

# Transaction cost economics as a predictor of management accounting practices at the Hudson's Bay Company, 1860 to 1914

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## Abstract

*With its emphasis on cost minimisation, transaction cost economics (TCE) predicts that as asset specificity and uncertainty increase, thereby making transaction management more difficult, the use of hierarchy for managing transactions will also increase. It follows that as a hierarchical mechanism for managing transactions, management accounting will also be positively associated with asset specificity and uncertainty. Roy and Spraakman (1996) tested those propositions with evidence from the Hudson's Bay Company. The evidence supported those propositions for the 1821 to 1860 period when the Company had extensive asset specificity and uncertainty. Compared to that frontier period, between 1860 to 1914 the Company experienced a decrease in uncertainty as communications and transportation modernised. During this later period, the Company's transportation network became worthless. The transportation network's devaluation was equivalent to a decrease in asset specificity. With less asset specificity and uncertainty, TCE predicts decreases in hierarchical governance and the use of management accounting information. Evidence for the 1860 to 1914 period was largely consistent with those predictions.*

**Keywords:** *management accounting; transaction cost economics; Hudson's Bay Company.*

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## Introduction

With its emphasis on cost minimisation, transaction cost economics (TCE) predicts that as asset specificity and uncertainty increase, thereby making transaction management more difficult, the use of hierarchy for managing transactions will also increase. It follows that as a hierarchical mechanism for managing transactions, management accounting will also be positively associated with asset specificity and uncertainty. Roy and Spraaakman (1996) tested those propositions on the Hudson's Bay Company (HBC) for the period 1821 to 1860 where there was extensive asset specificity and uncertainty. During 1860 to 1914, however, the environmental uncertainty was reduced because of improvements in communications and transportation. These technological advances made the HBC's once valuable river and lake transportation network worthless. In replacing its own transportation network with these advances, the HBC's asset specificity decreased. With decreases in asset specificity and uncertainty between 1860 to 1914 compared to 1821 to 1860, TCE predicts the reduction in the use of hierarchy and management accounting.

Established in 1670, the HBC is the world's oldest commercial entity that continues its original line of business (Milgrom & Roberts, 1992, p.9). For part of its existence, economists have judged this North American fur-trading company with its London headquarters to have been one of the few companies in the world to have earned an economic rent, or in other words to have been uniquely successful (Schoemaker, 1990, p.1180). The present study of the 1860 to 1914 period is an investigation of how the HBC changed its use of hierarchy and management accounting in response to reduced asset specificity and uncertainty. Primary and secondary sources are employed. The management accounting data come largely from the Hudson's Bay Company Archives (HBCA), while secondary sources provide the historical context.

The paper is organised into the following sections. Section two is a brief review of TCE and addresses its ability to predict changes in management accounting practice and also relevant criticisms of the approach. Then section three presents the hypotheses. Section four reviews the archival evidence, while the subsequent section discusses the evidence for the hypotheses. Concluding comments, including a discussion of the usefulness of TCE, are contained in the sixth and last section.

## Literature review

This section examines the basic attributes of TCE, the underlying theory to this research. The independent variables to TCE research - asset specificity and uncertainty - are discussed along with the dependent variables, particularly management accounting practices, and criticisms of TCE pertinent to the analysis of changes to management accounting practices.

### TCE, asset specificity and uncertainty

TCE concerns itself with markets and hierarchies as alternative governance mechanisms for completing a set of transactions (Williamson, 1975, p.8; Barney & Hesterly, 1996, p.117). Market forms of governance tend to rely on prices, competition, and contracts to keep all parties to an exchange informed of their rights and responsibilities. Alternatively, hierarchical governance brings exchange parties under direct control of a third party or manager, who keeps all informed of their rights and responsibilities. This manager has the right to directly resolve conflicts with "managerial fiat".

TCE is based on two assumptions about economic actors. The first, bounded rationality, means that those engaged in economic transactions are "intendedly rational, but only limitedly so" (Simon, 1947, p.xxiv). With the second, opportunism, TCE assumes simply that economic actors seek self-interest with guile (Williamson, 1975, p.26).

In their review of organisational economics, Barney and Hesterly (1996, p.118) state that the TCE governance decision is straightforward. Economic actors will choose that form of governance that reduces any potential exchange problems created by bounded rationality, on the one hand, and by the threat of opportunism, on the other, at the lowest cost. The adoption of the more costly hierarchical option may be necessary if market governance does not solve exchange problems.

The two attributes or dimensions of transactions, asset specificity and uncertainty, create the most problems (Williamson, 1985, pp.52-61). These dimensions are often the independent variables with TCE-based research. The first, asset specificity occurs when an asset has been customised in order to reduce production costs, creating a unique, complicated asset that cannot be easily understood by the market. Customisation restricts the asset to a narrower application, thereby inhibiting easy and costless redeployment. This further restricts the customised asset to hierarchical production, where opportunism and maladaptation can be checked. Thus, hierarchy is increasingly likely with asset specificity, which Williamson divided into four types: site (i.e. an advantageous location), physical asset, human asset and dedicated asset.

Uncertainty, the second dimension of TCE, complicates the writing and enforcing of contracts. Environmental changes cause incomplete contracts because of the difficulty with the ex ante understanding of ex post circumstances. The fundamental problem under the market option is that even the best contracts are incomplete. Hierarchy is better able to cope because adaptation can be made by the manager as needed, without reverting to formal agreements. Hence, the likelihood of in-house production or hierarchy is expected to increase with uncertainty.

Bouttes and Hamamdjian (1997, p.62) describe the impact that asset specificity and uncertainty have on the decision to choose hierarchy and to hire employees:

Asset specificity makes long-term relationships between the firm and its employees necessary. Moreover, uncertainty makes these relationships difficult to manage, since unforeseen events may occur and make renegotiation imperative.

With the choice of hierarchy, TCE predicts the use of internal information for minimising costs from shirking. The costs to be minimised are those of the series of linked activities and transactions that produce goods or services (Williamson, 1975, p.10). Shirking is constrained with appropriately designed activities and directing (ex ante) and monitoring (ex post) mechanisms (Williamson, 1991, pp.76-8). Shirking occurs through slack and waste, which are possible because of complex activities, and the tendency of employees for opportunism. The bounded rationality of managers prevents mechanisms from being built that completely and permanently eliminate shirking. However, bounded rationality is offset as managers gain in-depth understanding of activities, and with that knowledge design cost-reducing activities and mechanisms. In other words, they direct and monitor employees in ways that reduce shirking.

Hennart (1993, pp.531-41) has argued that organisations use a combination of market and hierarchical options. He builds the argument on the observation that the market rewards on the basis of outputs, whereas hierarchy rewards on the basis of behaviour or inputs. The cost of using output incentives (i.e. cheating costs) is the cost of measuring output, plus the losses due to fraud when measurement is imperfect. The cost of using hierarchy is that of using behaviour constraints, plus the shirking that occurs due to imperfect behaviour constraints. Hennart adds that although firms predominantly rely on hierarchy and markets on price, because of diminishing returns, both will often use a mix of output incentives and behaviour constraints. In addition, Hennart puts forth three propositions for the use of output incentives and behavioural constraints. First, the use of output incentives with firms should be indirectly related to the skills of management. Improvements in managerial techniques should reduce the use of output incentives, *ceteris paribus*. Second, at any point of time, large and diversified firms should make greater use of output incentives than small and non-diversified firms. Third, firms will use output incentives for those activities about which they have limited knowledge and/or those which are costly to supervise.

### **TCE and management accounting**

Management accounting, it will be argued, is a set of mechanisms in TCE terms for integrating activities and thereby reducing shirking costs. Baiman (1990, p.346) concluded in his review of agency research in management accounting that TCE has not had a significant effect on the direction of management accounting research. However, he speculated that TCE has the "potential to enrich our understanding of the role of the managerial accounting process." This paper pursues that potential. To do that management accounting must be understood in

TCE terms. For a definition of management accounting that of Edwards and Newell (1991, pp.412-5) will be used, that is, management accounting involves the provision to management of statistical information for the purposes of planning, decision-making and control. They recommend this definition for identifying the existence of management accounting in historical research. From this definition, the dominant attribute of management accounting is *information* - financial and operating data about an organisation's activities, including processes, operating units and products. Temporally, this information can be *ex ante* or *ex post*, and thereby can be used for directing and monitoring as described by TCE. *Ex ante* information - such as budgets, plans and standards - can be used for directing employees. On the other hand, *ex post* information - for example, internal financial/operating statements - can be used for monitoring employees.

An accepted TCE theory does not exist for predicting how the various management accounting mechanisms change with asset specificity and uncertainty. Nevertheless, there are some useful theoretical insights. The starting point is Williamson's (1985, pp.56-61) suggestions that the dimensions of asset specificity and uncertainty will be positively related to the selection of hierarchy instead of market. There is substantial empirical evidence for that relationship (see, for example, Anderson & Schmittlein, 1984; Anderson *et al.*, 1993). It follows that by being a sub-set of the available hierarchical tools for constraining shirking, management accounting information will also be positively related to asset specificity and uncertainty. However, Williamson does not specify how individual aspects of management accounting will be affected. Furthermore, Hennart (1993, pp.531-2) argues, it will be recalled, that hierarchical mechanisms for curbing shirking have diminishing returns, and thus firms will tend to use combinations of hierarchical mechanisms - which would include management accounting information - and output incentives. Hennart added that output incentives will be negatively related to the level of managerial expertise and positively related to the firm's size and diversification (p.541).

Within the TCE framework, Hart (1991) notes that the "benefit of integration is that the scope for opportunistic behaviour is reduced" (p.139). By internalising production, management can explicitly and systematically reduce shirking. But first shirking must be discovered through monitoring. Relatedly Hart states "the fact that asymmetries of information ... can be reduced to the extent that it is easier for a firm to monitor or audit one of its subdivisions than to monitor or audit an independent contractor" (p.151). If ease of monitoring allows shirking to be reduced, then it can be inferred that factors reducing the cost of monitoring - such as improvements in communications and transportation - would encourage greater use of monitoring. This presupposes an inverse relationship between the quantity of monitoring undertaken and the cost of monitoring, similar to the standard downward sloping demand curve. In other words, improvements in communication reduce the cost of

monitoring and thereby stimulate the demand for monitoring at the expense of competing directing mechanisms. Consequently, a positive relationship is expected between communication and monitoring. In other words, the more communication, the more opportunity for monitoring. It is inferred from Hart that communication is an intervening variable between the independent variables - asset specificity and uncertainty - and the dependent variable, monitoring.

Casson (1991, 1995) provides additional insights into the use of management accounting within the TCE framework. He considers two parts of the work of managers: "manipulation", where the manager as leader endorses hard work among employees; and monitoring, where the manager as supervisor monitors the work of employees. Casson's manipulation is similar to TCE's directing but differs in that it is largely limited to personal directing. In effect, it adds to the TCE model the interpersonal activities that managers pursue in getting employees to do what they, the managers, believe is best for the organisation.

According to Casson (1991, p.51), managers choose the combination of manipulation and monitoring that minimises transaction costs. Manipulation tends to be most effective in small, stable and compact social groups (Casson, 1995, p.9). This works when the manager establishes through personal interaction norms and obtains consensus on what constitutes dedication and slacking, and then associates guilt with slacking (Casson, 1991, pp.30-3). High communication costs are likely to discourage manipulation. Similarly, geographical dispersion is likely to raise communication costs because of inherent difficulties caused by distance (Casson, 1991, p.42). As for Casson's (1991, p.46) monitoring, it has two parts: (1) the collection of information - which is the same as TCE's monitoring - and (2) the application of a material reward or penalty. Casson (1991, p.47) notes that monitoring can be applied to inputs or outputs. In either case the incentive payment is made on ex post information.

Casson's monitoring costs are fixed over the relevant range and involve putting a system for monitoring in place for measurement purposes. This is particularly effective and relatively inexpensive with highly definable and tangible products. Casson further implies that monitoring is not time sensitive as employee action will be based on their knowledge of the eventual material rewards, which could be profit sharing or some other incentive pay, or in the extreme, a promotion or termination. As monitoring is not time sensitive, it is particularly attractive to managers faced with high communication costs. Casson implies that communication is relatively unimportant for monitoring.

In determining the mix of manipulation and monitoring to manage transaction costs, Casson (1991, 1995) implies some trade offs. Specifically, it is inferred that manipulation will be preferred with small groups. Monitoring will be preferred with larger groups. Relatedly, manipulation is preferred when communication costs are low; monitoring is preferred when communication costs

are high because little communication is needed. Moreover, Casson implies that manipulation is positively related to ease of communicating, while monitoring is indirectly related to ease of communicating. In other words, if communicating is difficult or impossible for directing employees, then monitoring will be done with ex post information. Moreover, Casson implies, contrary to Hart (1991) discussed above, that monitoring does not get used more extensively with improved communication. These are testable claims.

Johnson and Kaplan (1987) provide insights into the relative use of management accounting information. They argue that management accounting use changes positively with the amount of complexity and uncertainty. Simple organisations do not need management accounting to supplement financial accounting; managers-owners can personally understand and direct the operations. With growth along with increased complexity and uncertainty, the information needs of managers for planning, decision making and control come to be increasingly satisfied by operationally-based management accounting information (Johnson & Kaplan, 1987, pp.6, 8-9, 34-8, 62).

### Criticisms of TCE

The recent work of Roberts and Greenwood (1997) criticising TCE on its handling of organisational design adoption provides some important insights for analysing the evolution of management accounting practices. Their argument begins by accepting that organisations select governance mechanisms - market, hierarchy, or combination thereof - with the objective of reducing transaction costs. They cite Winter (1991, p.191) who concluded that a given organisational design exists because of its efficiency compared to the set of available alternatives, including market. In this sense, Roberts and Greenwood (1997, p.349) conclude that the transaction cost explanation is a comparative efficiency one. Furthermore, Roberts and Greenwood accept Kay's (1992, p.330) assessment that TCE "rests on comparative statics and therefore cannot be used to describe dynamic, evolutionary phenomena". In support they also cite Dow (1987, p.28) who notes that the TCE literature lacks a consistent theory of ex ante terms on which governance structures are established, that is, TCE contains no account of how or when novel organisational designs emerge and no explanation of how organisations adopt different designs as circumstances change.

Williamson (1987a, p.163; 1987b, pp.623-4; 1992, pp.335-7) acknowledges the underdeveloped state of TCE for design adoption and change. Therefore, Roberts and Greenwood (1997, p.350) conclude that TCE is based on the weak-form (rather than strong-form) selection, and state "it is the more (and not the most) efficient designs that survive". They offer three reasons to support that conclusion: (1) decision makers are subject to bounded rationality; (2) competition may not always force organisations to pursue greater efficiency; and (3) institutional influences. Compared to the first and second reasons, institutional influences needs



to be explained. Institutions provide a constraining context, which is de-emphasised by TCE. Granovetter (1985, pp.493-504) explains this as TCE being undersocialised. In contrast, the institutional approach in its strongest and extreme form rejects the premise that organisational phenomena are the products of rational choice based on technical considerations. Roberts and Greenwood (1997, p.356) take a more moderate position by suggesting that "(u)nlike bounded rationality within transaction cost theory, the cognitive influences emphasised by institutional theorists ... relate to the 'internalised symbolic representations of the world'".

These criticisms provide two insights for analysing the HBC archival evidence. First, with changes in independent variables, the dependent variables such as hierarchy and management accounting will likely change gradually and incompletely. Second, responsiveness will be directly related to the need to change in addition to changes to the independent variables. It is noted that through these and other valid criticisms TCE can be better understood and theorised.

### Statement of hypotheses

Based on Williamson (1975, 1985), Johnson and Kaplan (1987), Hart (1991), Casson (1991, 1995) and Hennart (1993), the prospects of decreasing asset specificity and uncertainty suggest six hypotheses. The first is noted below.

- H<sub>1</sub>: Reduced asset specificity and uncertainty were associated with the decline in the use of hierarchy for managing transactions.

The hypothesis is based on Williamson's work which holds that hierarchy will be selected when asset specificity and uncertainty exist. Williamson primarily discusses situations where increasing asset specificity and uncertainty are associated with hierarchy. This same direct association should hold with this very general hypotheses when asset specificity and uncertainty decrease.

Hennart (1993) contends that the diminishing returns to the use of hierarchy at high levels of asset specificity and uncertainty require the supplemental use of output incentives. During the earlier period, the HBC had high levels of asset specificity and uncertainty and, in accordance with the predictions of Hennart, output incentives were used. For example, the HBC used the output incentive of profit sharing: the two most senior levels of management - chief factors and chief traders - shared 40 percent of the profits rather than receiving salaries. Thus the assumption, that during this period the HBC was incurring diminishing returns to the use of hierarchy, is supported by the fact that output incentives were used. If the HBC receded in its use of hierarchy, the consequences according to Hennart's (1993) model, are a return to higher marginal productivity of hierarchical mechanisms. Consequently, Hennart would suggest that HBC would reduce its use of output incentives. This is expressed with the second hypothesis.

- H<sub>2</sub>: Reduced asset specificity and uncertainty were associated with the decrease in the use of output incentives to supplement hierarchy.

Johnson and Kaplan (1987), Hart (1991) and Casson (1991, 1995) suggest how management accounting might react to changes to asset specificity and uncertainty. Management accounting information consists of ex ante and ex post information which can be financial or operational in measurement attributes. More specifically, Hart (1991) suggests that with improved communications (and transportation) accompanying decreased asset specificity and uncertainty, the cost of monitoring decreases, which would lead to the increased use of management accounting monitoring. The third hypothesis expresses Hart's argument.

- H<sub>3</sub>: Reduced asset specificity and uncertainty were associated with the increase in the use of ex post management accounting information.

With improvements in communication that accompany decreases in asset specificity and uncertainty, Casson (1991, 1995) suggests that manipulation (personal direction) by the manager would be more effective and thereby the trade-off would be towards greater use of manipulation or personal directing and less use of monitoring or ex post management accounting information. This is stated in the following hypotheses.

- H<sub>4</sub>: Reduced asset specificity and uncertainty were associated with the decrease in the use of ex post management accounting information.

- H<sub>5</sub>: Reduced asset specificity and uncertainty were associated with the increase in use of personal directing.

Hypothesis four is in conflict with the third hypothesis, which was drawn from Hart who implied that improvements in communications will increase the use of ex post management accounting information. Hart's argument assumed that improvements in communications would make the use of ex post management accounting information more effective. Casson's argument assumed that improvements in communications would cause a shift to personal directing while decreasing the use of ex post management accounting information. Hart considers the impact on a single variable while Casson considers the substitution effect.

Johnson and Kaplan (1987) suggest that reductions in asset specificity (complexity) and uncertainty reduce the use of management accounting operational information in favour of management accounting financial information. Hypothesis six captures these insights.

- H<sub>6</sub>: Reduced asset specificity and uncertainty were associated with the decrease in the use of operational management accounting information and the increase in the use of financial management accounting information.

It is timely to reflect on the criticism of TCE offered by Roberts and Greenwood (1997). Because of bounded rationality and institutional forces, the reaction of the

dependent variables to the independent variables may take time and the adjustment may never be complete. The longitudinal nature of this study can partly compensate for this expected lack of hyper-rational reactions.

### **Archival evidence**

For the period between 1860 and 1914 there exists strong evidence that both asset specificity and uncertainty for the HBC decreased substantially from the earlier period. There were also changes to the five TCE (ex ante) mechanisms for directing resource allocation and six TCE (ex post) mechanisms for monitoring resource allocation, identified in Roy and Sprakman (1996).

### **Uncertainty**

The uncertainty facing the HBC during the 1821 to 1860 period was substantial. It traded over a vast area, from Labrador on the Atlantic Ocean to Vancouver Island on the Pacific Ocean, from the Canada-United States border on the south to Great Slave Lake on the north, and included parts of the present states of Washington and Oregon. Uncertainty resulted from the isolation, for example, in 1821 a total of 1,983 employees were dispersed among 172 fur posts. There was also uncertainty because of the time lag between the shipping of the outfit of trade goods and supplies often more than 1,000 miles and the eventual receipt of monies from the sale of the furs.

More specifically, the uncertainty can be categorised as: inland travel on rivers and lakes, trade conditions and living off the land. These categories of uncertainty relate to major groupings of activities or means-ends chains in the fur trade operation. Each grouping will be discussed with regard to changes that occurred.

#### ***Inland travel***

During the 1821 to 1860 period, there was uncertainty with inland travel for several reasons. First, employee actions were unpredictable as the behaviour of employees with birch-bark canoes and crude York boats could not be observed. Their efforts and diligence were unknown. Second, there was environmental uncertainty from random events. The arrival times at the various fur posts and depots could not be dictated as there were so many factors that could interfere with a schedule. Moreover, the exact distances between points were uncertain. Third, there was uncertainty because of opportunistic behaviour of employees. Thus, the out-of-sight employees could misuse equipment, trade goods or supplies. For example, they could report that a boat was overturned in a storm and trade the HBC's property for their own benefit.

Modernisation of the infrastructure is the best way to describe the changes that occurred during the later period (1860 to 1914). Until this time the HBC had

maintained a monopoly position over the infrastructure through its understanding and investment in water routes, canoes and boats. The first significant challenge to this monopoly came from the 1859 introduction of a steamboat on the Red River, which flows from the United States into the present-day Canadian province of Manitoba. This boat greatly increased the speed, reliability and volume of goods that could be delivered in a single trip. The advances in transportation were not only implemented on the Red River, but also farther north and west a few years later. Steamboats were introduced on the Saskatchewan River in 1874, making it the baseline for transportation in the region of the present-day Canadian provinces of Manitoba, Saskatchewan and Alberta with goods being sent to the interior or north from three points: Cumberland House, Fort Carlton and Edmonton (Innis, 1956, p.344).

Uncertainty in the Red River basin was reduced even further with the extension of the Northern Pacific Railway, which was completed to Winnipeg by the Canadian Pacific Railway (CPR) in 1878. This, in effect, made Red River steamboats obsolete (Barris, 1977, p.41). The CPR however, had a much greater impact on lowering costs when the trans-continental line between the eastern and western extremities of Canada was completed in 1885. One of the most notable impacts of the railway was the change of supply routes used by the HBC. For example, the supply headquarters for the Edmonton District was moved to Calgary in 1883 so that merchandise and furs could be transported on the CPR instead of the steamboats on the North Saskatchewan River. Goods were then sent out from Calgary to outfit most of Edmonton and parts of the Mackenzie and Athabasca Districts (den Otter, 1990, p.15). The steamboats were used for transportation farther north. But as Barris (1977, p.89) pointed out, this symbiotic relationship largely came to an end when the CPR extended the railway north to Prince Albert (1890) and Edmonton (1891).

Modernisation in transportation significantly reduced the HBC's uncertainty with inland travel. Rail was not only cheaper than the York boats and steamboats, it was also quicker and more reliable.

### *Trade conditions*

During the 1821 to 1860 period, the trade conditions presented substantial uncertainty because of the multitude of factors to consider. The behaviours of traders could not be observed to ensure they made the best deals for the HBC. Actual trade conditions were complicated by the lack of market prices and by environmental uncertainties caused by distance, language, customs, multiple goods, multiple furs and competition.

After 1860, uncertainty declined significantly with regard to transactions at fur posts. With better communications, it became possible for traders to obtain the current market price of furs offered for auction in London. In this respect the mail service and the increasing circulation of newspapers were important. However, it

was the introduction of the telegraph which revolutionised the information flow to fur posts. The telegraph, completed in 1887, broke the HBC's monopoly on information (Ray, 1990, p.66).

The HBC continued to adhere to its long established methods of trade for some time after the availability of telegraph service, while free or independent traders took advantage of the new medium of communication. The telegraph not only permitted auction prices to be known at the fur posts but also enabled lower inventories to be maintained, as supplies could be ordered when they were required, rather than a year in advance in a single annual outfit. Also, where cash payments had been introduced to replace the traditional barter system, transfers of money could be conducted via telegraph.

The isolation of the fur posts and employees decreased in relative terms between 1860 and 1914 with communications and transportation developments. Travelling and correspondence time were reduced significantly. With the development of telegraph, instructions could be detailed and given frequently to the traders along with advice on the latest market prices in London. Prices and barter at the fur posts could be adjusted to take these factors into account, thus reducing the uncertainty of traders' paying more than the market allowed for furs. However, in the more remote fur posts there remained a considerable reliance on the traders individual skill and judgement (Innis, 1956, p.363).

#### *Living off the land*

During the 1821 to 1860 period it was too expensive to feed and clothe employees with supplies from London. Locally produced supplies or "country produce" were generated by the employees either directly or indirectly through trade with the aborigines. There was transformation uncertainty as employee behaviours could not be observed. The time devoted to obtaining food and clothing reduced trading time. The matter was complicated by environmental uncertainty in terms of unpredictable migratory patterns of game and fish. In some seasons, they were not available. Also, the short growing season and infertile soil at some northern fur posts yielded poor and uncertain crops.

With the settlement of the Canadian West particularly after 1885 there developed an infrastructure for providing the HBC with food and clothing (HBCA, reel 733; transcribed by Bowsfield, 1977, p.85). Farmers were settling the prairies and producing crops and other farm products. Small businesses started in the major urban centres of Victoria, Vancouver, Calgary, Edmonton and Winnipeg produced an increasing variety of food and clothing products. The HBC no longer had to be self-sufficient. In-house production was replaced by efficient and plentiful markets for food and clothing, allowing the HBC largely to withdraw from those responsibilities. The earlier uncertainty with those responsibilities was eliminated.

### **Asset specificity**

There is also significant evidence that asset specificity was extensive during 1821 to 1860. Physical asset specificity was important at this stage in the HBC's development. Instead of trading on the shores of the Hudson Bay from general purpose sailing ships, the HBC developed specialised (freight) canoes and (York) boats designed to avoid damage in shallow rocky rivers. There was site specificity with inland fur posts strategically located near aboriginal tribes.

More important was the development of human asset specificity with the traders. They had knowledge, skills and other attributes that enabled the HBC to conduct widely dispersed trade. These employees knew how to gauge fur quality and to price the many furs in terms of trade goods. They knew the wilderness and its rivers and portages. They understood aboriginal customs, and they could speak adequately one or more aboriginal languages. Skill with canoes and boats was essential, and they could live off the land for weeks and even months. Moreover, they had the physical strength to endure the demands and hardships of frontier life. Trader-asset specificity was systematically pursued with the selective recruitment of European youth and the talented offspring of HBC employees and aboriginal women. Most of these employees were hired as apprentices during which time they underwent a long period of socialisation and learning.

The HBC had three forms of specialised assets in the earlier period: human assets, fur post locations and a transportation network. Changes occurred in the 1860 to 1914 period that led to reduced asset specificity.

### ***Human assets***

Improvements in communications and transportation enabled directions and instructions to be given more easily from the centre, thus reducing the level of training and skills needed by traders. One example of this was the chief commissioner's detailed instructions issued in 1898. He itemised for the traders the exact criteria that were to be employed in classifying the various grades of fur (Ray, 1990, p.83). This effectively reduced the use of judgement and skill by the traders. In addition, as the annual outfit was replaced by more frequent requisitions or orders, the required management skills of the fur trader decreased (Innis, 1956, p.360). The foresight and experience needed to complete the old indents (budgets) were no longer essential for the job. As a result, the apprenticeship system - the long period of socialisation and training - was abolished in 1902 (Innis, 1956, p.356). The need for this training had become redundant, not only because of the lower level of skill requirements demanded by the HBC, but also because of the growing availability of young men initiated in other businesses and those educated in Canada.

### ***Trading post locations***

The HBC trading system rested on a series of interconnected fur posts. These posts were specialised assets. Their value declined significantly during the period under

consideration, as independent traders started to practice a system of trade that required neither fur posts nor the outfits. These traders became known as “live-wire travellers” (Ray, 1990, p.67). They would travel by train to, say, Edmonton and from there use more traditional methods of transport to reach various trappers. The telegraph service enabled them to have access to the latest market prices in London and to make extensive cash purchases. Therefore, the fur posts diminished in value with cheaper and more flexible alternatives largely determined by the market, most notably by the stops along the railway.

### ***Transportation network***

The introduction of steamboats, railways and telegraph reduced the value of the HBC’s specialised canoe and boat routes. The impetus for the newer infrastructure came from the market and government rather than from HBC’s own desire to provide these services. Thus, the canoe and boat routes - geared to the exploitation of the fur resource - were replaced with railways designed for the multifaceted resource exploitation and settlement of Canada.

### **Directing resource allocation**

The changes to the five TCE (ex ante) mechanisms for directing are now discussed.

### ***Organisational structure***

During the earlier period, the HBC was structured with a Committee (comparable to a contemporary board of directors) and governor (comparable to a chairman) in London while the North American operation was managed by the inland Governor (Sir George Simpson). The latter governor was the head of a structure consisting of chief factors managing districts. These districts consisted of fur posts managed by chief traders and containing other employees. This basic structure persisted after Simpson’s death in 1860.

A new Deed Poll was introduced in 1871, replacing that which was in place from 1821. It still allocated 40 percent of the fur trade profits but now to 100 shares rather than the previous 85 shares. Three shares were allocated for each of the four inspecting chief factor positions; two and a half shares for each of the eight chief factor positions; two shares for each of 20 factor positions; one and a half shares for each of the 10 chief trader positions; and one share for each of the eight junior chief trader positions (Stanley, 1953a, pp.35-6). This amounted to 95 shares; the remaining five shares were retained in a fund for retired officers and their families. Consequences of the 1871 Deed Poll included the use of more levels of managers and a larger portion of junior managers, except for the temporary classification of inspecting chief factors. Initially that position had line authority over district managers while the incumbent reported to the inland governor. As they were more senior than any of the fur post or district managers whose operations were inspected, the inspecting chief factors were regarded as threats to district authority. Later, the title was changed to inspecting officers and their authority over fur post

and district managers eliminated (HBCA, reel 733).

The 1886 responsibilities (or scheme) of the inspecting officers are shown in Exhibit 1. It should be noted that these responsibilities were similar to those undertaken by Governor Simpson who visited most of the fur posts most years during his 40 year reign. After Simpson's death in 1860, the regularity of tours made by his successors declined. This was due in part to Simpson's successors (Dallas, 1860 to 1864; Mactavish, 1864 to 1870) being less rigorous in their scrutiny and inspection of fur posts (MacKay, 1936, p.284). The legacy of Simpson's inspections probably led to the establishment in 1871 of the position of inspecting chief factor; if not, his inspections certainly influenced the responsibilities established for inspecting officers noted in Exhibit 1.

### Exhibit 1 – Scheme for inspections, 1886

- |              |  |
|--------------|--|
| A. Buildings | <ol style="list-style-type: none"> <li>1. Condition.</li> <li>2. Situation.</li> <li>3. Suitability.</li> </ol>  |
| B. Stock     | <ol style="list-style-type: none"> <li>1. Verification of inventory.</li> <li>2. Suitability.</li> <li>3. Sufficiency.</li> <li>4. Condition.</li> <li>5. Time of turn-over.</li> <li>6. Unsaleable stock (list attached) with suggestion for disposal.</li> <li>7. Live stock.</li> </ol>   |
| C. Furs      | <ol style="list-style-type: none"> <li>1. Quality.</li> <li>2. Is post obtaining full portion of best skins.</li> <li>3. Is the trade affected by tariff.</li> <li>4. Increase or decrease of fur-bearing animals.</li> </ol>  |
| D. Accounts  | <ol style="list-style-type: none"> <li>1. Cash book.</li> <li>2. Examination and classification of outstanding balances (with list attached and marginal notes). Is each account current, if not, is debtor a regular customer.</li> <li>3. Verification of debts.</li> <li>4. Securities (with list attached and remarks).</li> <li>5. Capital employed. How often turned over.</li> <li>6. Percentage of apparent gain to capital.</li> <li>7. Audit.</li> </ol> |



### Exhibit 1 – Scheme for inspections, 1886 (cont'd)

- |                |  |
|----------------|--|
| E. Expenses    | <ol style="list-style-type: none"> <li>1. Mess expenses or commutation.</li> <li>2. Gratuities to servants and [aborigines].</li> <li>3. Miscellaneous expenses.</li> <li>4. Possibility of reduction expenses.</li> <li>5. Transport and cost-landed.</li> </ol>  |
| F. Personal    | <ol style="list-style-type: none"> <li>1. Business capacity, suitability and personal character of all attached to post.</li> </ol>  |
| G. General     | <ol style="list-style-type: none"> <li>1. Can trade of post be improved.</li> <li>2. Can additional posts be opened or present closed with advantage.</li> <li>3. Opposition.</li> <li>4. Division of territory.</li> <li>5. Route of goods and return.</li> <li>6. Remarks on general character of business with anything met under preceding heads.</li> <li>7. Conditions of [aborigines].</li> <li>8. List of outposts.</li> <li>9. When last visited by officer in charge of district.</li> </ol> |
| H. Suggestions |  |

*Source:* HBCA (reel 3M224).

The use of inspecting officers could be attributed to increases in the number of fur posts and the HBC's expansion into sales shops. One of the consequences was that there were just too many different outlets to individually inspect in the required detail; the inspecting officers were a means of compensating for the bounded rationality. It should be noted that the responsibilities in Exhibit 1 are strikingly similar to the duties of contemporary internal auditors.

In response to expansion, the HBC was divided into two parts under two commissioners in 1874: (1) land sales, to accommodate the sale of those lands provided to the HBC when in 1870 its monopoly was surrendered to the Canadian Government, and (2) fur posts and the sales shops, the latter which were started in 1880 to supply settlers.

A 1887 internal circular from the commissioner announced that the Board

(which was frequently at this time being used as a synonym for Committee) was "of the opinion that the requirement of the service would be met by a smaller number of officers than at present" (HBCA, reel 3M232). Furthermore, in 1888 the system of districts was streamlined to allow for greater direct influence by the commissioner over fur posts within districts (Ray, 1990, p.78) and, by 1889, some of the smaller districts were amalgamated (Innis, 1956, p.360). In 1893 the Deed Poll was finally extinguished after 72 years and the factors and traders became salaried employees (Stanley, 1953b, p.24).

In summary, decreased asset specificity and uncertainty led to a simpler organisation to manage. There were fewer parts - no transportation and no need to provide food and clothing - and the employees who were left were easier to manage because of improvements in communications and transportation. The organisation structure became flatter and more centralised.

### *Indents*

HBC trade practices had traditionally centred on the annual outfit system. Goods were sent out at the beginning of the outfit year and exchanged for furs which were returned at the end of the year when new goods arrived. An indent or budget of trade goods and supplies requested for the next outfit was returned with the furs to be sold in Europe. Thus, turnover or cycle time was very slow, usually not less than two years. Between 1821 and 1860, the HBC had a detailed series of indents for co-ordinating the physical movement of trade goods and supplies over this cycle.

The HBC was slow to adopt the use of the railway in the 1880s. The inefficiencies were quite clear; the HBC had to finance a two year inventory level compared with an inventory level of three months for competitors using the railways (den Otter, 1990, p.10). In 1885, when the CPR was completed, the HBC established semi-annual, rather than annual indents, which brought cost savings and saved time as well (Ray, 1990, p.73). Later, the telegraph enabled trade goods and supplies to be ordered directly by depots and some fur posts and districts as required (Innis, 1956, p.360). The indents were primarily for ordering items from England, which was a decreasing part of the trade goods and supplies. Orders, called requisitions, were placed with various suppliers in Canada and the United States.

In summary, the indents became less important as there was not the need to plan months or years in advance for trade goods and supplies. Most ordering could be done easily from North American suppliers as needed.

### *Outfits*

Dating from the establishment of the HBC, the outfit was the listing and actual shipment of trade goods and supplies sent from London. During the 1860 to 1914 period, the remote fur posts continued to receive annual outfits, many of which came from London. However, the trade goods and supplies from North American suppliers were increasingly ordered directly as needed, and reported ex post

(HBCA, reel 733). Many of the fur posts and sales shops in the Northern Department replenished their trade goods and supplies by ordering from the Depot in Winnipeg (HBCA, reel 3M236).

The outfits were less important for reasons noted. Communications and transportation innovations permitted more reliable and more frequent shipments of trade goods and supplies at a lower cost per unit than the previous system (den Otter, 1990, p.11). However, the Committee was unwilling to forego the substantial control that accompanied the annual outfits, not even to be more responsive to customers through more frequent ordering. The need for both responsiveness and control was achieved by establishing a quota of capital employed for each fur post or sales shop. In this way the ordering would be held in check by pre-approved limits (HBCA, reel 3M230).

Control over ordering by using capital employed was apparently successful. The HBC was able to expand into sales shops, maintain the same fur trade business, and increase profits with basically the same capital employed (HBCA, reel 3M230). The definition of capital employed was: starting inventory plus inventory received from the depot, inventory received from other districts, cash, and employee wages, less cash provided to the HBC, employee debts, and transfers of inventory to other districts.

### *Councils*

Between 1821 and 1860, departmental councils consisted of chief factors, and perhaps chief traders, along with the inland governor interpreting instructions from the Committee and establishing rules and regulations for the conduct of business. As the 1860 to 1914 period unfolded, the importance of councils for directing declined and eventually they ceased to exist. The last council meeting for the Northern department took place in 1887 (Newman, 1992, p.130). Nevertheless, item 104 of the HBC's 1887 "Rules and Regulations" allowed for the calling of councils on an irregular basis (HBCA, reel 3M224).

Councils had been useful when communications and transportation were crude. They allowed: low-cost information sharing; joint establishment of rules and regulations; detailed co-ordination for the delivery of trade goods and supplies and the return shipment of furs; and assignment of traders and employees to fur posts. Co-ordination had to be carefully planned well in advance with a geographically dispersed fur post network and slow-speed communications and transportation. However, during the 1860 to 1914 period, councils were no longer necessary. Rather than waiting for meetings, the commissioner could easily contact traders to co-ordinate the shipments of trade goods, supplies and furs, assign employees and introduce rules and regulations.

### *Standards*

During 1821 to 1860, standards were extensive. Each fur post was charged for trade goods. This was set at the London invoice rate plus all expenses to the tidewater

port (that is, freight, packaging, insurance, wages, interest) plus an advance or a percentage allowance over cost to cover inland transportation. The advance was set by the Committee to reflect distance and types of goods being carried inland (HBCA, reels 195 and 508). With these costs, each fur post developed its standard of trade to relate all types of furs and trade goods to a prime beaver pelt (designated "made beaver"). These standards provided explicit instructions on the amount of furs to be obtained from an outfit, and that there was to be a profit after all transportation and post costs were covered. The councils also set travel and transportation standards in physical terms. Standard prices were also in effect at the district level; the Committee sent a list of recent fur prices for calculating district profitability at the end of an outfit year rather than waiting for actual sales, which required approximately a further year.

Early in the 1860 to 1914 period the standard of trade resulted in product prices that were often out of line with the prices offered by competitors. This problem was expressed in a 1871 letter from Cyril Graham to the London governor (HBCA, reel 733). HBC standard prices for trade goods were eliminated. Products continued to be costed; this equalled what was called "cost-landed" being the invoice cost plus all freight and charges (HBCA, reel 3M230). The latter was easy to ascertain as common carriers were used, such as steamboats and, especially, railways. These actual costs were held in check by market prices.

Without the standard of trade, and also as barter was replaced with cash prices, the setting of prices for furs became problematic. In a 1887 circular, the Committee announced that the prices paid for furs (i.e. the fur buying tariff) would be set at 20 percent less than the average price obtained at the last London sales (HBCA, reel 3M232). The announcement went on to state that higher prices could be paid for high quality furs but other furs would have to be purchased at lower prices in order for the average to be 20 percent less than the recent sales prices. The tariff was to be used for determining the interim profitability of the furs at the closing of the accounts for an outfit, which was necessary as the furs were yet to be sold.

In summary, the standard of trade was no longer needed as market prices existed for furs and trade goods. Similarly, operational standards were not needed for transportation as market prices existed where previously the HBC managed its own transportation network.

### **Monitoring resource allocation**

In what follows the TCE (ex post) mechanisms used for monitoring are discussed.

#### *Inventory records*

During 1821 to 1860, detailed inventory records were kept for all trade goods and supplies (including country produce) in monetary and physical terms with reference to the actual location. Considerable effort was devoted to the tracking of inventory

with packing slips, invoices, and records from port, to depot, and to fur post. Inventories were crucial as replacements might take a year or more. The existence of inventory records reflected that importance.

Inventories were recorded annually (June 1). This became the starting point for the indents in the 1821 to 1860 period. From the inventory records, the clerks prepared a "scheme distribution", which constituted a planned distribution of trade goods and supplies from existing inventories for the current and next year to meet expected trade by fur post. When the current outfit arrived, a "scheme indent" was developed. This specified what the council thought the fur post outfits needed for the next two years. Then, the master indent was prepared, which was the basis for the importation of trade goods and supplies for the subsequent two years.

The store balance book reconciled the stocks held in the depots with the distribution of trade goods and supplies for each outfit (HBCA, reel 1M689). This indicated where everything was, by category. Thus, detailed book balances were generated for comparison to actual inventory. In addition, this record reconciled opening inventory, receipts, distribution and ending inventories.

However, during the 1860 to 1914 period, and as a larger portion of trade goods and supplies could be ordered and obtained relatively quickly, a decreasing portion received the above detailed tracking. Inventory was still counted annually (June 1), but the scheme distributions, scheme indents, master indents, and store balance sheets were not needed as inventory did not have to be planned for periods of two or three years. Similarly, there was less need for internal packing slips and invoices. Inventory could be easily and readily ordered without those detailed records. In addition inventory had to be maintained for a shorter period of time as replacements could be more easily obtained. Inventory stock and purchases from North American suppliers were merely reported in comparison to the same month the previous year (e.g. HBCA, reel 733).

### *Accounting records*

For the earlier 1821 to 1860 period, the North American accounting function was to furnish the Committee in London with the cost of the furs from each district (HBCA, reel 508). These records were kept during that period, by district, for each outfit year, and they culminated at the district in what would be now called an operating statement but was actually called a "balance sheet". As a ledger account and part of the debit and credit bookkeeping system, it was a means of closing the district books at the end of the outfit year, and thus a culmination of the year's activities for the district and its fur posts. Further, with the scale of prices (a list of recent prices of furs provided by the Committee), the profits of the district could be calculated prior to the actual sale of furs. The left (debit) side of the balance sheet contained the following headings: beginning inventory, shipments received, servant wages, and profit (if one). The right (credit) side contained: inventory supplied to other districts, servant debts and advances, ending inventory, sale value

of furs based on the scale of prices, and loss (if one).

By 1887 balance sheets and related documents were being prepared for fur posts, districts and departments on 31 pre-printed forms, many of which included more than one page (HBCA, reel 3M224). With the improved communications and transportation the HBC demanded some monthly statements from fur posts and sales shops.

In 1889 the HBC's auditor made suggestions for improving financial reporting. This was prompted by the increasing role played by cash in the purchase of furs from trappers and in the purchase of trade goods and supplies from North American suppliers. The auditor believed that the wide variety of items included in inventory led to inaccurate information. As an example the auditor stated "(a) large increase of payments might indicate a new policy of purchasing supplies elsewhere than in England, or might mean that a greater portion of the furs shipped had been purchased for cash" (HBCA, reel 508). His contention was supported by item 70 of the HBC's 1887 "Rules and Regulations" which listed the inventory subcategories to include such heterogeneous assets as trading goods, supplies, country-made articles, livestock, outstanding balances, buildings and land, ships and steamers (HBCA, reel 3M224). His recommendations led to the division of the inventory account into cash, goods held for barter, furs and country produce, livestock, ships and steamboats, and other assets. The purpose was to differentiate between the amount of assets and liabilities for current accounts, for barter and for other purposes (HBCA, reel 508).

In 1891 Commissioner C.C. Chipman proposed to the Board to change the accounting from outfit to fiscal years (HBCA, reel 508). This was accepted and, on being implemented, had a substantial impact on reporting (HBCA, reel 3M230). When using outfit years, the books were not being closed until after the sale of furs in London, which was one year or more after the May 31 calendar end of the outfit. This also meant that the accounting reports for all posts, districts and departments, had to be completed at the London office. Consequently, the London office had to maintain and complete those financial records. The resulting accounting system was complicated and expensive.

Using a fiscal year meant that the books could be closed in Canada. There was no need to wait for the furs to be sold. Unsold furs were merely valued as inventory. When sold, the revenue would accrue to the respective fur post or district in the year they were actually sold. No district or fur post accounting reports needed to be prepared at the London office, which was able to simplify its accounting processes by keeping only one continuous account with the fur trade. Winnipeg became the accounting office for all fur posts and sales shops. Exhibit 2 shows the pre-printed format for the 1910-1911 operating statement now called the trading account, instead of a balance sheet (HBCA, reel 3M280).

**Exhibit 2 – Trading account format**

Trading Account _____ District Outfit 1910, Form 20	
To inventory of goods	
To goods from depot and mills	
To goods and country produce purchased	
To goods from other posts, etc.	
To freight on goods	
To insurance on goods	_____
By supplies or expense accounts	
By supplies or servant accounts	
By supplies to other posts, etc.	
By inventory of goods	_____
Net cost of goods sold	
By cash sales	
By credit sales	
By bartered for furs, country produce	_____
Gross profit	(Per cent. Of C.L.)
<i>Add</i> - Gain on: live stock, bad debts recovered, fur purchased, [aboriginal] debts recovered	_____
<i>Less</i> - Expenses as per Form No. 14 Repairs and improvements (annual depreciation) Loss on articles at fixed prices (goods depreciation) Loss on: bad, doubtful, [aboriginal] debts	_____
Apparent gain	=====
Furs purchased	
Cash	
Freight, insurances, packing, etc.	
Bartered for goods	
Credit [aborigines]	
Credit Customer	_____
Cost	
Tariff valuation	
Gain exclusive of profit on goods bartered	_____
	=====

Source: HBCA (reel 3M348)

By 1896, some of the pre-printed forms had been customised for the sales shops and "Rules and Regulations for the Management of Sales Shops" were developed (HBCA, reel 3M224). An important change to the accounting records was the reporting of the return on capital employed by fur post, sales shop, district and department. This was the profit or loss on the returns or sales divided by the capital employed.

In summary, as the HBC operated almost entirely in a cash economy the financial reports became more detailed and were used more frequently. The trading account, comparable to a contemporary operating statement, apparently became more important by providing more frequent feedback, which was possible with better communications and transportation.

### *Journals*

In addition to maintaining accounting records, the practice in the 1821 to 1860 period was to have the senior employee at each fur post maintain a narrative journal of daily activities and events such as aborigines coming to trade and the temperature. Journals were a means of providing the Committee with a "better understanding" of the fur trading transactions (HBCA, reels 1M116 and 3M224). Fur posts continued to maintain narrative journals during the 1860 to 1914 period (HBCA, reel 1M1284), but they were not required at the sales shops (HBCA, reel 1M224). Moreover, the Committee appeared not to monitor journals to the same extent as during the 1821 to 1860 period.

### *Operational data*

During Simpson's governorship from 1821 to 1860 operational data were important. The physical recording of inventories was noted previously. Distances and load weights were recorded. Operational data were discussed at council meetings, and operational standards were agreed upon. However, with improvements in communications and transportation during the 1860 to 1914 period, the emphasis on operational data decreased. This coincided with the HBC ceasing to be responsible for its own transportation network and for providing its employees with food and clothing. Financial measures appeared to be sufficient.

The discontinuance of the councils also contributed to the decline in the use of operational data. Opportunities to discuss operational practices and to get agreement on performance standards were lost. The "Rules and Regulations" specified the required practices rather than efficiency (see, for example, HBCA, reel 3M224). Monthly and even weekly (in the sales shops) reports were possible, and thus directions from the commissioner replaced operational data.

### *Annual review of operations*

After Simpson's death in 1860, the annual reviews of operations were maintained to a lesser extent by his successors. These reports lost their insight as their authors lacked Simpson's in-depth knowledge. They tended to become explanations of



financial statement line items and discussions of actions taken to address inspectors' criticisms (HBCA, reel 3M238).

### *Council meetings*

From 1821 to 1860, the councils presented an opportunity to share information and to pool experience by monitoring performance of fur posts and the HBC in total. Inconsistencies among fur posts could be easily noted. This use of council meetings was made explicit in the preamble to council minutes as evidenced in the following record "to investigate the results of the Trade of the last year and determine the Outfits and the arrangements of the current year" (transcribed by Fleming, 1940, p.101).

As previously noted, the number and frequency of council meetings declined after 1860 while the last meeting held in the Northern Department took place in 1887. There was a marked decline in information sharing and experience pooling. Traders no longer met annually to discuss the results of trade, to assess what was effective and to identify and resolve problems. As they no longer shared in HBC profits, the traders were not required to review overall performance. Moreover, there were no other opportunities to convey ex post information among traders. Perhaps, this was no longer necessary as communications allowed the commissioner to gather information more systematically such as through the use of pre-printed forms and on an individual basis when necessary.

### **Discussion**

The evidence presented above supports four of the six hypotheses. There was partial support for the other two hypotheses. More specifically, the first hypothesis related to a decline in the use of hierarchy, which was supported by the evidence. The uncertainty facing the HBC declined because of advances in communications and transportation and the development of an infrastructure with the influx of settlers. The HBC reacted to these changes by ceasing to provide its own transportation and employee food and clothing. It used market rather than internal organisation for these activities. In the case of food and clothing, employee wages were increased to allow them to make the purchases on their own. With these adjustments, the HBC became less hierarchical; the structure was flattened and authority was centralised.

The second hypothesis accurately predicted that with a decline in asset specificity and uncertainty there would be a decrease in the supplemental use of output incentives. During the earlier period, internal organisation was used extensively because of extreme asset specificity and uncertainty. To make internal organisation work under those conditions, the HBC used profit sharing for the senior managers (chief factors and chief traders). This was necessary as the directing and monitoring mechanisms could not adequately ensure output in terms

of furs and profit. However, with the decline in asset specificity and uncertainty the control over shirking at the HBC appeared to become easier. The composition of managers changed with a higher portion of junior managers. Managers and employees were personally directed more often. Eventually, the profit sharing was eliminated, and traders received a salary where previously their remuneration was entirely from profits.

Moreover, the second hypothesis is premised on the TCE assumption that asset specificity and uncertainty put information demands on hierarchy. These demands make hierarchies more difficult to manage and, with diminishing returns to hierarchy, output incentives become necessary. The measurement of efficiency is therefore important for assessing the impact that asset specificity and uncertainty have on hierarchy. This can be done with Williamson's (1980) efficiency criteria. The 11 criteria enable an understanding of the efficiency of a system of governance. Accordingly, the 11 criteria can be used to assess the efficiency of the same hierarchy under two conditions for asset specificity and uncertainty. For example, the first criterion - transportation expenses - rates more highly in those situations where transportation expenses are low. With the modernisation of transportation, the efficiency of hierarchy would be greater for the HBC between 1860 to 1914 compared to the earlier period. The remaining 10 criteria were applied to the two time periods. The results are detailed in Exhibit 3. Seven of the 11 criteria indicated greater efficiency in the 1860 to 1914 period, while the other four criteria indicated no difference between the two periods regarding the efficiency of hierarchy. Consequently, this evidence suggests that the use of hierarchy became more efficient during the 1860 to 1914 period, and thereby profit sharing was not needed to supplement hierarchy.

### Exhibit 3 – Simple efficiency properties of the two periods

1821 to 1860	1860 to 1914	Definitions of efficiency indicators
	Greater	1. <b>Transportation expenses.</b> The physical transport of work-in-process inventories from one station to the next is costly. <i>Ceteris paribus</i> , modes which economise on transportation expenses are favoured.
	Greater	2. <b>Buffer inventories.</b> Temporal separability between successive work stations is effected by creating a buffer inventory. Modes which economise on the level of these inventories are favoured.

## Exhibit 3 – Simple efficiency properties of the two periods (cont'd)

1821 to 1860	1860 to 1914	Definitions of efficiency indicators
No change	No change	3. <b>Interface leakage.</b> Actual or effective losses of product during production. Modes which at low costs discourage embezzlement and/or the disguise of the true quality attributes of intermediate product transferred across stages are favoured.
	Greater	4. <b>Station assignments.</b> Talents will be effectively utilised to the extent that workers are assigned to tasks for which they are relatively well suited. This is a specialisation of labour issue. In the normal case where workers are not equally skilled in every task, modes that make discriminating job assignments on the basis of comparative advantage are favoured.
	Greater	5. <b>Leadership.</b> Modes vary in the degree to which co-ordination is required and the efficiency with which leadership assignments are made. Modes which economise on co-ordination needs and make discriminating leadership assignments are favoured.
No change	No change	6. <b>Contracting.</b> The capacity to aggregate demands and contract with specialists which service the needs of many stations (e.g. maintenance specialists) is the issue here. Modes in which such contracting is easily accomplished are favoured.
	Greater	7. <b>Work intensity.</b> Refers to the amount of productive energy expended on the job. Modes which discourage workers from malingering are preferred.
	Greater	8. <b>Asset utilisation.</b> The issue here is whether assets are utilised with appropriate care. Modes which disfavour asset abuse and neglect are favoured.
No change	No change	9. <b>Local shock responsiveness.</b> Those shocks that affect an individual work station. Work stoppages due to breakdown or worker illness are examples. Mode which facilitate quick recovery are favoured.

## Exhibit 3 – Simple efficiency properties of the two periods (cont'd)

1821 to 1860	1860 to 1914	Definitions of efficiency indicators
No change	No change	10. <i>Local innovation</i> . Process improvements at individual stations. Modes that promote local cost economising processes are preferred.
	Greater	11. <i>System responsiveness</i> . The capacity to respond to system shock and to recognise and implement system innovations (or process, product, or organisational kinds) are matters of interest here. Modes that adapt easily to changing market circumstances and which permit systems improvements to be made without requiring contract renegotiation are favoured.

Source: Williamson (1980, pp.21-3).

While hierarchy was becoming more efficient, a new system of management was developed at the HBC. The structure was flattened and authority was centralised. Indents, outfits, inventory records, operational data and standards were de-emphasised. Councils became unnecessary. Instead of the elaborate ex ante and ex post management mechanisms, the system was simplified. The commissioner directed the fur posts, sales shops and districts with simpler indents and outfits, with fewer standards but with explicit feedback of two types. First, more detailed and more frequent financial reports. This was an important source of feedback, especially when used with return on capital employed. Second, the HBC employed inspecting officers to visit and to report to the commissioner on how well fur posts, sales shops and districts were being managed. The inspector function was not new. It was comparable to what Governor Simpson did from 1821 to 1860. Simpson had a unique capacity for remembering details (Rich, 1960, p.438). None of his successors could match his capability in this regard and thus led to the appointment of inspecting officers.

During this period, the HBC experienced decreased asset specificity and uncertainty, the independent variables for hypotheses three to six. More specifically, the third hypothesis, suggested by Hart (1991) anticipated that the reduction in asset specificity and uncertainty via improved communications would increase the use of ex post management accounting information. The hypothesis was supported as there was more frequent and more detailed financial statements not just at the district or higher level but also starting at the fur post and sales shop level. However, the hypothesis was not supported to the extent that there was a

decline in the use of operational ex post inventory records and operational data. Consequently, the results for this hypothesis are mixed. Similarly, the evidence in support of hypothesis four is mixed. That hypothesis, drawn from Casson (1991, 1995) expected a decrease in the use of ex post management accounting information with an improvement in communications. As noted, the decrease only occurred with operational ex post management accounting information.

Hypothesis five, also drawn from Casson (1991, 1995) anticipated there would be more personal directing with decreased asset specificity and uncertainty leading to improved communications. This could not be rejected by the evidence. The structure was streamlined with the commissioner dealing directly with the persons in charge of fur posts and sales shops. Districts were amalgamated, and the district managers were by-passed by the commissioner. The improvement in communications enabled more extensive use of personal directing instead of ex ante management accounting information such as indents, outfits, councils and standards.

Johnson and Kaplan (1987) were the source of the sixth hypothesis; reduced asset specificity and uncertainty would be associated with increased use of financial management accounting information and decreased use of operational management accounting information. The hypothesis could not be rejected. Financial reports, especially the trading account, were expanded in detail, frequency, and use. The operational aspects of indents and outfits - the physical planning of the movement of inventories - were eliminated as indents and outfits were simplified and scaled back dramatically. The detailed tracking of inventory quantities was no longer needed as replacements could be ordered much more quickly. Moreover, as councils were eliminated, the opportunities to discuss operational conditions and operational data declined. Relatedly, standards were de-emphasised, and those that remained were in financial terms.

## Conclusion

The TCE framework of directing and monitoring mechanisms is broader than management accounting but better suited to explaining how transaction costs are managed. It provides a meaningful context to understand how management accounting responded to decreasing asset specificity and uncertainty. The difficulties with understanding the relationships between independent variables and dependent variables attest to the concerns expressed by Roberts and Greenwood (1997).

The evidence also makes suggestions for the development of a TCE theory of management accounting. As previously discussed, management accounting information can be partitioned according to content, as operational and financial, or along temporal lines, as ex ante and ex post. Temporally, another partition can be added, and this is personal directing. Managers can personally direct employees

using financial or operational information for establishing expectations. This personal direction is important in understanding the use of management accounting in the context of management. These relationships are shown in Exhibit 4.

#### Exhibit 4 – Dimensions of management accounting information

	Financial	Operational
Directing	1	2
Ex Ante	3	4
Ex Post	5	6

When there were high levels of asset specificity and uncertainty during 1821 to 1860, the management accounting practices at the HBC were represented in boxes 4 and 6 shown in Exhibit 4. That is, there was extensive use of operational ex ante and ex post management accounting information for directing and monitoring. Personal directing was less important because of difficulties with communication. From 1860 to 1914 there was a sharp decrease in asset specificity and uncertainty leading to improvements in communications. Turning to Exhibit 4 again, boxes 1 and 5 depict the management accounting practices where the commissioner provided the managers in charge of fur posts, sales shops and districts with explicit direction on expected returns and received feedback with very extensive and frequent financial reporting.

The support for the hypotheses can explain the transition from domination shown in boxes 4 and 6 to domination indicated in boxes 1 and 5. Hypothesis six predicted the increased use of financial information at the expense of operational (that is, the movement away from boxes 4 and 6 to boxes 1, 3, and/or 5). This was largely borne out with the domination as indicated by boxes 1 and 5). Hypothesis five predicted more personal directing or the movement to box 1, which was supported with decreased direction or ex ante operational information. By personal and financial direction dominating ex ante management accounting information, there was still the need to provide feedback which was provided by ex post financial management accounting information (that is, box 5).

To theorise, with conditions of extreme asset specificity and uncertainty, an organisation employs management accounting practices which emphasises both ex ante and ex post management accounting information that is largely operational. Management is difficult with asset specificity and uncertainty so directing must be carefully specified with budgets and standards and carefully followed up in

operational terms. With the easing of asset specificity and uncertainty, the management approach changes; the extensive ex ante direction gives way to personal directing and feedback in aggregated financial terms.

The evidence also emphasised the conditions for effective control of shirking. To make personal directing effective feedback was required. Given the simpler business and the lack of intermediate products, the feedback was in the form of financial information in the late 1890s. Moreover, the evidence suggested that the business was simpler when there were market prices for inputs and outputs. However, when the business was more difficult to manage as market prices for inputs and outputs were often missing during the 1821 to 1860 period, more operational ex ante and ex post management accounting information was used in the form of indents, outfits, standards, inventory records and operating information. For both periods inspectors were used. Governor Simpson conducted the inspections during the earlier period while inspecting officers did the inspections in the more recent period.

In conclusion, this study found that as asset specificity and uncertainty decreased, so did the use of hierarchy and management accounting. The evidence in support of decreased hierarchy was convincing. The support for reduced management accounting was more difficult to interpret. Nevertheless, the evidence provides strong support for the decreased use of ex ante and ex post operational information and the increased use of personal direction and ex post financial information, and thereby presents important insights for a TCE theory of management accounting.

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