among participants in the network. We examine the period from 1840 to 1875 to identify the issues facing the efficient development of international mail systems; these issues provided the context in which the change in governance from spot market exchanges to bilateral treaties and to a network structure occurred. The earlier date, 1840, used as a cut-off for the period prior to the formation of the UPU reflects the creation of the modern business model for postal services in the UK with the passage of the Penny Post Act in that year. The reforms brought about by the Penny Post Act included prepayment of postage, the creation of postage stamps and a drastic reduction in postal rates to encourage greater volume of mail (Richardson, 2008). This was a unilateral act on the part of the UK at a time when postage was normally collected on delivery of mail from the recipient. Thirty-five years later the basic principles of UK postal reform would become embedded in the Constitution of the General Postal Union (now Universal Postal Union, UPU). We end our sample period with the creation of the first UPU Convention in 1875. The basic provisions of this treaty remained stable until the 1960s consistent with the conjecture
that they represented an efficient solution to the problems of the international mail system.

Our focus, in particular, is on the role of accounting in structuring the international postal system and the variation in the use of accounting over the evolution of international governance models in this sector. Accounting practice reflects and constitutes an important part of the rules used in various governance structures (cf. Johnson, 1983; Spekle, 2001). Accounting is used to support decisions concerning the allocation of resources and performance of productive activity; it is used to monitor behaviour and outcomes; it is used to motivate and reward performance; and, it is used to justify the distribution of gains among stakeholders. The international postal system prior to the creation of the UPU was fragmented and complex. It operated partially on voluntary agreements that were subject to opportunism that could not be resolved and partially on the basis of bilateral treaties that attempted to provide accountability and improve performance of the postal system. We will discuss the evolution of accounting procedures within the international mail system as reflected in private agreements and treaties prior to the formation of the UPU and contrast these with the rules implemented by the UPU. We will argue that the UPU was, at least in part, an institutional solution to an accounting problem.

The paper is structured as follows. We begin with a discussion of the role of accounting in markets, hierarchies and networks. We use this literature review to identify two key assumptions about the role of accounting in governance: that management accounting information is used to replace market price information when transactions were internalized in firms, and that management accounting information plays a key role in the coordination of inter-organizational networks. We then identify two key elaborations of transaction cost economics that have not been used in the accounting literature that will facilitate our understanding of changes in the use of accounting in the international mail system; these are the distinction between mundane and opportunistic transaction costs and the distinction between financial and technological transactions. The use of the case method to explore the use of accounting in the international postal system is discussed. In particular we argue for the use of case analysis as a theory testing method when theories make non-probabilistic predictions and as a theory elaboration method through its emphasis on mechanisms and processes. We then describe our data set. Our main results are presented in three sections describing the state of the postal system in the time period 1840-1875, the transactional issues that arose, and, finally, the change in rules and accounting procedures that were implemented in the first UPU.

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1 As with all social phenomena, multiple interpretations of events are possible. The use of transaction cost economics in this setting is consistent with Keohane’s (1982, 1984) work on the origins of international regimes. His work has been criticized, as might ours, for ignoring issues of power, culture and the path dependence of social institutions. Williamson’s work has been criticized as being overly atomistic and voluntaristic (Granovetter, 1985, 2005). Given the extensive literature that has critiqued Williamson’s original formulation and Keohane’s application of transaction economics in international relations, these views will not be covered here but are recognized (See also Hopper and Armstrong, 1991; MacDonald and Richardson, 2002). We begin with the view that the situation we examine is consistent with TCE, this theory has been used to make predictions of accounting phenomena, and we believe that the setting we examine contributes to a critical understanding of the potential application of TCE to accounting phenomena.
Neo-institutional economics, and transaction cost economics in particular, provides an important framework for understanding many accounting phenomenon. This framework relies on two main insights. First, Coase (1937) developed the insight that markets and firms were alternative ways of completing transactions and that there are costs to the use of either mechanism. The idea that the market mechanism was not costless, in particular, provided Coase with a way to reconceptualize the nature of the firm. The firm would arise if it could complete transactions at lower cost than in the market. For example, where complex interdependent tasks are required to produce some good, it may be more effective to hire skilled craftsmen as wage labour controlled by a central authority (the firm) rather than have each craftsman attempt to contract with all others for specific work. However, there must be increasing costs to the use of the firm and authoritative control to complete transactions that limits the size of the firm (otherwise, a single firm would internalize all of some forms of transactions). Coase (1937) thus provides a role for management inside the “black box” production function envisioned by classical economics and provides a rationale for the existence and size limits of firms.

Second, Williamson (1975) generalized these observations by suggesting that markets and hierarchies (firms) were alternative governance mechanisms that had a contingent cost advantage in completing transactions depending on the nature of those transactions (characterized by the “critical dimensions” of asset specificity, frequency, and uncertainty, Williamson, 1979: 239). This leads to the “discriminating alignment” hypothesis that transactions will be allocated to particular governance mechanisms in order to minimize the cost of completing those transactions.

“Transactions, which differ in their attributes, are aligned with governance structures, which differ in their cost and competence, so as to effect a discriminating — mainly a transaction cost-economizing — result” (Williamson, 1996: 12).

Williamson’s work proved to be particularly useful for challenging anti-trust laws by showing that vertical integration in some industries was economically rational rather than simply an attempt to create monopoly power. In general, empirical support has been greatest for the relationship between asset specificity and the choice of governance form but inconsistent for other dimensions of transactions (Shelanski and Klein, 1995). Williamson’s (1975) insight has also been used in the accounting literature to suggest that management control systems, as a key aspect of governance systems, would also vary according to the characteristics of transactions (Spekle, 2001).

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2 Santos and Eisenhardt (2005) provide a review of alternative conceptions of the formation of organizational boundaries.
In spite of the relevance of these core insights to accounting, Coase (1990) lamented the (relative) lack of use of institutional economics in accounting. From his point of view the firm existed as an alternative governance mechanism to the market and within this governance mechanism accounting information played the same role as prices in allocating resources. He saw accounting academics as being well placed to contribute to and draw from transaction cost economics.

“In … the firm, costs do not, in the main, arise directly out of the operations of the market but are computed and provided by the accounting system. While outside the firm prices and therefore costs are explicit (because of the demands of others for resources) and are determined by the operations of the market, within the firm there are explicit costs for exactly the same reason but they are provided by the accounting system. This internal system takes the place of the pricing system of the market.” (Coase, 1990: 11)

This view of the role of accounting as a substitute for prices has been noted by others.

“Without market prices for these goods, the firm must rely on relatively costly and inefficient methods of generating its own accounting prices to perform internal calculations.” (Klein, 1996: 4)

“Firms engage in non-market contracting, on their own internal terms (here labeled "quasi-prices"). These are not market prices and need not resemble market prices in either form or magnitude; and market prices are not sufficient to guide firms' decisions. Hence, a whole range of institutional phenomena, including the sets of "transfer prices", standard costs and the numbers on firms' income statements and balance sheets, are hypothesized as being neither market prices nor estimates of market prices. In this model, accounting is viewed as a specialist function for providing information that assists firms in establishing their quasi-prices, or even for providing the quasi-prices themselves” (Ball, 1989: 3).

“Just as the firm is an alternative to the market system, accounting in this setting is an alternative to market prices” (Emanuel et al, 2003: 154).

Thus accounting historians such as Johnson (1975), Kaplan (1984), Spraakman and Davidson (1998) and Spraakman and Wilkie (2000) draw on Coase (1937) and Williamson (1975) as theoretical prolegomenon to the discussion of the emergence of management accounting (see MacDonald and Richardson, 2002, for a discussion of alternative interpretations of the emergence of management accounting). They see management accounting techniques as arising in concert with the development of large scale organizations to provide a substitute set of information to market prices on which managers could make resource allocation decisions and to evaluate performance.

The simple story of management accounting information arising to replace market price information, however, must be refined to take into account three factors: (1) the use
of a contracting perspective to understand markets, (2) the emergence of hybrid forms of governance, and (3) the increasing dominance of organizations in the organization of economic life. In addition, recent elaborations of TCE that differentiate financial transactions from technological transactions, and mundane transaction costs from opportunistic transaction costs are useful in understanding the role of accounting in the international postal system.

Williamson (2002) differentiates transaction cost economics from classical economic marginalism by the change in orienting metaphor from a problem of rational choice to a problem of contract negotiation and enforcement. In the simplest case, these “contracts” are spot market transactions where commodities are exchanged between anonymous buyers and sellers at a known market price. These contracts become more complex, however, as asset specificity, uncertainty and frequency of transactions increase. At some point, the difficulty of forming contracts to anticipate all uncertainties, to deal with frequent transactions, or to overcome ex-post opportunism where there is high asset specificity, raises the costs of using markets/contracts beyond the cost of creating a hierarchical structure to control the transaction and the transaction is internalized within a firm.

But what of accounting? It is not uncommon to see accounting used in contracts between the firm and external stakeholders to monitor and report on contingencies or to track contract performance over time (Watts and Zimmerman, 1986). So from this perspective, accounting is part of the contractual controls used between arm’s length contacting parties as well as being used within the firm to control operations; the relative use of accounting in market (contracts) and hierarchies (firms) to complete equivalent transactions is at best ambiguous. Rosen (1988) contrasts the completion of production in a setting where all relationships are based on contracts (historically this was known as the “putting out” system of production) versus a hierarchy where wage labour is used without specifying the tasks to be completed:

“The number of prices necessary to manage it can be very large indeed. However, a simpler mechanism may be available; one person retains all residual rights, assembles the appropriate team of workers on a contractual basis, assigns them to their most productive positions in the firm, and monitors their work. The terms of these contracts must specify standards for the quality and quantity of work, as well as employment conditions regarding working hours and regularity of employment, these non-price dimensions of contracts being necessary to internalize technological dependencies among workers. Financial terms of contracts are constrained by competition for workers in the labor market. Concentrating control in this way and establishing a wage system may be a less complicated way of achieving efficiency than designing and monitoring an elaborate accounting system and calculating the individualized prices required by a decentralized internal transfer-pricing mechanism”, (Rosen, 1988, emphasis added)

While Rosen (1988) is not an accountant and his paper focuses on labour markets, this paragraph captures the dilemma; compared with the record-keeping needed for a complex
multi-stage production process run by contracts through the market, a hierarchical system might need less accounting rather than more. If this is so, then the basic insight drawn from Coase (1937) in the accounting literature that management accounting information develops to replace market prices may be in error or, at least, such statements may be overgeneralized.

The second complication to the use of transaction cost economics to study accounting is the rise of hybrid governance structures that combine the characteristics of market and hierarchy. Miller et al (2006) note that hybrid forms are not a single, stable class of governance structures and hence the forms of accounting that go along with them are also in a state of flux. In spite of this caveat, however, one hybrid form of governance has emerged as a focus of empirical work: networked organizations (Powell, 1990; Podolny and Page; 1998).

Networks may be defined as:

“…any collection of actors (N>2) that pursue repeated, enduring exchange relations with one another and, at the same time, lack a legitimate organizational authority to arbitrate and resolve disputes that may arise during the exchange” (Podolny and Page, 1998: 59)

The existence of “enduring exchange relationships” differentiates the network from markets in which transactions are completed on a “spot” basis while the lack of a “legitimate organizational authority” differentiates the network from hierarchical governance structures (this is not to imply that a network of actors cannot voluntarily create rules for resolving disputes but these are an outcome of the network and not a priori to the network or the result of authoritative intervention).

Recent work has begun to explore the role of accounting in networks based on transaction cost economics (e.g. Dekker, 2004; Cooper and Slagmulder, 2004; Hakansson and Lind, 2004). In general, these authors have found it necessary to combine TCE with other theoretical perspectives in order to account for the type of coordination mechanisms put in place empirically. These studies are limited, in terms of the issues explored here, by their focus on the role of accounting within existing networks rather than exploring the changes in the use of accounting before and after the formation of the network. The lack of control for the uses of accounting in market contracting makes it difficult to make valid inferences about the causal role of network formation on the use of accounting. The theoretical relationship between accounting and networks cannot be addressed by these studies.

The final complication in the use of transaction cost economics to study the role of management accounting in governance mechanisms is the emergence of the “organizational society” (Presthus, 1962), i.e. a society in which most economic and social activities are carried out through hierarchical structures. The original formulation of transaction cost economics was based on the comparison of a market of individual factors of production (i.e., labourers, owners of resources or capital) versus a firm. Given the complexity of modern production technologies and the economies of scale of large organizations, the role of isolated factors of production in the economy has decreased and firms/organizations are now the dominant governance structure. The market is now populated by firms dealing with other firms rather than individuals.
Coase (1990) questions whether transaction cost issues will continue to be the key issue when the question becomes which of several alternative firms to assign a transaction to instead of whether to assign a transaction to a firm versus the market but he does acknowledge the important role of accounting:

“…the expansion of a firm will halt at the point at which the costs which it has to incur to organize an additional transaction within the firm become equal to the costs of carrying out that same transaction on the market or to the costs of organizing it within some other firm. But what determines where this point will be? It cannot be said that we see very clearly the answer to this question, although as a result of the work now going forward the mists are beginning to clear. My present feeling is that, while transaction cost considerations undoubtedly explain why firms come into existence, once most production is carried out within firms and most transactions are firm-firm transactions and not factor-factor transactions, the level of transaction costs will be greatly reduced and the dominant factor determining the institutional structure of production will in general no longer be transaction costs but the relative costs of different firms in organizing particular activities. This does not mean that transaction costs will not be important in particular cases nor that they will not be important in determining the form of the contractual arrangements made by firms. What it does mean, if I am right, is that … ‘to explain the institutional structure of production in the system as a whole it is necessary to uncover the reasons why the cost of organizing particular activities differs among firms’. … If economists are to study the determinants of the costs of organizing various activities within firms, they will have to call in the assistance of accountants since the costs of organizing clearly depend on the efficiency of the accounting system”. (Coase, 1990: 11)

To combine the last two points, the limits of the ability of the firm to internalize transactions may not be resolved by market mechanisms particularly as organizations come to dominate the economy; rather the resolution may be to arrange firms within network structures that allow a “domesticated” market to arise (Arndt, 1979). A “domesticated” market is one in which repeat exchanges occur on the basis of negotiated rules between parties. The rules developed in “domesticated markets” typically combine market mechanisms (i.e. contracts enforced by the courts) and hierarchical mechanisms (i.e., rules that are created and enforced through a voluntary enforcement mechanism created by the network participants).

In order to understand the use of accounting in the international postal system we introduce two refinements of TCE: the differentiation of mundane from opportunistic transaction costs and the differentiation of financial from technological transactions.

The Role of Mundane and Opportunistic Transaction Costs

Williamson has frequently used the metaphor of transaction costs as a “friction” in economic exchanges (Klaes, 2000).
“Although failures can be and often are assessed with respect to a frictionless ideal, my concern … is with comparative institutional choices. Only to the extent that frictions associated with one mode of organization are prospectively attenuated by shifting the transaction … to an alternative mode can a failure be said to exist. Remediable frictions thus constitute the conditions of interest.” (Williamson, 1975: 20)

“In mechanical systems we look for frictions … The economic counterpart of friction is transaction cost.” (Williamson, 1985: 1)

But the “frictions” that concern Williamson are those associated with opportunism, bounded rationality and small numbers bargaining. He is concerned with the ability of one party in an exchange to cheat another and transaction costs represent the losses due to this problem and the costs of mechanisms to reduce this possibility. This approach to transaction costs underlies most uses of TCE in the accounting literature: accounting is associated with the monitoring and bonding processes that reduce agency costs.

Several authors have noted, however, that Coase and Williamson define transaction costs in different ways (Baldwin and Clark, 2003; Baldwin, 2007). Coase is concerned with the costs of using a governance mechanism (mainly contracts in the market) while Williamson is concerned with the opportunity costs of governance mechanisms (incentive effects and agency costs). Baldwin (2007) refers to these two sets of costs as “mundane transaction costs” and “opportunistic transaction costs” respectively. Mundane transaction costs arise simply through the use of any governance mechanism3. These are the costs of defining the attributes of an exchange, measuring contract performance and compensating the parties to the contract. These costs represent the “frictions” of using a specific governance mechanism in the manner originally envisioned by Coase (1937). These costs are incurred even in the absence of opportunism. In the accounting literature to date we have focused exclusively on the effect of accounting on opportunistic transaction costs but the effect of accounting on, or as a, mundane transaction costs has been ignored.

Differentiating Financial Transactions and Technological Transactions

With respect to the nature of transactions, the distinction is made between Williamson’s version of transaction costs and John Commons’ version. Williamson cites Commons (1934) as an intellectual progenitor but commentators have noted significant differences in their approach to several issues (e.g. Ramstad, 1996; Pessali and Fernandez, 1999). In particular, for Williamson a transaction is defined as an exchange of goods or information across a technological boundary. The existence of the transaction is essentially an engineering issue (Baldwin and Clark, 2003). Commons, however, saw a

3 There is a possible relationship between mundane and opportunistic transaction costs. Baldwin (2007) suggests that these costs move in opposite directions at the margin i.e. mundane transaction costs (the cost of defining, measuring and paying for the transaction) are incurred to reduce opportunistic transaction costs (the possibility of being cheated or the failure of contract completion). The relationship between these categories of costs has not been explored theoretically or empirically. At a minimum it would be reasonable to assume that there is a fixed component to mundane transaction costs as well as a component that varies with the volume of transactions. The relationship suggested by Baldwin (2007) may simply redefine mundane transaction costs as opportunistic transaction costs.
transaction as an exchange of property rights drawing from legal traditions of analyzing transactions. Transaction costs were incurred anytime there was a need to bargain over, manage or ration control of assets.

In complex production systems the transfer of physical products or information may be separated from the exchange of the property rights in the items transferred. In the simplest terms, the arrangements for the physical transfer of goods may differ from the arrangements for the payment for those goods (Niehaus, 1969). Each of these dimensions of the complete transaction may be subject to its own costs (both mundane and opportunistic) resulting in differing governance mechanisms being enacted to ensure completion of the transaction. So in our analysis of the international postal system we examine both the mechanisms put in place governing the physical transfer the mail between nations and the mechanisms by which each country was compensated for their contribution to the operation of the international mail system.

**METHOD**

We undertake a longitudinal case study of the international postal system between 1840 and 1875. There is a long tradition in institutional economics of using case analysis to resolve theoretical issues. This arose largely because of the use of stylized institutional facts by marginalist economics authors attempting to improve the face validity of theoretical statements. Institutional economists have examined the details of these anecdotes and frequently found that real institutions have evolved in ways to deal with problems that standard economics argues are “market failures.” For example, it was argued that lighthouses, designed to protect shipping in dangerous waters, are an example of a public good that must be provided by the state because the free rider problem associated with the market would result in the underproduction of this good and hence a loss of social welfare. Coase (1974) undertook an historical study of lighthouses in the UK and found that they were being provided for hundreds of years in a free market and that mechanisms were in place to ensure that ship owners using the ports at the terminus of the shipping lanes protected by the lighthouses would pay their share of the costs. A second example was the case of apiaries (bee keeping) to illustrate the problem of externalities. Many crops require bees to pollinate their flowers and bee keepers need flowers for their bees to make honey. The argument was that since in each case there is a positive externality that has no market price, there would be an under-supply of bees compared with the needs of farmers to pollinate their crops and an under-supply of honey compared with market demand. Cheung (1974) undertook a study of the actual relationship between farmers and apiaries and demonstrated that well developed social norms ensured that both pollination services and honey were produced in efficient quantities.

The use of case studies in the service of theory testing can take one of two forms. First, if theory makes non-probabilistic statements about the phenomenon, then a case study can provide unequivocal falsification of the theory (i.e. if a theory predicts that

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4 There is a negative correlation between the cost to the farmer of “renting” the hives and the total amount of honey produced. Thus if the hives are placed in a field that allows efficient honey production but pollination is not needed, then no fee is paid to the bee-keeper; if the hives are placed in a field where pollination is essential but little honey is produced, then a significant fee is paid to the bee-keeper.
black swans do not exist, finding one black swan disproves the theory). The studies by Coase (1974, 2000) and Cheung (1974) are of this nature. Since each example had been used to demonstrate the absolute need for a non-market (state) solution, illustrating that the participants had solved the issue without resort to state intervention disproved the original assertion. Second, case studies may provide multiple degrees of freedom for testing theory (Campbell, 1975). The use of a case is appropriate where the context provides a clear situation to which the theory applies and multiple dimensions of the case can be used to test the predictions of the theory. The situation we examine allows for the interdependence of observations to be used to test a range of predictions of TCE in accounting.

The distinction between theory-testing and theory-development in case studies does not imply that a case may be used for only one purpose. In particular, if a case disproves a theory’s prediction, the case may also be useful to develop boundary conditions for the original theory or to suggest extensions (Eisenhardt, 1989). Williamson (2005: 19), speaking specifically of historical studies notes:

“...there is no better way to discover the need for refinements, corrections, and extensions than to do research on puzzling phenomena for which the microanalytics have yet to be carefully worked out”.

We approach the present case with this rich view of the potential of case studies. First, we believe that this case provides clear data on the assumption that management accounting information is developed to replace market price information when transactions are internalized within hierarchical or network structures. Second, the case provides multiple perspectives on this issue since it deals with a number of independent postal systems that came together to form one network. The experience of each national postal operator who entered into the formation of the Universal Postal Union provides an independent perspective on the phenomenon. Finally, because of the network context that we examine, the case provides us with an opportunity to develop the application of transaction cost economics to accounting phenomena in this context.

Data

We examine the period between 1840 and 1875 to better understand the accounting and business problems associated with the international flow of mail and to capture the transition between discrete governance structures. Our data consists of bilateral postal treaties signed between these dates, the first UPU multi-lateral convention, and a small secondary literature. The treaties were collected from the Royal Mail Archives (London, UK), the archives of the UPU (Berne, Switzerland) and on-line sources including the Yale University Law School Avalon Project, and various web sites dealing with philatelic issues. There is no catalogue of postal treaties available for this time-period so we cannot claim that this list is comprehensive or representative. On the other hand, the decision to place these treaties in the public domain is unrelated to our study and we do not anticipate any particular bias from the sample used.

In most settings, the development of any governance mechanism is dependent upon the existence of the state both as a direct regulator of business activity (e.g.
providing rules regarding acceptable organizational forms, mandated disclosures etc.) and as the source of authority for a court system that arbitrates voluntary agreements (contracts). There is a complementarity between state-created rules and voluntary rules of the type envisioned within TCE in the sense that, at a minimum, the state provides a means of enforcing voluntary contracts and places constraints on the conditions under which contracts may be created (e.g. by prohibiting the use of coercion and requiring disclosure of material facts affecting a contract) (North, 1990). One setting in which the impact of the state may be reduced, allowing for more powerful tests of the insights of transaction cost economics, is in situations where transactions occur internationally particularly in transactions between state agencies. This setting gives priority to voluntary agreements that are self-enforcing since the enforcement of contracts by any one agency becomes problematic because of jurisdictional disputes and conflicts of laws between countries.

The context that we examine is an exemplar of this situation. The postal system operates through national organizations but the degree of structure to impose on those organizations, rather than allowing point-to-point exchanges, has been subject to debate. At the beginning of the period we examine, the system consisted of domestic post offices and private shipping companies. Dealings among these actors were on a bilateral basis through private contracts. By the end of the period, the Universal Postal Union had been created and mail was routed through the fiction of a single postal territory, i.e. the transactions among members of the network were no longer explicitly accounted for by members. Our goal is to explain this change and relate it to the transaction cost economics literature on accounting.

The following treaties are included in our database:

- Agreement between the General Post Office of London and the Post Office of Hamburg, January 27, 1841
- Postal Convention Between the United States and Great Britain; December 15, 1848
- US Treaty with the Hawaiian Islands, December 20, 1849
- Postal Convention between the Hawaiian Kingdom and the French Protectorate Government of Tahiti, November 24, 1853
- Postal Treaty Between U.S. and France, April 1, 1857
- Agreement between the General Post Office of London and the Post Office of Hamburg, June 29, 1859
- Agreement between the General Post Office of London and the Post Office of Hamburg, March 26, 1860
- Postal Convention Between the United States of America and the Republic of Mexico; December 11, 1861
- Agreement between the General Post Office of London and the Post Office of Hamburg, December 9, 1862
- Postal Convention Between the United States and Great Britain; November 24, 1868
- Postal Convention between the United States and Newfoundland, December 1 1872
• Postal Convention between the Colonial Government of New South Wales and the Hawaiian Kingdom, July 1, 1874
• Universal Postal Union Convention, 1875.

To supplement our direct examination of postal treaties we have also relied on Courtis (2004) and Hargest (1971). Hargest (1971) provides an analysis of postal treaties and practices between the US and various European countries during the period from 1845 to 1875. His work focuses particularly on the markings used on letters to track changes in postal rates, routings and the distribution of revenues. Courtis (2004), although not referring to Harget’s (1971) work, provides a parallel analysis of postal markings used on letters between Australia and the UK between 1843 and 1876. We used these sources to develop an expanded set of business issues affecting the post during our focal time period.

AN OVERVIEW OF POSTAL SERVICES BETWEEN 1840 AND 1875

In 1840 the UK redesigned its postal system to require prepayment of postage rather than, as was then customary, charging the recipient for the cost of delivering the letter. This allowed much simpler delivery methods and a dramatic reduction in postal rates (Richardson, 2008). After 1840 postage rates were set to encourage but not require prepayment of postage. Thus a prepaid letter would be delivered for one rate and an unpaid letter would be delivered at a higher rate. International mail posed a particular problem. As Table 1 indicates, after postal reform but before the universal acceptance of prepayment for mail, there were four potential combinations of postal policies between originating and destination posts. In cases (1), (3) and (4), there must be a negotiation between the posts to divide the total postage charged or received. Only in case (2) can the posts operate independently, i.e. with mail physically transferred between states on a spot basis without an accounting for the costs incurred. To further complicate this system, even in countries where prepayment was available, it was not usually mandatory. Customers could choose to prepay or not depending on their assessment of the relative costs in the receiving and sending jurisdictions and based on their ability to pay the postage at the time of mailing. Thus, at the customer’s discretion, countries could move from case (1) to case (3) and from case (2) to case (4) for some proportion of their total mail flow.

[Table 1 about here]

In the majority of exchanges of mail between countries, there had to be an agreement on the sharing of postal revenues either downstream where postage was prepaid or upstream where postage was collected on delivery. The key problem in these negotiations was to reach agreement on what those costs were and the relationship between those costs and the opportunity cost of revenue foregone by insisting on payment on delivery.

What were the key issues in the early postal system?
The compensation exchanged for services provided by one post office to deliver the mail originating with another post office required complex negotiations dealing with a series of contractual problems that arose in bilateral relationships. We identify seven of these and provide a brief discussion of the characteristics and implications for the postal system. These problems formed the context in which the bilateral treaties described in the next section arose.

(1) Variation in currencies

The problem of variation in currencies is both an exchange rate problem and a problem with the currency/specie itself. The delivery of mail could take months between distant locations. This meant that, particularly for prepaid mail, there was both an inflation risk and a currency exchange risk that had to be borne by the postal system. The uncertainty of costs could be reduced by creating bilateral postal treaties which specified the basis of exchange but this simply shared the exchange rate risk between the post offices. Postal treaties were established and maintained for an indeterminate period but usually measured in years before being renegotiated. In addition, the settlement of accounts between countries was done, at most, on a quarterly basis but typically only annually. At the time of negotiation revenue sharing rules were based on an assumed rate of exchange between the two currencies. If one currency appreciated against the other, they would find that the share of revenue from the other country represented a decreasing payment for services while their payment to the other country would provide a higher return than expected. Currency fluctuations during this period could severely undermine the revenue sharing between countries.

The second issue concerns the stability of value of notes versus coins. In the US, for example, coins were struck in gold and silver and these coins had value that could move independently from the value of bank notes particularly during times of inflation. Hargest (1971) notes that for some time in the US postal rates were specified in terms of how the rate was paid, with different nominal costs for payment by bank note versus coin. This was primarily a complication for retail postal sales and did not directly affect the exchanges between national postal operators.

(2) Variation in weight scales

The use of both imperial and metric weight scales proved to be a problem for some exchanges of mail (e.g. between the US and France) where the ½ ounce standard was translated into 15 grams (the exact equivalence is ½ ounce = 14.175 grams). This slight discrepancy in the standard applied to postage could create circumstances where a letter might be charged double postage in France but only single postage in the US (e.g. for a letter weighing between 14.175 and 15 grams). If a letter originated in the US it would be charged for single postage but when it was received in France double postage would be used in their calculations of the balance of payments. The US postmaster recognized that this difference in weight scales was resulting in an overpayment (i.e. higher than the postage collected) by the US to France (Gough, 2005).

The choice of weight scales was also affected by the technology of paper production. The French, for example, were routinely using lighter weight paper stock than Germany so that the French preference for a 10 gram letter rate between these two
countries would result in much higher costs in Germany than France for an equal volume of mail. The problem was also exacerbated by the decision to use weight as a proxy for the postage collected on prepaid mail. If, on average, French letters weighed less than German letters, even where both were within the limits for single postage, then for the same gross weight (and therefore the same estimate of postage revenue), French mail would represent more items and a higher delivery cost than German mail. On balance, this would result in Germany subsidizing the delivery of French mail in Germany.

(3) The use of postal rates as diplomatic tools

Hargest (1971: 24) suggests: “Postal rates…were conceived to have functions beyond those of paying for a service or of producing a revenue. Postal rates could be used as an instrument of diplomacy; they could be used to promote trade; or … they could be used as a protective tariff.” This observation was primarily in reference to the UK who, in spite of reduced postage for domestic mail, continued to charge much higher rates for some international mail while subsidizing mail flows between the UK and its colonies. This encouraged domestic/imperial trade and correspondence at the expense of cross-border trade and correspondence. Although beyond the scope of this paper, postal rates also varied between letters and other forms of mail. For example, newspapers and magazines received privileged rates based on the negotiation of publishers with the post office and supported politically as helping to develop the intellectual and moral strength of the nation. However, this privileged rate also meant that there were incentives for people to use newspapers and books as a cover for more personal communications. This meant that the post office had to create standards to differentiate generic newspapers from personal communications on newspapers and to monitor for violations of these rules. This raises the transaction costs associated with the postal system overall.

(4) Issues in the transit of mail across third jurisdictions

The transport of mail from one country to another might, in some cases, be most efficiently achieved by transit across the territory of a third country. For example, mail to Asia from Europe might be best sent to New York, transported by train to San Francisco and then by boat to Asia. In these cases the country providing transport would charge for their services. Note that foreign countries did not have the option of negotiating with private freight companies to make these transfers after national postal operators were created and given a monopoly. This provided certain national posts with unique opportunities. In Europe in the early 1800s, for example, Belgium found that it could benefit by acting as a transit point for mail between France and Prussia and between rest of Europe and the UK. This central location within the postal system allowed some posts to charge amounts that were very profitable. France and Prussia, for example, found that they needed to establish a postal treaty even though they had been at war and not reestablished other normal relations because of the high cost of exchanging mail via Belgium. These situations arose because of the opportunity cost of alternative routings. The country that had a territorial advantage in transportation routes could raise its prices up to the cost of the next best available route.

(5) Variation in international carrier costs
Courtis (2004) provides a detailed description of accountancy marks that were recorded on letters travelling between the UK and Australian colonies during this period. These markings, in red or black, signaled the distribution of revenues among parts of the value chain. One complication facing clerks creating these records was that the distribution depended upon the carrier transporting mails, in particular, whether the carrier was under contract to the post office or a private vessel. The UK had established a law requiring private vessels to transport mail on demand. This allowed mail to be sent on the next available departure rather than being limited to the schedules of contract ships. The private vessels were compensated for carrying mail at a fixed rate in the UK although in the US the amount paid would vary depending on the type of ship (e.g. sail versus steam, Hargest, 1971).

(6) Variation in domestic carrier costs

The variation in the cost of international transport between two countries (i.e. port-to-port) was at times less than the variation in cost within a country, particularly for large countries such as the US. Initially some countries attempted to charge postage based on the actual distance travelled. This approach however was not tractable, i.e. the transaction costs of measuring and charging postage per mile was too high compared with the value of the service, and soon gave way to simplifications\(^5\). The Franco-Prussian Treaty of 1817, for example, divided France and Prussia into “rayons” or districts based on the distance from the border exchange point. In the US, domestic mail was charged at two rates: one rate for mail travelling less than 300 miles and a second rate for distances greater than 300 miles. Hill (1837), contrary to these systems, advocated a single rate to any point within the UK based on his finding that the variation in cost was trivial (this was based on two assumptions, that the mail coaches were travelling under capacity so additional mail had zero marginal cost, and that the variation in cost was smaller than the minimum amount that could be billed [i.e. an integer programming solution]).

(7) Lack of internal controls/auditability

Courtis (2004) notes that the use of letters as accounting records within the postal system meant that there was no audit trail once the letter was delivered. The letters were marked to indicate the distribution of postal charges between the originating post office, shipper and destination post office. Summary accounts were created from these markings but the markings were turned over to the recipient of the letter and lost from the system. If a letter was not deliverable, the envelope would be returned and the markings used to reverse the original entries. There was, however, no means to verify the original entries.

The set of issues described above suggests that if the exchange of mail between national postal operators was to be based on cost, then the contracts written between operators would have to take into account multiple factors including: currency fluctuations, variation in the mode and routing of shipments, the volume of mail and its composition, the final destination of mail and the distances between the port of entry to a country and the final destination of the mail, and ancillary non-market issues such as political interference in mail rates.

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\(^5\) This is the problem of the “fineness” of the system. There is a tradeoff between the costs of increasing the fineness of a costing system and the benefits from better decision-making/resource allocation.
From the perspective of TCE, the transactions at issue are frequent (the volume of international mail was increasing exponentially during this period; Courtis, 2004) and undertaken under conditions of uncertainty (particularly with respect to exchange rates and the composition of the mail). There was very little asset specificity in this market with the exception of some mail transit facilities provided by third-parties for mail crossing their jurisdiction. The sorting facilities were created to support domestic mail services and so are not subject to “hold-up” to international mail. The transportation services were provided by regular commercial ship lines as a marginal cost activity. The UK, for example, passed a law requiring commercial ships to accept international mail to ensure that delivery would be by the next available ship between countries. The main issue was simply the high costs of monitoring, reporting and reconciling the provisions of contracts between countries.

Attempts to deal with market problems through bilateral treaties

Nations exchanging significant volumes of mail attempted to deal with these complexities in the spot market by negotiating bilateral treaties that reduced some of the uncertainties in market exchanges. For example, the UK and Hamburg established a postal treaty in 1859 for letter mail under ½ ounce (in the UK) or under 1 zoll loth (16 grams, in Hamburg). The treaty between the UK and Hamburg specified that the UK post office pay the Hamburg post office 3p for every prepaid letter originating in the UK and 4p for every unpaid letter originating in Hamburg (and a reciprocal agreement for other mail). The 1860 treaty created a more complex revenue sharing rule:

1. for prepaid letters (6p.) originating in the UK, the UK receives 4½p and Hamburg received 1½p.
2. for prepaid letters (5 silver groschen [sg]) originating in Hamburg, Hamburg receives 1 3/12 sg and the UK received 3 9/12 sg.
3. unpaid letters were charged 8p. in the UK and 7 sg in Hamburg with the UK receiving ¾ of this amount and Hamburg receiving ¼.
4. Ship owners who conveyed the mail between the UK and Hamburg were paid 1p.

All of these costs were paid by the UK post (or reimbursed to Hamburg if paid by them).

The rewritten treaty recognizes the UK’s dominance of commercial shipping and shifts more revenue to the UK. This latter aspect may reflect differences in cost or simply the greater negotiating power of the UK. Note, for example, that after allowing for shipping costs the UK received more of the total revenue than Hamburg under this treaty.

The 1862 treaty between the UK and Hamburg introduces accounting procedures to capture and reconcile these revenue sharing agreements. The treaty requires monthly accounting reports, agreed to by both parties, and quarterly payment of the fees agreed to by the parties. It also provided a table of postal rates and revenue sharing rules for mail flowing through the UK and Hamburg from other countries (see Figure 1). Note in this table the complications that arise when mail is flowing between nations with different postal policies (pay-on-delivery versus prepaid postage). Even with this treaty, a significant amount of accounting was required to track letter flows and costs to allow the reconciliation and payment.
The treaty also allowed the UK to forward mail to Hamburg through Belgium, with which it had a separate treaty, should it be more cost effective to do so. The introduction of accounting into these contracts arises because of the spatial and temporal separation of technological transactions (i.e. physical mail) from the financial transactions that completed the exchange. Rather than have money change hands each time mail changed hands, accounting allowed the parties to aggregate the many small, frequent transactions into a more cost efficient contracting structure.

Even though accounting simplified the costs of transactions in this market, the complexity of the accounting/bookkeeping within the international postal system was clearly of concern. Accounting represented a deadweight loss on postal transactions. The US Postmaster General reported to Congress in 1861 that the costs of incoming and outgoing mail tended to be roughly equal (Table 2) and that significant accounting work was being done with virtually no impact on the money owing between countries (Gough, 2005).

This finding was reflected in US postal treaties beginning with the Mexican postal treaty of 1861. Mexico at that time collected its postage on delivery of a letter hence letters from Mexico also entered the US without postage. US mail to Mexico, even though the US used stamps for domestic mail, were sent without postage. Article 3 of the Treaty between Mexico and the US specified that:

“Upon all letters, newspapers, printed pamphlets, or other printed matter received in the United States of America from Mexico by sea, there will be charged by the United States such rates of inland postage as are now, or may hereafter be, established by the laws of the United States, which shall be collected at the place of destination, and shall belong exclusively to the United States of America, and vice versa, upon all letters, newspapers, printed pamphlets, or other printed matter received in Mexico from the United States of America by sea, there will be charged by Mexico such rates of inland postage as are now, or may hereafter be, established by the laws of Mexico, which shall be collected at the place of destination, and shall belong exclusively to Mexico”.

Similarly, the Treaty between the US and Newfoundland in 1872, Article 3, specified:

“No accounts shall be kept between the Post Departments of the two countries upon the international correspondence, written or printed, exchanged between them, but each Department shall retain to its own use all the postages which it collects thereon”.

Both Newfoundland and the US used prepaid postage so this clause reverses the onus for payment from the recipient to the originator of the letter but in both the US-
Newfoundland and US-Mexico treaties, the requirement for accounting for revenues and revenue sharing was eliminated.

The US/Mexican postal treaty also specified that mails could cross each territory on route to a third destination without cost (i.e. this service was provided as a marginal addition to the second country’s internal mail distribution system and/or based on the assumption that the flow of mail across each country would be approximately equal in cost allowing each country to barter their services). Article 7 specifies that:

“The United Mexican States engage to grant to the United States of America the transit, in closed mails, free from any postage, duties, imposts, detention, or examination whatever, through the United Mexican States, or any of their possessions or territories, of letters, newspapers, printed pamphlets, or other printed matter, forwarded from the United States of America, or any their possessions or territories, to an other possession or territory of the United States of America, or to an foreign country, or from any foreign country, or possession or territory of the United States of America, their possessions or territories.

A mail agent of the United State of America shall be permitted to accompany the closed mails in their transit.

The United States of America on their part, engage to grant to the United Mexican States the transit in closed mails, free from any postage, duties, imposts, detention, or examination whatever, through the United States of America, or any of their possessions or territories, or letters, newspapers, printed pamphlets, or other printed matter, forwarded from the United Mexican States, or any of their possession or territories, to any other Mexican possession or territory, or to any foreign country, or from any foreign country, or Mexican possession or territory, to the United Mexican States, their possessions or territories.

A mail agent of Mexico shall be permitted to accompany the closed mails in their transit”.

The elimination of transit charges for Mexican and US mails in each others territories and the retention without reconciliation of international postage paid in each country largely eliminated the accounting associated with the cross-border postal system. These clauses may be contrasted with the Treaty between the US and UK negotiated in 1868 that specifies in Article 6 that accounts are to be kept and that the revenues collected by each party be pooled and divided equally. These treaties reflect apparent differences between the US and UK regarding their beliefs about the realized equality of cost and revenue flows. The treaty between the UK and US requires accounting records but the equal distribution of revenues presumes an equality of costs between the countries.

The UK however was also aware of the complexities of accounting within the international mails. This was reflected in a simplification of revenue sharing under the
Anglo-French treaty of 1843 (Courtis, 2004). This treaty introduced the use of rubber stamps rather than hand markings on letters to indicate the distribution of revenues. Only three markings were used representing a letter fully paid to its destination (PD), paid to the frontier of the receiving country (PP) or unpaid (P). This system eliminated complex accounting for different carriers and routings from one country to the other.

The changes in the bilateral treaties reviewed above suggest that the first approach to reducing transaction costs was to change from a unit (job) costing approach to a batch (process) costing approach. By reducing the number of distinct accounting entries (e.g. by using a small number of distance classes rather than actual mileage travelled by each letter) the cost of record keeping could be substantially reduced. As contemporary activity based costing studies have made clear, however, this results in cross-subsidization of different services and, potentially, suboptimal investment and operating decisions. The second approach was to eliminate accounting where it could be demonstrated that mail flows were approximately balanced such that no significant exchange of resources resulted from the detailed accounting for transactions. This stage created the incentive to seek multilateral agreements to eliminate the accounting for international postal transactions.

The high mundane transaction costs of operating the international postal system through the market were sufficient to motivate a search for alternative governance structures for the completion of these transactions. The fact that the postal operators were government agencies meant that a pure hierarchical solution was not possible – this would require each government to cede sovereignty to a single transnational agency that would operate both the international and domestic postal systems. The solution that emerged was to create a network of domestic postal operators whose transactions would be subject to an agreed set of rules that could reduce the transaction costs of the market. The exact nature of these rules however is indeterminate theoretically so we examine the actual rules created and consider the role of accounting within the network and consequences of these rules on the functioning of the international postal system.

The uses of accounting in the first UPU treaty

The UPU arose after an initial set of meetings in 1863 in Paris called at the request of the US Postmaster General to discuss the possibility of simplifying the international postal system. This meeting was attended by fourteen countries. The meeting did not result in specific agreements and further progress was limited by the US civil war (1861-1865) and the Franco-Prussian war (1870-1871). A second meeting was held in Berne Switzerland at the behest of the German Postmaster General who prepared an initial document based on the postal agreements between states of the German federation. This meeting was attended by 22 countries and resulted in the creation of the Universal Postal Union (Williamson, 1930).

The UPU Treaty in 1875 contained a remarkable clause that states (emphasis added):

Each Administration shall keep the whole of the sums which it collects …. Consequently, there will be no necessity on this head for any accounts between the several Administrations of the Union. Neither the senders
nor the addressees of letters and other postal packets shall be called upon
to pay, either in the country of origin or in that of destination, any tax or
postal duty other than those contemplated by the Articles above
mentioned.

The UPU had eliminated any accounting between members of the postal network with
regard to the services provided in one country to deliver the mail originating in another
country. It achieved this by (a) setting a uniform rate of postage denominated in a stable
currency and with a fixed weight scale for letter mail, (b) making the assumption that the
volume of mail and characteristics of the mail exchanged between countries was
essentially equal\(^6\), and (c) treating all members of the international postal network as a
single jurisdiction. In part, this approach to international mail was due to Hill (1837) who
had suggested at the time of reform of the UK postal system that international mail be
delivered without cost in the UK and that international mail from the UK be charged
twice the domestic rate to compensate for the unpaid inbound delivery of mail.

The use of a common rate of postage meant that flows of mail could be accounted
for by bulk weight rather than by tracking the postage attached to individual letters. The
use of a single currency (the French centime) as the basis of this postage meant that all
postage rates, regardless of the domestic currency, could be determined against a known
standard. The adoption of a fixed international postal rate across different countries
eliminates the possibility of arbitrage between countries, i.e. people shipping mail to a
country with low postage rates for onward delivery at a lower rate. This phenomenon has
become known as “remail.” Similarly by adopting the gram as the official unit of weight,
problems associated with the conversion between different postal scales disappeared.

These elements of standardization would have significantly reduced the
accounting burden facing the posts but it would not have been sufficient to eliminate the
need for accounting information. The assumption of equal flows of mail between all
postal partners was also required. This is a heroic assumption because it assumes not only
that there is an equal volume of mail; it assumes also that the composition of the mail is
also the same. For example, if the number of items per kilogram of mail varies between
countries even though the number of kilograms is the same, then one of the countries will
be required to spend more to deliver the mail than the other country.

The final assumption/policy required is that the UPU treat its members as a single
jurisdiction. By this time most countries had adopted the norm that domestic mail was
delivered for a uniform rate regardless of the distance travelled. This policy was not an
unreasonable approximation in densely populated and geographically compact countries
such England where the policy originated. In countries such as Australia, Canada, India
and the United States, however, this assumption might not be reasonable. The fixed
domestic mail rate used by many countries was set to approximate a weighted-average of
all possible pairs of origins/destinations within the postal system. The UPU policy
extended that logic to the international system. The international mail rate was chosen to
approximate a weighted-average of global mail flows and the “cost” of those deliveries. It
should be noted however that the “cost” was negotiated during the first UPU convention

\(^6\) This is a cost/benefit issue and depends on the costs of setting up systems versus the amount that would
be paid between countries.
without the benefit of cost data. It represents a negotiated outcome. The basis for this decision requires further analysis of historical materials.

The only accounting that remained within the UPU treaty was to compensate countries that acted as carriers for mail passing across their territory to a third country. The country providing the service would keep a record of the weight of mail transported and could claim a fixed fee virtually independent of distance (two rates could be charged: one for under 750 miles, and a second rate for longer distances):

The despatching Office shall pay to the Administration of the territory providing the transit, the sum of 2 francs per kilogramme for letters and 25 centimes per kilogramme for the several articles specified in Article 4, net weight, whether the transit takes place in closed mails or in open mails.

This payment may be increased to 4 francs for letters and to 50 centimes for the articles specified in Article 4, when a transit is provided of more than 750 kilometers in length over the territory of one Administration.

It is understood, however, that in any case in which the transit is already actually gratuitous or subject to lower rates, those conditions shall be maintained.

Whenever a transit shall take place by sea over a distance exceeding 300 nautical miles within the district of the Union, the Administration by or at the expense of which this sea-service is performed shall have the right to a payment of the expenses attending this transport.

The members of the Union engage to reduce those expenses as much as possible. The payment which the Office providing the sea-conveyance may claim on this account from the despatching Office shall not exceed 6 francs 50 centimes per kilogramme for letters, and 50 centimes per kilogramme for the articles specified in Article 4, (net weight).

In no case shall these expenses be higher than these now paid. Consequently, no payment shall be made upon the postal sea routes on which nothing is paid at the present time.

Even for these costs the UPU took steps to reduce the accounting required. Instead of using actual weights, the treaty specified that the payment would be based on a sample conducted during a two week period. The regulations that implemented the treaty stipulated that this sample data would be collected every three years. The approach used assumes that the pattern and amount of mail flow between countries was very stable.

**DISCUSSION**

At the beginning of our sample period the international postal system attempted to operate on a cost recovery basis with the reimbursement of the costs of national postal
operators delivering mail originating with other national postal operators depending on
weight, distance, routing, currency of payment, mode of transportation, and timing of
payment. The mundane transaction costs of operating on a spot market basis led countries
exchanging significant volumes of mail to negotiate agreements that would reduce the
uncertainty of the exchanges and the need for repetitive bargaining. These details were
initially dealt with in bilateral treaties among nations exchanging significant volumes of
mail. Even with bilateral treaties in place, however, this level of detail in costing and
revenue sharing became an impediment to the timely delivery of mail as postal volumes
increased and became a significant deadweight cost on the operation of the postal system.
In addition, opportunism associated with countries and individual postal clients taking
advantage of variations in weight scales and currency fluctuations were creating
identifiable ex post problems that, in an extra territorial setting, were difficult to resolve.
The bilateral postal treaties created between 1840 and 1875 provide evidence of
adjustments to reduce transaction costs based on the parties experience with costs. The
most extreme adjustments are evident in the US postal treaties that eliminated accounting
for transit costs and revenue sharing based on the implicit assumptions that (a) the
volumes of mail exchanged between and travelling through each country was
approximately the same, and (b) that the costs of service in each jurisdiction was
approximately the same or that differences were immaterial compared with the mundane
transaction costs of identifying, measuring and compensating for those differences.

The later assumption was only partially recognized in the bilateral treaties. For
example, in setting the rates for postage between the US and Mexico, each post had to
make assumptions about the domestic source and point of delivery of mail to understand
their costs. The initial high rates of postage were attributed to an error in these
assumptions. However, this aspect aside, by not accounting for the costs of service in
each country based on an assumption of equal volumes of mail, the treaties assume also
that the value of services provided was the same. This is essentially a barter arrangement
that removes the need to monetize the value of these services.

The postal treaties also began to eliminate variation in shipping costs and
variation in domestic transport distance from their accounting procedures. This was seen
first in the UK- France postal treaty of 1843 when a set of three markings were used to
summarize the large set of potential cost variations between different types of letters.

In summary, the postal treaties show consistent evidence of voluntary agreements
to reduce transaction costs and specifically to reduce the cost of accounting by (a) using
averages to represent a range of cost variation and (b) omitting cost/revenue
reconciliations where experience showed that these costs/revenues were approximately
evenly distributed across exchange partners. The variation in treaties however suggests
that the experience of countries on these issues was not consistent, or there was sufficient
uncertainty that continued accounting was seen as valuable, or postal rates and treaties
were being used as part of a broader diplomatic initiative so that losses on postal
agreements could be off-set with gains in other areas.

The creation of the UPU in 1875 allowed a complex set of bilateral agreements to
be subsumed within a single multilateral agreement. The higher level of aggregation in
this institution meant that further simplifications of costs and revenue sharing were
institutionalized. In particular, all accounting between countries was eliminated with the
exception of transit charges for third-party mail. This was done by standardizing certain
aspects of the postal system (currency, postal rates and weight scales), adopting policies to reduce incentives and opportunities for arbitrage (e.g. regarding the entire postal network as a single postal jurisdiction) and by making simplifying assumptions about the equality and stability of mail flows between countries.

The case we describe here is of great theoretical interest in elaborating the interpretation of transaction cost economics in accounting. Most studies in accounting suggest that management accounting information is developed when transactions are internalized in firms and networks (Johnson, 1983; Kaplan, 1984). Our study provides a setting in which postal transactions are internalized in order to reduce the accounting that was necessary between parties engaged in market transactions. This apparent contradiction requires further theoretical development. In particular, we return to the origins of concern with transactions and transaction costs in the work of John Commons and Ronald Coase to elaborate the nature of transaction costs (mundane and opportunistic) and transaction types (financial and technological). This broader conceptualization of transaction cost economics provides insights into the empirical findings above.

The implicit assumption in accounting studies has been that transactions completed in the markets do not require accounting information. All transactions are completed on the basis of market prices: no mundane transaction costs are incurred and opportunistic transaction costs are insignificant. There are two problems with this view. First, markets, with the exception of the simplest of spot market exchanges, are based on contracts between parties. These contracts require mundane transaction costs to define, measure and compensate parties according to the terms of the contract. Second, this would require comprehensive and competitive markets for all intermediate goods and processes in a value chain. Neither of these requirements was present in the early international mail system. The setting we examine is one in which the mundane transaction costs of using the market were large compared with the net value of the exchange and these costs exceeded the risk posed by opportunistic transaction costs. In addition, the market for mail services was incomplete in certain key areas.

The lack of a comprehensive market was a side-effect of the volume of mail transferred, the complexity of the delivery process, the extended time for delivery and the uncertainties in key variables over this extended time period. The initial system for distributing mail approximated an actual cost job-order system with each letter charged according to distance, weight, routing, mode of deliver, currency etc (Courtis, 2004). This system resulted in a cost to the user of the system which was extraordinarily high; the delivery of one international letter could cost a day’s wage for an ordinary labourer. Most of these costs were related to the record keeping system rather than the actual delivery of the mail. This system absorbed the uncertainties associated with currency fluctuations and variations in the delivery system by charging the recipient of the mail for costs that could only be determined ex post. The shift to prepaid postage changed this dynamic and now required the postal operator to set postage rates based on expectations of the future costs of completing delivery. In order to implement this change, the postal operators would have required access to currency hedges and/or forward contracts with all stages of the delivery process. These aspects of the market were not available.

The exchange of international mail along an extended value chain meant that there was considerable separation between the providers of services and those who
actually paid for the service. In principle this could be handled by having each stage in
the value chain “buy” the mail from the previous stage for payment-on-delivery mail or
“sell” the mail for prepaid mail. In a sequential production process such as this one,
however, certain bottlenecks may exist where no market is present. This appears to have
been the case for trans-Atlantic transport of mail where the UK steamship lines
dominated the market. In fact, the US began subsidizing its own steamship lines to
provide competition in this part of the value chain (Hargest, 1971). It also appears to be
the case in Belgium where its railway system provided a unique path from the coast into
continental Europe. In this situation it is possible for the owner of the bottleneck
resources to extract monopoly rents.

The lack of complete and competitive markets in the postal system meant that no
spot markets for mail services existed and put the postal operators at risk of considerable
financial losses. The postal operators dealt with this by creating contracts that established
currency exchange rates, revenue sharing rules and cost reimbursement procedures. All
of these features of the contracts required accounting records to be kept and mutual
auditing procedures to be put in place. Accounting thus appears in this setting as a cost of
completing the transaction but as one of the “mundane” transaction costs rather than
those specifically associated with enforcing property rights (Langlois, 2006: 1390). In
this sense, accounting appears as a “friction” in the market that could be reduced by
moving the transactions from the market and embedding them within a network that
included as part of its governance arrangements provisions to remove the need for
accounting.

In the period before the creation of the UPU we see high mundane transaction
costs associated with accounting for international postal flows. Over time national postal
operators found ways to reduce these mundane transaction costs by reducing the
accounting. This change in accounting procedure would only make sense, however, if the
perception of the opportunistic transaction costs were relatively low. The internalization
of the financial transaction and the prepayment of postage served to reduce the exposure
of national postal systems to international mail risk. As long as the flow of mail between
countries remained balanced and customers did not seek alternative mail systems, this
system would provide a reasonable balance of costs between the originating and
destination postal operators.

The creation of the UPU had distinct effects on the transaction as a technical
event versus the transaction as a property rights event. The creation of the UPU brought
the transfer of physical mail within a single organizational entity. Mail was treated “as if”
there was a single postal territory and transported by the most direct route without
concern about political boundaries or local variations in transport costs. On the other
hand, the accounting provisions within the UPU meant that, in effect, there was no
exchange of property rights, or explicit compensation for the services provided, between
postal operators. The originating post office collected initial revenues and did not “owe”
the delivering postal operator for their work.

It is possible, drawing on Coase’s (1990:11) insight cited above, that networks are
used to reduce transaction costs (including accounting costs) between firms when (a) the
individual firms cannot cost efficiently expand to incorporate the entire transaction (in
this case, a single post office serving the entire world) and (b) a set of agreed upon rules
can eliminate the transaction costs while controlling opportunism of network members
(see also Williamson, 1991). The UPU appears to have initially achieved this role. However, the reduction in accounting between organizations may not imply the reduction in accounting within organizations that form the network. The changes in the accounting processes implemented in the UPU meant that each postal operator had the opportunity to improve their financial position through internal cost savings that were no longer dependent on the activities of their trading partners. In this sense the creation of the UPU network internalized (the financial aspects of) transactions within each national postal operator by (a) creating, in essence, a barter system between postal operators where services within a country were traded for services in a second country without any reconciliation of value and (b) charging domestic users of the international mail system for the outbound logistics of their own international mail and the inbound logistics of an equivalent volume of mail coming from abroad.

In the UPU, the network succeeded in separating financial and technological transactions. Niehaus (1969) alludes to this distinction by separating the “ultimate flow” of commodities and the payment system for those commodities. The creation of the UPU allowed a technological transaction to be internalized within a networked governance structure comprising national postal operators while the financial consequence of this transaction was internalized within the individual postal operators. The barter economy is sometimes discussed in TCE as an example of a high transaction cost exchange that is eliminated through the institution of “money” i.e. a medium of exchange that is agreed to represent value within a community. However, the use of barter and countertrade to overcome financial market failures is gaining more interest among economists who have observed its rise among formerly planned economies where the lack of trade credit and a sound banking system has forced companies to seek alternatives to money-based exchange (Mirus and Yeung, 1993). The UPU network brought together a group of countries with a common need to provide reciprocal services that were equal in nature and so could be held to be the same without resort to explicit mechanisms of valuation. This assumption that the services were of equal value would ultimately reemerge as a challenge to the network.

CONCLUSION

We have examined the role of accounting in transnational governance focusing on the restructuring of the international postal system between 1840 and 1875. During this period international mail services were provided by transactions between national postal operators governed by bilateral contracts across a market space. An examination of a time series of bilateral treaties between countries demonstrates a growing recognition of the dead-weight losses associated with accounting procedures to track mail flows and to divide revenue among stages of the value chain according to an approximation of the actual cost of delivery of each letter. The attempts to simplify accounting in bilateral treaties culminated in the creation of the UPU Convention which eliminated accounting between national posts.

The case illustrates several key points. First, accounting was associated with the use of contracts in the market and, hence, any commentary on the role of accounting in organizations from a transaction cost perspective must adopt the comparative institutional approach advocated by Williamson (1991) and establish the baseline use of accounting in
one discrete governance system before assessing the use in a second governance system. This is particularly important given the distinction between technological and financial transactions developed above. It may not always be the case that the internalization of one type of transaction is mirrored by the internalization of the other type of transaction even though the two components are part of one “transaction.”

Second, the internalization of transactions within a network organization can be associated with a reduction in accounting. Accounting does not always play the role noted in the accounting literature of providing a replacement for market price information. In the case of the UPU, the reduction in the use of accounting was brought about by the replacement of a monetized market with a system of barter (in essence, each country traded their internal delivery of a second country’s mail in exchange for the second country providing the same services). The reduction of monetized exchanges in this setting proved to be a particular problem as postal systems were liberalized after the Second World War. The creation of prices was necessary for the reintroduction of market logic.

Third, the change in the use of accounting within the international postal network did not reduce the need for accounting within the national postal operators that comprised the network. The barter arrangement created incentives for each postal operator to improve the efficiency of their internal delivery system. The adoption of a fixed postage rate for international postage meant that national postal operators could achieve a surplus or profit by reducing the cost of providing the service. Furthermore, the barter system did not provide incentives for trading partners to achieve equivalent cost savings.
References:


Table 1: Combinations of postal policies between 1840 and 1875

<table>
<thead>
<tr>
<th>Postal System at point of origin</th>
<th>Postal System at destination</th>
<th>Prepaid</th>
<th>Cash on Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepaid</td>
<td>(1) Originator retains postage paid in compensation for outbound logistics; destination charges higher unpaid rate for delivery</td>
<td>(2) Originator retains postage paid in compensation for outbound logistics; destination charges normal rate for delivery</td>
<td></td>
</tr>
<tr>
<td>Cash on Delivery</td>
<td>(3) Originator receives no compensation for outbound logistics from customer; destination charges higher unpaid rate for delivery and compensates originator</td>
<td>(4) Originator receives no compensation for outbound logistics from customer; destination charges higher rate for delivery and compensates originator</td>
<td></td>
</tr>
</tbody>
</table>
Table 2: Report to Congress by the US Post Master General (1861)\(^7\)

<table>
<thead>
<tr>
<th>Direction</th>
<th>Volume</th>
<th>Value of Mail (US Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From USA to Europe</td>
<td>3,086,121</td>
<td>$675,997.29</td>
</tr>
<tr>
<td>From Europe to USA</td>
<td>3,059,700</td>
<td>$686,039.41</td>
</tr>
<tr>
<td>Difference (USA-Europe)</td>
<td>26,421</td>
<td>-$10,042.12</td>
</tr>
<tr>
<td>Differential</td>
<td>0.009 (9/10ths percent)</td>
<td>-0.015 (1½ percent)</td>
</tr>
</tbody>
</table>

\(^7\)This reflects mail flow to the UK and France and involves assumptions about exchange rates in addition to measured postal volumes. The small discrepancy between flows may be due to measurement errors rather than reflecting true differences in the values of mail. (Source: [http://www.rpsl.org.uk/cpu/index.html](http://www.rpsl.org.uk/cpu/index.html) accessed April, 2008).
**TABLE showing the Conditions on which shall be exchanged in Ordinary Mails between the British Post Office and the Hamburg Post Office Ordinary Letters dispatched from the Countries the Correspondence of which is transmitted through Great Britain for Hamburg and Countries via Hamburg and vice versa.**

The rates marked * are increase according to two different principles. The sum of Threepence out of each rate is chargeable by the Zoll-Loth and the remainder by the half an Ounce.

The rates marked † also increase according to two principles, twopenny being chargeable by the Zoll-Loth and the remainder by the quarter ounce.

<table>
<thead>
<tr>
<th>COUNTRIES</th>
<th>Regulation as to Payment in Advance</th>
<th>To what Limit</th>
<th>Rate of Postage to be paid by the British Office to the Hamburg Office for an unpaid Letter not exceeding one Zoll-loth.</th>
<th>Rate of Postage to be paid by the British Office to the Hamburg Office for a paid Letter not exceeding Half an Ounce.</th>
<th>Letters delivered to Hamburg</th>
<th>Letters delivered to Countries via Hamburg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antigua, Bahamas, Barbados, Bermuda, Carilcaon, Dominica, Grenada, Gibraltar, British Guiana, Honduras, Montserrat, Nevis, St. Christopher (St. Kitt’s), St. Lucia, St. Vincent, Tobago, Jamaica, Trinidad, Tortola, → by Canadian packet</td>
<td>Optional Destination</td>
<td>Optional Destination</td>
<td>0 9</td>
<td>0 3</td>
<td>The same rate as for paid letters coming from England.</td>
<td></td>
</tr>
<tr>
<td>by United States</td>
<td></td>
<td></td>
<td>Do.</td>
<td>Do.</td>
<td>Do.</td>
<td></td>
</tr>
<tr>
<td>Nova Scotia, New Brunswick → by Halifax to Prince Edward Island → by United States</td>
<td>Optional Destination</td>
<td>Optional Destination</td>
<td>0 9</td>
<td>0 3</td>
<td>The same rate as for paid letters coming from England.</td>
<td></td>
</tr>
<tr>
<td>Colonial</td>
<td>Optional Destination</td>
<td>Optional Destination</td>
<td>0 9</td>
<td>0 3</td>
<td>The same rate as for paid letters coming from England.</td>
<td></td>
</tr>
<tr>
<td>by British Packet</td>
<td>Optional Destination</td>
<td>Optional Destination</td>
<td>0 9</td>
<td>0 3</td>
<td>The same rate as for paid letters coming from England.</td>
<td></td>
</tr>
<tr>
<td>by Packet</td>
<td>Optional Destination</td>
<td>Optional Destination</td>
<td>0 9</td>
<td>0 3</td>
<td>The same rate as for paid letters coming from England.</td>
<td></td>
</tr>
<tr>
<td>by Packet</td>
<td>Optional Destination</td>
<td>Optional Destination</td>
<td>0 9</td>
<td>0 3</td>
<td>The same rate as for paid letters coming from England.</td>
<td></td>
</tr>
</tbody>
</table>