

The Role of Management Accounting in Competition Policy : The Case of the Inverness Route

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ABSTRACT

Although competition policy is an important area for accounting research, contributions from management accountants are lacking. This article aims to show that management accountants can help clarify a number of issues in competition policy using diagnostic tools such as analytical constructs and concepts of cost to establish relevant facts and cost. Accordingly, this article demonstrates that the employment of such diagnostic tools can give insights into anti-competitive behavioral issues in competition policy, as illustrated in the Inverness route case.

ABSTRAK

Walaupun polisi persaingan adalah satu bidang penting untuk penyelidikan perakaunan, sumbangan daripada akauntan pengurusan adalah kurang memberangsangkan. Artikel ini bertujuan untuk menunjukkan akauntan pengurusan boleh membantu menjelaskan isu-isu dalam polisi persaingan dengan menggunakan alat diagnostik seperti konstruk analitikal dan konsep kos untuk mengemukakan fakta yang relevan dan kos. Seterusnya artikel ini menunjukkan penggunaan alat diagnostik boleh memberikan pemahaman ke atas isu-isu kelakuan anti persaingan seperti yang ditunjukkan dalam kes penerbangan Inverness.

INTRODUCTION

There is a belief that economic competition is a good thing, and in countries where the economy operates based on free-market principles, '... the commitment to competitive markets is rarely questioned, although the pervasive pro-competition rhetoric is often more of an aspiration rather than a reality' (Cini & McGowan, 1998, p. 2). However, com-

petition causes uncertainty. To make the future more predictable, firms employ anti-competitive strategies. To counter these, competition policies are thus developed to prevent, persuade and deter firms from deploying those strategies. The establishment of competition policies allows for the development of a regulatory framework within which governments can maintain and encourage competition.

Lawyers and economists have shown much interest in the competition policy area, as seen from their contributions. However, management accountants have shown very little interest. Bromwich & Hong (2000, p. 161) remark that management accountants need to become more involved in competition policy debates as:

... accounting for regulated industries is an important area for accounting research. Regulation raises many important and difficult accounting issues of application more widely but which seem to be neglected in the general management accounting literature.

For clarity and ease of understanding, this article is structured into different sections. The first section reviews concepts of cost that are used with analytical constructs to clarify issues in competition policy. The second section discusses the analytical constructs that are relevant to the analysis of the case. The term 'analytical construct' has been invented to describe the 'topics' discussed in as linguistically neutral a fashion as possible. These analytical constructs can help establish which facts are relevant and which concepts of cost will shed light on the issues in the case. The third section discusses the theoretical issues related to the case. The fourth section describes the Inverness route case. In this section, the importance of Heathrow to the economic development of Inverness and its surrounding areas is discussed. In the fifth section, the diagnostic tools (analytical constructs and concepts of

cost) are used to clarify issues in the case. The conclusion, in the final section, closes this article.

CONCEPTS OF COST

A good understanding of concepts of cost is particularly useful when there are multiple ways in which the concepts are used in managerial decision processes. Costs are used for a variety of purposes, and the same cost data that serve very well for one purpose cannot be expected to serve equally well for other purposes. A failure to recognize this inadequacy has resulted in many apparent differences among accountants (see Clark, 1923).

Concepts of cost are important to management accountants because they help to measure the cost of a product and are useful in decision-making. In the context of this article, the cost concepts discussed below help to cast light on particular issues in the case.

COMMON COSTS

Hawkins (1969, p. 44) provides a definition:

... common costs are incurred when products can be separately produced with the same or part of the same facilities, but need not necessarily be produced together.

Costs may be common to a period of time, responsibility, classes of customers and other costing units. Common costs contribute to the ambiguity of product cost and thereby to the

problems of setting prices. Faulhaber (1979) demonstrated this in the problem of rate-making for a profit-regulated railroad. A regulated railroad that connected two cities also provided a service to an intermediate city. The fare revenues for passage to and from the intermediate city were more than the additional long-run costs of serving that city, but not sufficient to cover the allocation of a 'proportionate share' of common cost. The question posed was whether the intermediate city was being subsidized by the cities at each end of the line.

FULLY-DISTRIBUTED COST

Fully-Distributed Cost (FDC) is also known as fully allocated cost. It is widely used to determine a set of prices that normally involve historical cost, through the allocation of common costs to various outputs. The distribution of common costs can be made on a number of allocation bases. Within accounting practice, there are three popular methods of allocating common costs to outputs: direct, step-down and reciprocal (Ahmed & Scapens, 1991). Under the direct method, each service department's total costs are allocated directly to the production departments. Under the step-down method, the service cost is allocated to user departments (both production and service departments). The cost allocated to service departments is again allocated to user departments until the particular service department's costs are fully distributed. It then drops out of the allocation process. The process is repeated until the costs of the service departments are fully distributed to production departments. Under the reciprocal method, simultaneous

equations are used to allocate common costs to the production departments.

The basic defect of FDC is that it does not necessarily measure marginal cost responsibility in a causal sense; '... it is an average cost' (Kahn, 1970, p. 151), and the numerical results are highly sensitive to the basis selected for the allocation (Baumol *et al.*, 1987).

INCREMENTAL COST (IC)

IC can be defined as the increase in cost as a result of producing a further output in addition to the existing output. Mathematically, the IC of product y_2 is defined as $C(y_1, y_2) - C(y_1, 0)$ where $C(?)$ is the total cost function. The argument is that the price of product 1 which exceeds its IC is not 'unfair' to the buyers of product 2 since those buyers gain from the sale of product 1 at that price. Baumol (1986) considered that the consumers of product 1 are better off by the supply of that product. This is because consumers of the firm's other products must also gain as a group, and no consumers lose out in the process.

The definition of which output is the first one for a firm that produces two outputs may be of crucial significance because the first output bears all the common costs. The number of outputs that have to be considered has no limit, and this raises the issue of ordering (Heald, 1996). For example, Aumann-Shapley's prices are based on marginal costs averaged along a linear path from zero to current production, and Shapley's prices are based on ICs averaged over all possible orderings of outputs (Curien, 1991, p. 82).

Hornigren *et al.* (1994; 1997) use the IC concept to rank individual cost objects and

thereby allocate costs according to their rankings. The first-ranked cost object (the primary user) typically receives cost allocation up to its stand-alone cost and the second-ranked cost object is allocated the additional cost arising from the increase in resource consumption. If there are more than two secondary users, they will need to be ranked sequentially. Under the IC allocation method, the primary user receives the highest allocation of the common costs. If the first output is monopolized, the firm may be able to establish its dominance in adjacent markets because the second output receives only additional costs. This gives the firm enormous discretion in setting prices for its second product.

AVOIDABLE COST

Sharkey (1977) exemplifies an avoidable cost as a cost that can be avoided by taking a particular plant out of production. The cost that can be avoided depends only on the total capacity of the plant being used, and not on the output produced. Baumol (1996) states that avoidable cost may be thought of as decreasing cost to a firm, if it decides to exit the industry. In other words, avoidable cost is the cost that a firm '... can escape or avoid by leaving' (Baumol, 1996, p. 58). Which costs are avoidable and their measurement, according to Baumol, can be determined only with reference to a particular issue or decision.

Most industries, according to Van Boening & Wilcox (1996), seem to exhibit this kind of avoidable cost. For example, an electricity generating facility is most efficiently operated at output close to its capacity. Thus, the asso-

ciated labor and fuel required to run the facility are the avoidable cost. Avoidable cost dominates an airline's short-run cost. This is because most of the operating costs depend on the size of the unit capacity rather than the number of passengers carried.

OPPORTUNITY COST

The concept of opportunity cost is useful in analyzing efficient resource allocation. In a perfectly competitive market, the market price is always equal to the opportunity cost. This can be illustrated in an open auction called the first-price auction. Vickrey (1994) gives an example. In a progressive auction, bids for an item are freely made and announced. In the bidding process, the bids will get closer and closer, until no one wishes to put in a higher bid for the item. The bidding will stop at a level close to the second highest bid. At that point, there is only one interested bidder left. Realizing this, the 'surviving' bidder has only to raise the price marginally above the price made by the second highest bidder. The opportunity cost of the bid is the second highest bid.

In a closed auction of the form known as a second-price auction, its process and outcome are similar to the first-price auction; Vickrey designed a mechanism that replicates the outcome derived from open auction markets. The normal practice in calling for a tender of bids is that the highest or lowest bid, as the case may be, will be accepted. According to Vickrey, it is advantageous to have the 'second-price' method to handle sealed bids or closed auctions. Due to asymmetry of information among bidders, errors in evaluation,

or mistakes in strategy, the result of the 'top-price' is non-optimal. The change to the 'second-price' method will yield an increase in the aggregate profits to be shared among sellers and buyers.

To prevent a bidder using a 'shill' to push the price up by putting a late bid just under the top bid, it is desirable to have all bids delivered to and certified by a trustworthy holder who will then deliver all bids to the seller. Since the second-price auction replicates the outcome of the first-price auction, the top bidder buys the object at a price that corresponds to the second highest bid. If the seller is a governmental body or a large corporation, it is desirable to publish the final terms of sale, to prevent the agent handling the sale from acting against the seller's interest. If this happens, a bidder whose bid has been improperly overlooked could discover this and lodge a protest. Vickrey (1994, p. 68) states that:

If he were uncertain as to the amount of the bid put in by the successful bidder, his protest would be motivated by a hope of being top bidder, so that there would be some advantage at this point of not announcing the top bid, but only the effective price.

In this auction, the opportunity cost is the same as in the first-price auction, that is, simply the second highest bid.

Another of Vickrey's (1963) examples is on pricing urban and suburban transport. He considered that the pricing structure in operation in New York emphasized financing services rather than promoting economy in the use of facilities. One of his examples is on the East

River crossings to Long Island and Brooklyn. In this example, the use of old bridges is free because of the peculiar political logic that the older bridges are already paid for, while tolls must be paid on newer ones. As a result, traffic is diverted from newer facilities to the old bridges, such as the Manhattan and the Queensboro bridges, causing congestion on these bridges. The social opportunity cost of using older bridges is that users face traffic congestion. Vickrey suggested that tolls should be imposed on older bridges to reduce traffic congestion, and tolls should be reduced or removed from newer ones to encourage usage of these facilities.

The concept of opportunity cost is also highly useful for analyzing commodities that have no ready market. Samuelson & Nordhaus (1985) provide an example. The drilling of oil at Yosemite National Park would involve considerable noise and road building which would spoil the park for hikers and bear watchers. The opportunity cost of oil drilling would be the presence of additional roads and noise. In the context of assets without a ready market, opportunity cost may not be easily measured but it has real value, as do barrels of oil.

ANALYTICAL CONSTRUCTS

In the formation of competition policy, economics and politics play a significant role. Although the perfect competition and monopoly models are abstract and not necessarily accurate (particularly the perfect competition model), they can be used as tools to provide an insight into how markets would

operate under such theoretical conditions. The theory predicts that perfectly competitive markets will result in both allocative and productive efficiency. Under perfect competition, producers are 'price takers'. The price of the product is determined by the aggregate industry output and consumer demand. In contrast, a monopolist is a 'price maker'. The monopolist exerts control over prices by setting the level of output. The monopolist has also the ability to create a scarcity of the product in order to make excess profit. Under monopoly, resources can be misallocated and as a result consumer welfare suffers. Under such monopolistic market conditions, a firm uses its dominant position to influence the market as illustrated, for example, by Virgin Atlantic's allegations that British Airways has used its dominant position to Virgin's detriment (Rodger & MacCulloch, 1999). But the problem is how to identify this 'anti-competitive behavior', and the discussion below will identify some ways of doing this.

ACCESS TO NETWORKS AND ESSENTIAL FACILITIES

A network is a structure that connects complementary components for the purpose of providing services demanded by consumers without the need for interconnection. Whilst an 'essential facility' can be defined as one which is important to a firm for the purpose of providing services to customers, but controlled by a rival firm. This definition is consistent with the one provided by Vogelsang & Mitchell (1997) who define an essential facility as a facility which is controlled by one firm but is an indispensable input for the firm's rivals.

According to Vogelsang & Mitchell (1997), the market for an essential facility might not exist and may be impossible to define meaningfully. As the owner of the facility is the only optimal provider, it would not be efficient to bypass it. From the preceding definitions, access to networks and 'essential facilities' can be defined as the owner of the facilities offering the use of the facilities to rival firms for the purpose of providing services to customers on equal terms.

The main motivation (for competition authorities) for access to networks and 'essential facilities' is to extend competition to upstream and downstream businesses that can provide consumers with a greater variety of services that are both of high quality and reasonably priced. Klein (1998) remarks that for some types of networks, for example, water pipeline systems, railroad tracks, gas pipelines, and power transmission lines, the presence of several parallel networks competing against each other would be a waste for society. The natural monopoly argument makes monopoly the most efficient market structure for providing access to networks.

In the United States, refusal by the essential facility owner to provide access to the facility contravenes Section 2 of the Sherman Act as an act of monopolization. In numerous cases, the essential facility doctrine has influenced decisions of courts (Hovenkamp, 1994). There are four main elements of the doctrine. First, a monopolist controls the essential facility. Second, competitors cannot reasonably duplicate the essential facility. Third, denial of access is harmful to competition. Fourth, it is feasible for a monopolist to provide access to the facility.

However, in the United Kingdom, refusal by the essential facility owner is not dealt with under a specific Act. Where a dominant firm is involved, an exclusive distribution agreement which falls outside the Restrictive Practices Act 1976 is subject to a referral to the Competition Commission under the Fair Trading Act 1973 procedure or liable to an investigation under the anti-competitive practice provisions of the Competition Act 1980.

Contrary to the situation in the United Kingdom, in the European Union, refusal by the essential facility owner is dealt with by Article 85 of the Treaty of Rome, which addresses agreements in restraint of trade, and by Article 86, which focuses on the abuse of dominant position. Article 100A of the Treaty of Rome is also relevant in addressing the issues of access to networks and 'essential facilities' in the telecommunications industry.

CROSS SUBSIDY

Viscusi *et al.* (1995) have provided a simple definition of cross subsidy. Cross subsidization

... is the use of revenue from the sale of one product to subsidize the sale of another product. More specifically, the price of one product is set to exceed its average cost while the price of a second product is set below its average cost (Viscusi *et al.*, 1995, p. 337).

There are many motives for cross subsidization. First, it has been used in a benevolent way by making essential but uneconomic services affordable to all. Second, cross

subsidy has been defended in the past by governments as necessary in order to finance development of national infrastructure (Cronin *et al.*, 1995; Cronin *et al.*, 1997).

Kaserman *et al.* (1990) remarks that the telecommunications industry has been subjected to many varieties of cross subsidization via regulation. The most important in terms of the monetary value, according to Kaserman *et al.*, is the cross subsidisation of the local service by the long distance service (see also Stigler, 1971; Posner, 1971 and 1974; and Peltzman, 1976). Stigler (1971) takes the view that business users who can make a significant campaign contribution to regulators, and provide them with employment opportunities later, dominate regulatory decisions. According to Stigler, business firms that have enough political power will utilize the state to control entry.

One variant is the protective tariff and the corresponding barriers that have been raised to interstate movements of goods and people. Other variants are using the state to suppress substitutes and complements, and to fix prices. This rent-seeking behavior by public officials is held to be the consequence of government intervention in the market place via public ownership or regulation. Rent seeking is a social cost as the resources used could have been used beneficially somewhere else in the economy (Tullock, 1967), and is unproductive as it destroys value by wasting valuable resources (Buchanan, 1980). Posner (1975) suggests that the social costs of rent seeking in the regulated sector of the US economy could be substantial; he estimated that 3 percent of the US GNP was lost due to the social costs of monopolization through regulation. Krueger (1974) estimated that 7

percent of the GNP in India was wasted in rent seeking and that 15 percent of the Turkish GNP was lost due to rent seeking for import licenses.

Posner (1971) argues that the government can use cross subsidization as a policy instrument to redistribute wealth from one group of consumers to another. Posner is of the opinion that cross subsidy is an aspect of public finance that can be used to redistribute wealth. Laffont (1999) argues that cross subsidy can help finance the provision of universal service in developing countries. He considers that cross subsidy as a more efficient way of financing these services than tax because the latter is more expensive. He remarks that it costs between 0.3 and 0.5 to raise a unit of public funds in most developed countries. In developing countries, the costs are much higher, as demonstrated by Thailand (1.19 to 1.54), Malaysia (1.20) and Philippines (2.48). However, Schmalensee (1999) is more cautious in commenting on the way to finance universal services in developing countries. Although in theory it is better to finance these services with cross subsidy in the absence of an efficient tax system, he argues that once the decision to rely on this for financing is made, it might be difficult to reverse when the tax system improves.

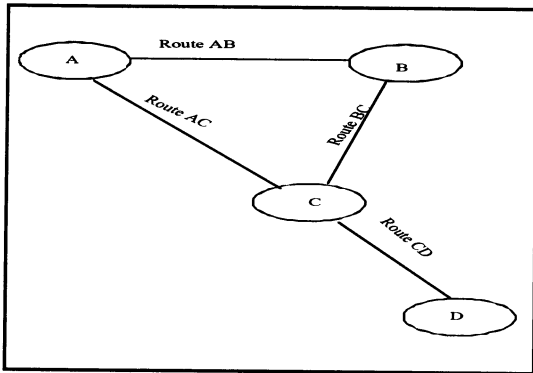
The third motive of cross subsidy is to gain 'unfair' advantages over competitors. Dominant firms have used cross subsidy in 'unfair' pricing decisions. A business undertaking uses cross subsidy as an investment to minimize the impact of competition in a market (Heald, 1994; 1997). Moreover, the practice of cross subsidizing is damaging to economic efficiency (see for example Viscusi *et al.*, 1995).

There is no law on cross subsidization in the United States, the United Kingdom, or the European Union. However, under Articles 92 and 93 in the Treaty of Rome, the cross-subsidization practices of an undertaking with an exclusive concession are viewed as state aid. Such practices by an undertaking will have to be reported to the EU Commission. In co-operation agreements, including joint ventures, the undertakings involved must obtain approval from the Commission under the Merger Control Regulation or Article 85(3) so that these businesses refrain from practicing cross subsidization. The reason is that they do not discriminate against third parties in business dealings because of their exclusive concession; Articles 85(d) and 86(6) set forth certain prohibitions on third-party discrimination. Article 86 is commonly used to condemn cross subsidization by an undertaking holding an exclusive concession that confers its dominant position, and thereafter, reference is made to Article 86(a), which prohibits the practice of predatory pricing.

THEORETICAL ISSUES

Figure 1 shows a hypothetical airline network. In the figure, the airline is serving four towns A, B, C and D in a network with routes AB, AC, BC and CD. In this network setting, a passenger traveling from town A can go to any town without having to experience any inconveniences such as changing flights. A passenger can travel from A to D via C or via B and C. Having a good network can provide competitive advantage to the airline and increase consumer demand for its services.

Figure 1
A Hypothetical Airline Network



A route can be dropped if its contribution is negative (the incremental revenue of the route is less than its IC). However, the airline may not drop the route if it can increase the airline's overall profits. This is because the route can provide network externalities, which can increase consumer demand for its services.

The concept of network externalities is derived from the economic concept of externality, which is said to exist when a person external to a transaction is directly affected (positively or negatively) by the event of the transaction (Capello & Nijkamp, 1996). There are two important characteristics of externalities in economics (Nijkamp, 1977; Capello & Nijkamp, 1996). The first one is interdependence, which refers to an interaction between decisions of economic agents that can be easily identified. The decision of an individual to join a network is dependent on the number of existing subscribers. In the context of an airline network, the decision is dependent on the number of already existing connections to destinations further afield. The second characteristic is that neither the individual who benefits has to pay nor is the individual who incurs the cost reimbursed.

Table 1 illustrates an example of this concept. The airline receives an incremental revenue of £100 and incurs an expenditure of £120 on route CD, therefore suffers a negative contribution of £20. However, route CD has provided network externalities to other routes. This is because consumers use the airline to travel to various destinations in the network. As a result, those routes gain £90 of additional contribution: route AB (£40); route AC (£20); and route BC (£30). By maintaining the route, the network as a whole gains an incremental net contribution of £70. If there are no network externalities associated with the route, the airline will definitely drop the route.

Table 1
Contributions from Route CD

	Drop	Do Not Drop
Contribution from route CD	0	-20
Network externalities	0	90
Contribution	0	70

The decision to keep the 'loss-making' route may give rise to claims that route CD is being cross subsidized by other routes, where despite making a negative 'direct' contribution, the 'total' contribution to the business is positive. The claims may be made on the basis that costs common to all routes are allocated on the Fully-Distributed Cost (FDC) basis.

Economists have questioned the use of FDC to allocate common costs on three grounds that:

- (a) FDC ignores pricing efficiency,
- (b) FDC has nothing to do with cross-subsidy, and

- (c) FDC arbitrary and lacks a conceptual foundation (Brown & Sibley, 1986, p. 59).

Economists have argued that the loss has nothing to do with cross subsidy which '... logically, should exist only when the deletion of a service benefits users of other services' (Brown & Sibley, 1986, p. 49); it is merely the result of an arbitrary allocation of common costs.

If the 'loss-making' route CD is terminated, the airline may lose network externalities associated with the terminated route. For example, users may choose other forms of transportation or opt for its competitors' services. If this happens, other routes may also be affected by having fewer passengers, and the airline's earnings are reduced to a greater extent than if the 'loss-making' route had been maintained.

So far the discussion has not considered the opportunity costs of the landing slots that can be used for other routes or even new routes, which are more lucrative. The use of the slots for such routes can increase the airline's profitability, particularly in the face of stiff competition from other airlines.

If a decision to drop the route affects the economic development of the area because it needs access to a network that can provide linkages to other networks in order to attract investment, the airline should not be blamed. By dropping the route, the airline can reallocate the resources used in a more efficient way since resources are scarce. If the economic development of the area is the government's priority in its economic policy, then the government should bear the costs of a politically-imposed policy. The government should be disciplined to '... bear direct financial respon-

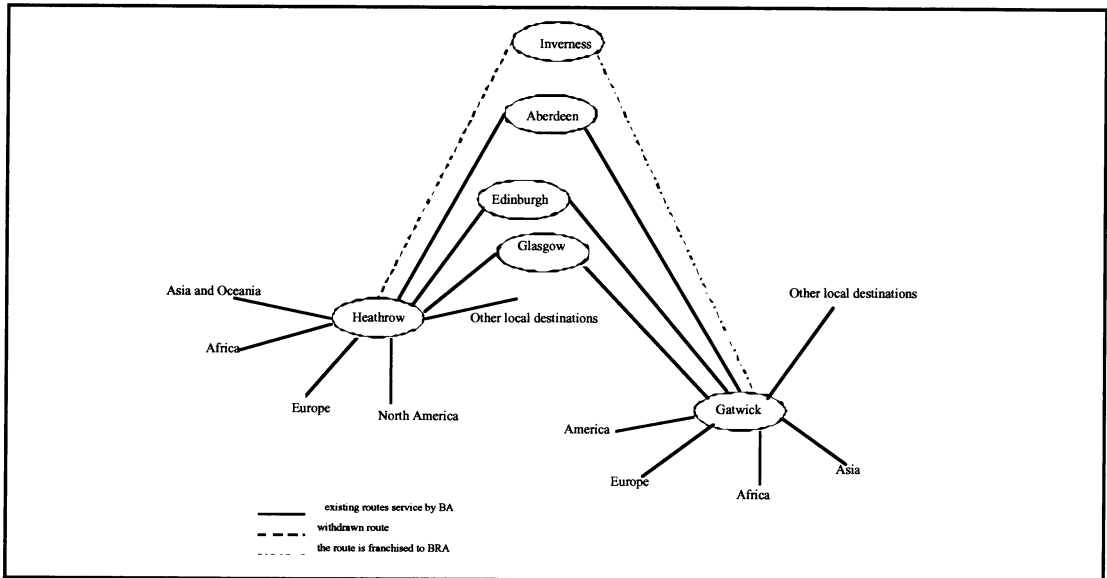
sibility for leading corporations away from courses of action which their own best interests would normally dictate; and the record of recoup payments would serve as a standing reminder of the costs of government-imposed policies' (Wettenhall, 1966, p. 409).

THE CASE

Inverness, being the only large town in the Highlands of Scotland, is a major employment and shopping center for the surrounding areas. It is a regional town of strategic importance with businesses and industry that export £1 billion a year (excluding oil) and contributes £500 million or 20 per cent of Scotland's tourism income (Highlands and Islands Enterprise, 1998). Fresh perishable goods and live produce are air freighted out of Inverness via Heathrow to European capitals (Highlands and Islands Enterprise, 1998).

British Airways (BA) had regular flights from Heathrow to Inverness after taking over Dan Air, which was acquired in 1991. Besides BA, other airlines also have regular flights to Inverness from various airports near London; Air UK flies from Stansted and EasyJet from Luton. With effect from November 1997, BA decided to stop servicing the Heathrow-Inverness route. Figure 2 shows local and international routes served by BA. All routes served by BA are linked to either Heathrow or Gatwick airports. Heathrow, a London airport that is the largest in the world, is better linked to various international and domestic airports than Gatwick. Its large network and geographical location attract a high volume of passengers to use the airport.

Figure 2
The Inverness Route



The Highlands region needs access to a network that can provide linkages to other networks in order to attract inward investment and tourism. Heathrow can provide the air links needed by Inverness. Overseas investors or tourists arriving at Heathrow en route to Inverness do not need to change airports. The Highland Council has argued that Heathrow airport offers the best interlining capability in the United Kingdom.

As a result of competition with other smaller airlines, BA, according to Robert Ayling, its then chief executive, was losing money at the rate of £4 million a year on the Inverness-Heathrow route (the basis of calculating the loss was not disclosed). BA decided to switch its services between London and Inverness from Heathrow to Gatwick, and franchised the services to British Regional Airlines (BRA) (Environment Transport and Regional Affairs Committee, 1998). The switch from Heathrow to

Gatwick, according to Robert Ayling, was because BA's short-haul services at Heathrow operating into Continental Europe faced stiff competition from European competitors. The three slots that had been used for the Inverness route were subsequently used for the Stuttgart, Berlin and Venice routes. David Stewart, the Labour MP for Inverness East, Nairn and Lochaber, and a member of the Scottish Affairs Committee, claimed that the Inverness slots were sacrificed in favor of more lucrative international markets (Scottish Affairs Committee, 1997). David Stewart criticized BA's decision and argued that slots at Heathrow should not be totally subjected to free-market forces, especially where they provide services to remote areas of the country with fragile economies. Iain Robertson, the chief executive of Highlands and Islands Enterprise (HIE), said that BA's decision 'posed a serious threat to the economic revival of the Highlands' (Buxton, 1997, p. 8).

A franchise is a contractual license under which BRA is permitted to carry on the Inverness services under BA's trade name, and BA provides continuing advice and assistance to BRA. Franchising is a means to reduce costs and staffing levels. On one hand, BA can avoid the high costs of providing the services through franchising the route to BRA. On the other hand, franchising can lead to a reduction in the quality of services; David Stewart raised the issue of service quality when he said that BA could not guarantee the frequency of flights and the fare structure. BA's decision to franchise the route to BRA had not received the support of the people of the Highlands and Islands.

The move from Heathrow to Gatwick is said to have affected the economic development of the area because Heathrow is 'a very strong card' for attracting inward investment (Environment Transport and Regional Affairs Committee, 1998). According to a study by HIE, passengers in 1996 interlining via Heathrow from Inverness went to 46 different destinations, of which 19 were not served by Gatwick (Scottish Affairs Committee, 1997). Business passengers seeking to travel to central and west London boroughs (City of Westminster, City of London, Kensington and Chelsea, Camden, Lambeth and Tower Hamlets), or to counties west of London, preferred to use Heathrow airport (Highland Council, 1998). In addition, American and Japanese companies are located around Heathrow.

Gatwick, according to Highlands and Islands Enterprise (1998), is a second-best alternative to Heathrow, as demonstrated by the fall in monthly traffic on the new Inverness-Gatwick route as compared to the old Inver-

ness-Heathrow route, and does not provide the same connecting opportunities as Heathrow and '... interlining passengers are inconvenienced by the extra time and cost in transferring to and from Heathrow' (Environment Transport and Regional Affairs Committee (Transport Sub-Committee), 1998a, para 292), whereas Heathrow is the preferred airport for a majority of passengers travelling from the rest of the world to the British region (Highland Council, 1998).

ANALYSIS OF THE CASE

People with vested interests in the case, such as Iain Robertson, have made various claims. BA's decision to use the slots for international destinations demonstrates that there are opportunity costs of using the slots, which can be used for the routes that give the highest contribution to profits. Robert Ayling stated:

If we had an 8 o'clock slot which was being used for one route which was a profitable route, but there was a very strong customer demand for that 8 o'clock slot to be used for another slot, then we might swap the slots (Environment Transport and Regional Affairs Committee (Transport Sub-Committee), 1998b, para 530).

BA again emphasized the opportunity costs of the slots when Robert Ayling argued that, if a route is less profitable than an alternative for a reasonable period of time, the route will be withdrawn. In terms of allocative efficiency, it seems that BA is optimizing the

use of scarce resources. In a situation where competitive pressure is high, as is the cost of the service, BA is moving '... along a production surface towards greater allocative efficiency' (Leibenstein 1966, p. 413). This is supported by the fact that the network externalities derived from the Inverness-Heathrow route were not sufficient to resist the removal of the landing slots to other more lucrative routes. Leibenstein (1966) reported on a visit by Frederick Harbison to two petroleum refineries in Egypt less than one and a half mile apart. The labor productivity of one refinery had been significantly less than the other for many years. However, after a change of management, the inefficient refinery was able to significantly increase its labor productivity. Leibenstein (1966) concluded that the change did not take place earlier because there was insufficient motivation to do so. Similarly, BA had insufficient motivation to remove the slots from Inverness-Heathrow route because there was no pressure on its profitability. However, BA has now been out-manuevered by smaller airlines, and falling passenger numbers have forced it to overhaul its strategy.

To face an increasingly competitive market, BA has to use its scarce resources efficiently. BA's argument, to use the slots for additional flights on those international routes to remain competitive, supports this reasoning:

Competitors on those routes have better schedules and we were competitively disadvantaged because we could not maintain the competitive arrangements that we wanted to (Scottish Affairs Committee, 1997, para 8).

As the Incremental Cost (IC) of servicing the Inverness route is greater than its revenue, there is substance to the claim that the route has been cross subsidized by other routes. Moreover, if a figure can be calculated to place a value on the opportunity cost of the slots, the size of the cross subsidy to the Inverness route could be much higher than what has been claimed.

It can be inferred that BA's decision was made after considering its own economic welfare. Based on the concept of opportunity cost, BA's decision in withdrawing the slots used to service the Inverness-Heathrow route was economically rational. BA should not be forced to provide the service particularly when the industry is highly competitive. This is because slots are in short supply and the opportunity costs of using slots for short-haul flights are high. It seems that BA's management accounting information system has not been able to give the value of the opportunity costs of those assets. The inference is made based on various conflicting statements made by BA's senior officers about losses suffered by BA. David Noyes, the BA Director for United Kingdom, Africa and the Middle East, stated that the Inverness-Heathrow route had lost over £2.5 million in 1996. BA was reported by Buxton (1997) to have lost £8 million on the Heathrow-Inverness route since 1992. This may be the reason for the difficulty in determining the opportunity cost of the slots and also the avoidable costs of the Inverness-Heathrow route. As a result, it is difficult to discover which route is not profitable after an opportunity cost charge for the slot, and therefore needs to be eliminated.

BA's decision may affect the economic development of Inverness and its surround-

ing areas. However, the economic development of the areas is not the responsibility of BA. If the economic development of Inverness and its surrounding areas is the government's priority in its economic policy, then the government should bear those costs.

CONCLUSION

Analytical constructs and concepts of costs can establish relevant facts and costs that give insights into anti-competitive behavioral issues in competition policy. However, in the case of cross subsidy, it is difficult to identify, measure and develop public policy response. Bös (1994, p. 139) argued that no public policy response may be necessary:

... the problem of cross-subsidization is of no importance from the point of view of welfare economics. If optimal pricing includes any kind of cross-subsidization (of the Faulhaber type or of an extended type), then that cross-subsidization should be accepted.

To conclude, management accountants can help competition authorities expose anti-competitive behavior and clarify certain competitive issues such as access to networks and essential facilities and cross subsidy. Thus, there is a role for management accountants to play in competition policy debates, and the competition policy field is an important area for accounting research. In addition, the insights derived from the real-world example discussed in this article have a relevance to other competition policy issues.

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