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Predation is Alive and Well in Canadian Skies: Myth or Reality?

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BACKGROUND

In the fall of 2000 Air Canada in response to the entry by Westjet Airlines into the Hamilton (Toronto)-Moncton market and the entry of CanJet Airlines into the Toronto-Halifax market lowered fares to meet the competition of these new entrant low cost carriers (LCC) and in the case of Westjet added capacity that it had previously removed prior to the entry of Westjet. Both carriers complained to the Bureau of Competition Policy regarding the actions of Air Canada. Was Air Canada responding in a competitive manner or were they trying to drive competition from the market?

On March 5, 2001 the Commissioner of Competition filed a complaint against Air Canada alleging that it:

1. *Operated capacity on a route or routes at fares that did not cover avoidable costs*
2. *Increasing capacity on routes at fares that did not cover the avoidable costs of the capacity.*
3. *Engaging in a policy of matching fares offered by low cost carriers on 'affected' routes and operating capacity at those fares without regard for the impact on the profitability of Air Canada and without regard to the added benefits such service provided and without regard to the impact on low cost carriers.*

Until December of 1999 Canada had two full service carriers that were affiliated with alliances having a world network. Air Canada was the dominant carrier with approximately 45 percent of the domestic market and was a member of the Star Alliance.¹ Canadian Airlines International (CAI) held about 38-43 percent of the domestic market. It was a member of OneWorld Alliance, which included American Airlines and was regarded as the 2nd most powerful alliance. These two carriers accounted for over 80 percent of passengers in the top 200 city-pair markets in Canada. These city pairs represented approximately 90 percent of domestic passengers. The two carriers were merged under the Air Canada name in January 2001.²

After 1999 when Air Canada took over a failing CAI, Canada had one dominant scheduled airline, Air Canada and a few smaller airlines such as Canada 3000 and Westjet that offer scheduled domestic flights. Air Canada has in excess of 80 percent of the Canadian air travel market. It served multiple destinations in Canada through its hub (at Lester B. Pearson International Airport, Toronto) and spoke network, and connected a number of Canadian cities with US and other International destinations. By contrast, Westjet is a small airline operating a linear route network only in Canada and has been described as a low cost carrier. Typically, West Jet operates routes with one or two flights. It provides a "no-frills" service at low fares. West Jet's business strategy is to build markets rather than poach traffic from other carriers. Two other scheduled carriers also operated in Canada. Canjet Airlines was a low cost carrier connecting Toronto and Montreal with two or three east coast destinations. Canada 3000 purchased it in the spring of 2001. Royal Airlines operated a service similar to Canada 3000 providing limited scheduled service between major cities in Canada and operating international charters to vacation and sunspot destinations. Canada 3000 also purchased it in the spring of 2001. In the fall of 2001 Canada 3000 failed and Canada was essentially left with two regular scheduled carriers, Air Canada and Westjet.³

¹ Many regard Star as the most powerful and profitable airline alliance. Membership in Star confers significant benefits.

² Air Canada now has 90 percent of travel agency business, 75 percent of seat capacity and is the 7th largest carrier in North America and the 12th largest in the world.

³ A few additional small carriers provide service similar to that of Canada 3000. They included Air Transat and Skyservice.

In the fall of 2001 Air Canada introduced Tango a subsidiary discount airline that flew the same routes as Canada 3000. It was regarded by some as a 'fighting brand' designed to drive Canada 3000 out of business.

Regulations Affecting Airlines in Canada

Airlines in Canada operate in a deregulated environment the provisions of which are detailed in the Canada Transportation Act. This means that domestic carriers operating in domestic markets are not subject to fare, entry-exit or capacity controls. There is a distinction made between scheduled and domestic carriers but both operate under the same rules in domestic markets. International markets are still regulated to more or less degree. The extent of the regulations is governed by bilateral agreements negotiated between Canada and another country. The Canada-US Open Skies Agreement governs the transborder market between Canada and the United States. This agreement allows domestic licensed carriers in either country to operate flights between any two city-pairs in the two countries. It does not allow cabotage.

There are currently foreign ownership restrictions in Canada. This, similar to other countries limits ownership of a Canadian carrier to 25 percent. Until recently, there was a limit on share ownership of Air Canada – no one shareholder domestic or foreign could hold more than 10 percent of equity shares.

As with all other firms in Canada the airlines are subject to the provisions of the Competition Act. As a result of the merger of Air Canada and CAI, Parliament changed both the Canada Transportation Act and the Competition Act. Changes to the Transportation Act provided the Governor in Council to make regulations affecting specific acts or conduct of person or carriers that were considered anti-competitive. Some regarded these new powers as a form of re-regulation of the industry. The Competition Act was also changed particularly the sections governing predatory behavior and abuse of dominant position. These changes are listed in an appendix to this paper.

THE AIR CANADA-WESTJET CASE

The Air Canada WestJet offers an interesting study for a number of reasons. First, it follows on the heels of the staying of charges against American Airlines of similar behavior in the US against a small low cost carrier. Second, it is the first time that the new regulations under the Competition Act would be in force. Unlike the US predatory behavior rules, the Canadian law extends to service and capacity behavior as well as fighting brands. Third, this is the first case in Canada and one of the few in North America that have been applied in a network industry. Distinctive issues with regard to network industries would figure prominently in the analysis (as they did in the American Airlines Case) Finally, the charges could be levied under either of two sections of the Competition Act – Abuse of Dominance or Predatory Behavior and which is selected will influence the likelihood of success of conviction. Canada has never had a conviction under any version of the predatory pricing provisions of the Competition Act. The case was filed under the Abuse of Dominance Provisions.

There are a number of areas of interest for this case.

1. Defining the relevant market
2. Price matching or price reduction
3. Prices in relation to average avoidable costs
4. Measuring costs - which one is relevant

5. Quality differences
6. Linkages between capacity and fares (yield)
7. Redeployment as a means of avoiding costs
8. Predatory pricing versus predatory behavior
9. Appropriate unit of output
10. Conditions necessary for predation
11. Fare threatens an equally efficient carrier
12. Prices serve no legitimate business purpose
13. Likelihood of supra-competitive prices with exit of new entrant.
14. Avoidable costs -- how should this be measured.

What is Predation?

Predatory behavior refers to aggressive pricing, capacity expansion or service delivery [bonus frequent-flier points, for example] by a dominant firm or firms designed to induce the exit or discipline of a rival firm. It is important to recognize that predation is not simply about pricing, as the traditional literature would suppose. An examination of the American Airlines case shows the evolution from a position where one focused upon aggressive pricing towards a rival firm to one in which consideration is given to both the low prices that are designed to drive a competitor from the market and any evidence of possible recoupment of the short-term losses after exit has taken place.

The traditional view of predatory pricing was severely criticized by what is known as the Chicago school. They argued first that in the past the focus tended to be on protecting competitors rather than competition. Second the argument was made that predatory pricing was irrational unless the predating firm could prevent re-entry once it had raised its prices after inducing exit. This was the argument that the recoupment could not take place unless there were barriers to entry. If there were barriers there would not have been entry the first place. The modern literature on predatory behavior recognizes that there are cases in which predation can be successful. The fundamental problem is trying to distinguish true predatory pricing or behavior from normal competition. The modern theories of predatory pricing show there are some circumstances under which predation can be a rational strategy.

Areeda and Willig (1975) provide the first careful definition of predation, "a response to a rival that sacrifices part of the profit that could be earned under competitive circumstances, were the rival to remain viable, in order to induce exit and gain consequent additional monopoly profit". This definition points to some key issues for our case. First, the predatory behavior must be aimed directly at the rival's viability. The viability could be based on an equally efficient competitor and the predatory pricing at below avoidable costs. Or it could be based upon a more efficient competitor having fewer financial resources than the dominant firm and having some limits to withstand a lengthy price war. Second, there may be some reputation effect desired by the predatory firm. The losses incurred in any price/behavior war may be justified in order to establish a reputation for toughness in order to deter future entry by other firms or entry into other markets in a network by the incumbent entrant. In effect these act as signaling models.

Reputation models make sense once we recognize that firms may operate in several markets, which may be distinct geographically or temporally. There may also be multi-product firms that gain additional profits from both lower costs due to scope economies but added revenues from product complementarities. Establishing a reputation in one market has spillover effects in other markets and can perhaps justify some losses from predatory behavior because the returns span several markets. As signaling models, reputation also has merit as a strategy since the losses of the prey once they have exited the market are a 'salutary' example to others should they decide to enter.

Bolton, Broadley and Riordan (2000) point out the [US] courts adhere to a static, non- strategic view of predatory pricing and believe that this represents a consensus in economic literature. The reliance is on a comparison between costs and prices. This position clearly ignores the strategic nature of predation and the reason it is profitable is because it represents an exercise of power to eliminate, discipline or otherwise inhibit the competitive conduct of a rival [or potential rival].

The new thinking in the economics literature explains predatory pricing and behavior in a dynamic world of imperfect and asymmetric information in complex strategic situations. The purpose of predation has seen in this literature is to influence the expectations of an existing rival, potential rival or suppliers to that rival, including suppliers of capital. For example, actions by Air Canada may convince the capital market that there is a greater risk to Westjet thereby increasing the cost of capital to Westjet or to increase the barriers to entry of a potential rival. The purpose of all of these actions is to convince the rival [Westjet] that continued competition, expansion or entry into other parts of the network would be unprofitable.

Signaling that in the market will be unprofitable can be not only for the competitor [Westjet] but also for input suppliers such as the capital market. The airline industry is highly cyclical and there is a high-level of business risk. The industry also requires a significant investment in aircraft and support facilities. Those providing the capital must internalize and capitalize the business risk as well as face agency risk. The agency risk arises since the lender must assess the future profitability of the borrower. Entrant airlines will be dependent upon outside financing. It will be participating in a relatively limited network. The incumbent can finance its' strategies from a broad network over which it does not necessarily face the same level of competition. Entrant airlines that are faced with price wars will confront a higher cost of capital since lenders will be reluctant to finance firms that are going to face uncertain revenue streams. This is a form of financial predation.

The Areeda-Turner Rule

Areeda and Turner (1975) proposed a legal standard for the examination of claims of predatory pricing. It was a cost based approach. This test was that prices should not fall below marginal cost. Since marginal cost was difficult to measure they suggested using average variable cost. Prices that were above average variable costs but below average total cost would not be considered predatory per se. Prices below average variable cost were considered predatory and those equal to or exceeding average total cost not predatory. Notice that this is a purely cost based tests of predation. It is based upon relatively straightforward objective of distinguishing between a dominant firm being able to meet the competition, which is viewed as desirable and a dominant firm being able to drive a more efficient firm from the market. Unfortunately this pricing test is not easily applicable to multiproduct firms and certainly not network industries.

A second criticism of the Areeda-Turner rule is that it does not focus upon the existence of predation as a positive phenomenon in this sense of driving the victim firm out of the market; that is, inducing exit. The test is simply a price cost test; it does not refer to the subsequent exit of the firm from a marketplace.

Economists in the traditional and modern antitrust literature are in full agreement that predatory pricing involves dynamic behavior. Baumol has said, "the problem clearly involves intertemporal behavior patterns that cannot be addressed by a comparison of prices at a point in time".⁴ The essential problem is to infer long run market conditions from short run pricing behavior. The Areeda-Turner rule dismisses long run effects but to focus on them too much is to be too lenient on predatory practices.

The fundamental problem with the Areeda-Turner rule is that it imposes standard that is equivalent to short run profit maximization. A number of authors have shown that in the Areeda-Turner rule would not promote long-run economic welfare, would not insure an efficient allocation of resources, and would encourage firms to maintain excess capacity. Others have shown that the rule would be too lenient and that it would allow the destruction of equally efficient rivals. Perhaps the most telling conceptual and practical argument is that the cost based rules would be ambiguous short run cost measurements. As Joskow notes, the fundamental problem is one of inferring unobservable long run market outcomes from what is seen in the short run. Finally, the rule is too narrow and would not be able to accommodate business behavior that would include predatory investment, economies of scope, vertical integration, and other cost reducing strategies such as learning.

Baumol's Contribution

Baumol's 1996 article (which is of interest to a number of areas listed at the beginning of this note) is probably the most influential in pointing out that any complex environment of multiproduct firms average variable cost is not easily defined. Therefore, he argues that it is average avoidable costs, which are to include product specific fix costs, but not sunk costs, that is the appropriate test for predation. There are several important features in Baumol's article for the Canadian case. First, he notes that average avoidable costs might be represented or proxied by average incremental costs. Incremental costs are the difference in the cost to the firm in a situation where it does produce the product compared to when it does not produce the product.⁵

Where there are costs that may be common to a number of flights, it would be impossible to measure average variable costs. Therefore, one would use average avoidable cost or at least average incremental cost in analyzing the relationship between revenues to costs. This would support the proposition made by a number of anti-trust economists that one should compare incremental revenues with incremental costs in judging whether an action is predatory or not. Second, the longer the period of time the more costs are avoidable; the costs that are sunk in the short run become variable in the long run. Therefore, the longer the period of predatory behavior the higher the price that needs to be used as the standard for judging predatory pricing. The Baumol article does not provide any direction as to the appropriate length of time but it is clear and the transition from sunk to variable costs are what would drive the view that a longer

⁴ See Baumol, W. "Quasi-Permanence of Price Reductions: A Policy for Predatory Pricing", in F.M. Schereer, (ed) Monopoly and Competition Policy, Volume 2 Elgar Reference Collection, International Library of Critical Writing in Economics, Vol. 30 Aldershot, UK 1993

⁵ This raises questions regarding the product definition. One could define the product as a flight whereas the defendant would likely define the product as a route.

rather than shorter period is the appropriate time frame. Third, the Baumol article clearly indicates that it is the victim's costs not the incumbents to which the comparison to prices should be made.

The test for predation seems to have fallen between two camps. The courts prefer the Areeda Turner rule while economics literature finds greater favor with the Baumol focus on average avoidable cost and the three conditions for predation.⁶ What is interesting about both of these approaches is that they tend to view predation as a unitary or single strategy rather than a combination or accumulation of strategies. The courts seem to prefer to the Areeda Turner rule because it appears to be straightforward and relatively simple. However, Bolton, Brodley and Riordan point out that in the U.S. the courts have found it difficult and complicated to measure costs. The evolution is that the courts started to rely on intent and the structure of the market. By market structure we refer to high concentration and entry barriers would seem to be necessary conditions for predation and for the predator to recoup their investment.

It appears the Brooke decision was significant in that it held that predatory pricing required both evidence of below cost pricing and proof of recoupment. This latter point meant there had to be some proof that the predator would be able to raise price above the competitive level. A case have to demonstrate an airline has exited a city-pair route and has raised fares. It also should be the case that the fare increase would be sufficient to fully compensate for any losses during the predation period.

Bolton, Brodley and Riordan state that the U.S. Department of Transportation Guidelines (1977) are the most significant change since the Brooke case. The guidelines developed by the Competition Bureau are based in part from the U.S. DOT guidelines. These recognize predation as a strategic problem and also place it in the context of a network industry in which reputation is an important element in recoupment. The strategic mechanism is any significant expansion of capacity coupled with a lowering of fares by the dominant airline. An interesting element in the guidelines is that they do not require fares to be less than costs. They rely on the gross revenue to identify the problem. The dominant firm in expanding capacity would drive fares down in that market and forgo revenue. Thus the U.S. guidelines recognize the relationship between capacity predation and equilibrium fares and the market. The output expansion strategy first identified by Williamson (1977) is highly relevant to airline markets since capital is so mobile, which can result in rapid expansion of capacity, in designated markets.

An important issue in the Canadian case is the time period over which to measure costs and presumably to measure prices or yield. Joskow and Klevorick (1979) identify short run pricing power as a condition to make predation a feasible strategy. This refers to the ability to raise price above the competitive level over some significant but not necessarily unlimited time. I believe that this would tend to favor a period longer than one month but certainly less than one year as the period of analysis.

In discussions as to what is the appropriate cost Bolton, Brodley and Riordan provide some helpful discussion. A price would be considered unlawful if it were less than average avoidable cost but would be considered lawful if it were greater than long run average incremental cost. Average avoidable cost is defined, as the average per unit cost the predator would have avoided over the period of below cost pricing had it not produced the predatory increment of sales. Bolton, Brodley and Riordan provide an example, which is similar to the situation in which we find ourselves in choosing between flight and route. A price that covers the avoidable cost of a flight may not cover the avoidable cost of a route. Average avoidable cost is seen to be superior to average variable costs since it does not require the allocation between fixed

⁶ Baumol proposed a "price reversal rule" as a test for predation. This rule would deem a price predatory if it forced to rival to leave the market and the predator thereafter reversed a price cut within the next several years.

and variable costs.⁷ Average avoidable costs includes all costs that could have been avoided had the firm not made the predatory sales, whether the cost or fixed or variable.

Bolton, Brodley and Riordan's notion of long run average incremental cost is, I believe, close to what I see as average avoidable cost if we take an ex ante position; that is, if we have the perspective of not exiting the market but entering it. This means that costs that might be considered sunk would be included in the calculation. Long run average incremental cost would be calculated as the airline's total production cost including the product less what the airline's total cost would have been had the product not been produced, divided by the amount of product produced. Long run average incremental cost would include all product specific cost, and would not require the allocation of joint or common costs. I also believe that long run average incremental cost would include redeployment costs.

Responding to the issues in the Canadian case.

1. PRICE MATCHING OR PRICE REDUCTION

The issue is that Westjet selected the fares. Air Canada simply matched them. The implication is that response was due to competition rather than predation. The economics literature on predatory pricing focuses on a price reduction rather than price matching. The reason is there is implicit assumption that the entrant firm is equally as efficient as the dominant firm. There is almost no discussion of the situation in which the entrant firm is significantly more efficient. The Baumol article [1996] refers to price reduction and not price matching. However, matching may also be for a limited number of seats but more than would have been offered prior to the entry. Thus price matching is not the full story, the number or proportion of low fare seats, and when they are available, must also be included.

2. MEASURING COSTS - WHICH ONE IS RELEVANT

As I discussed earlier there seems to be the two costs that the literature focuses upon. These are average variable cost or average avoidable cost. The choice of either of these neither favors nor hinders Westjet or Air Canada. Rather it is the time period over which they are defined that determines what is included. There is no jurisprudence in Canada and it is not clear what one would learn from the United States court decisions, save for the American Airlines case. In the American Airlines case flight capital was excluded from avoidable cost.

Oster and Strong (2001) make the point that a narrow definition of costs will also be overly lenient on predatory behavior. The key issue is avoidability (or in their words fixed or variable) in the short run. In many industries capital costs are fixed in the short run since they cannot be varied or redeployed. Airlines have capital, which is easily moved around and in and out of individual markets. They and others have recognized this point.

They also provide a supportive discussion of measuring [variable] costs. The marginal costs, which variable and avoidable are trying to proxy, is at the seat of aircraft level since these are measures of the 'added output' that the marginal cost covers. But they point out, to the extent airlines add capacity in response to new entry, then the marginal cost is not at the seat level but at the flight level and should reflect the costs incurred in making an aircraft and crew available for the added service. At the same time a withdrawal should reflect the costs saved by moving the aircraft and flight crew to other parts of the system.

⁷ Both average avoidable cost and average verbal costs are short run concepts and neither includes sunk costs.

3. QUALITY DIFFERENCES

The argument is that matching fares by Air Canada must on the face of it mean that quality adjusted fares are lower. This requires a careful argument as to how quality should be included and whether it is relevant given the fareclasses and clientele that are being served. In other words this issue is very much tied into the relevant market definition. Issues of flight frequency, FFPs and other amenities enter into this debate. The fares that Air Canada was charging were not restricted to an individual flight but they were restricted to a city-pair. Furthermore, passengers receive benefits such as frequent flyer points, more check-in counters etc.

4. LINKAGES BETWEEN CAPACITY AND FARES (YIELD)

The airline economics literature is quite clear that capacity drives fares. Airlines do not set fares and then adjust capacity accordingly but rather adjust capacity to sustain a particular fare regime. For example, in international markets bilaterals are structured specifically to limit capacity since this provides a desired level of fare. The same will be true in domestic markets.

The relationship between pricing and the number of carriers or capacity provided en route depends on the nature of the interaction among the carriers. If the flights offered by each carrier cannot be distinguished and each carrier sets their fare on the assumption then the others will maintain fares at existing levels, the result is that fares will be driven to marginal costs. If there are any cost economies revenues will be insufficient to cover costs. In this case there has to be some market rationalization, which generally means exit. On the other hand, if flights are considered indistinguishable and carriers assumed that other participants in the market would maintain their capacity, the result is that fares will exceed marginal cost. In fact fares will approach average cost, which means that exit will not necessarily take place.

The assumption that individual flights are indistinguishable on a route is unrealistic. The flights can be differentiated with respect to departure times and connections as well as number stops, alternative equipment and cabin service. It is more difficult to talk about 'the price' because the offering differs. If the differentiation is assumed to be simple, and involving only departure times, for example, it can be shown that the fares charged by each carrier decline as the number of carriers on a route increases. Fares would tend to marginal cost only if adjacent departure times were virtually adjacent and the fixed costs of offering flight were very low. There are two important points. First, it provides some indicators of quality differences that would make the quality-adjusted price different for Westjet and Air Canada. Second, it shows that predatory behavior involving capacity and placing that capacity such that it minimizes the difference between yours' and your competitors' service is designed to drive fares towards marginal cost.

5. REDEPLOYMENT AS A MEANS OF AVOIDING COSTS

This is an issue that is not discussed generally in economics literature except to the extent it is consistent with managing on the basis of opportunity cost. I think that redeployment is consistent with the notion of exit rather than entry.

6. PREDATORY PRICING VERSUS PREDATORY BEHAVIOR

Bolton, Brodley and Riordan make the point that the current jurisprudence tends to think predatory pricing or predatory behavior has been unitary. Under the circumstances you can treat them as synonymous. The

modern economics literature discussing predation considers it strategic and an integration of a number of actions. Predation to establish reputation or to signal are examples of this type of integration. Treating predation as a firm strategy would favor the Westjet case whereas focusing only on predatory pricing would tend to favor Air Canada. One reason would be that the relationship between capacity and fares would tend to be ignored.

7. APPROPRIATE UNIT OF OUTPUT

This is not identified in any precise way in either the guidelines or economics literature. In the American Airlines case I believe the unit of output was the route. This was a result of the way in which American Airlines evaluated performance using its various simulation models.

What is implied in Baumol's article as well as in the paper by Bolton, Brodley and Riordan is the avoidable cost refers to a product rather than units of the product. This does not solve the debate on flight versus route debate except to say that airline economists refer to the market as the city pair. One or more routes can join these city-pairs. The product of the airline is offering a trip in this market. One could argue that a morning trip is different than a noon trip. They are two different products but they are in the same market because they are substitutes. In the Canadian case, it would be difficult to consider the product the route since both firms were offering service between the city pairs. The product is the offering of seats or capacity.

8. CONDITIONS NECESSARY FOR PREDATION

The Areeda Turner rule requires only that prices be less than average variable cost. The Brooke decision requires that prices are less than variable cost and that there be the possibility of recoupment. Baumol in proposes that predation requires three conditions to be satisfied. These are:

- Fare threatens an equally efficient carrier
- Prices serve no legitimate business purpose
- Likelihood of supra-competitive prices with exit of new entrant.

If any of these conditions are not satisfied Baumol would argue that it would be difficult to distinguish between competition and predation. Baumol's position clearly favors Air Canada, the Brooke decision would likely favor Westjet since we can demonstrate prices or yields that were well above cost per available seat mile when competitors exited the market. The Areeda Turner rule would tend to favor Westjet.

9. AVOIDABLE COSTS -- HOW SHOULD THIS BE MEASURED.

An **avoidable cost** is a cost that is avoided or escaped by not producing. In contrast a **sunk expenditure** cannot be avoided if the firm stops producing. Sunk expenditures arise because productive activities sometimes require specialized assets. For example, in entering a particular airline market such as Hamilton – Moncton an airline would undertake an advertising campaign to alert people in the Moncton region to this new service. This expenditure must be undertaken even before the first aircraft flies. It is

also an expenditure that is not transferable to another market so it cannot be redeployed. In fact it is highly specialized and specific to the Moncton market. The portion of an expenditure that is sunk is the difference between its *ex ante* (meaning before incurring the expense) opportunity cost and its salvage value or opportunity cost *ex post* (meaning after the expense has been made). It is the portion of costs that are not recoverable upon exit from the original productive activity.

A distinction can be made between firm and industry specific capital. For example an aircraft is a sunk expenditure to the airline industry because there is relatively little value to that asset outside of this industry. However to an airline that made the original investment it is not a sunk expenditure because it may be able to sell the aircraft in a secondhand market without incurring a loss.

In the enforcement guidelines the Competition Bureau identifies the avoidable cost test. The cost test compares the revenues earned as a result of providing a service to the avoidable costs of providing that service. It defines avoidable costs as “all costs that could have been avoided by the dominant airline if it had chosen not to offer the service in question”. In section 4.1.2 of the guidelines the Bureau provides a table of how it is likely to categorize cost as either avoidable or unavoidable with respect to an airline's decision to either add or remove a flight. I have underlined the words *add or remove* because they are very important in terms of what costs are considered avoidable or not. As I have identified above all costs are avoidable before an investment is made or product is brought to the marketplace. However after one is producing a product there may be certain costs that are incurred or were incurred that are not avoidable. These would be sunk costs (it may be the case that a portion of these costs may be recoverable and therefore avoidable in a longer run). So it matters a great deal the perspective one has. In looking at the documents and discussing issues with the Bureau I find this distinction is really not made and in some cases there seems to be a certain amount of carelessness in ignoring whether we are adding a flight or we are removing a flight. They seem to be treated synonymously.

In the table in section 4.1.2 there are four cost categories: outright avoidable, avoidable through the deployment, potentially avoidable and unavoidable. In the first cost category, outright avoidable, the discussion treats adding a flight and removing a flight as the same. In the second cost category, avoidable through the redeployment, they again refer to adding a flight or removing a flight. In adding a flight it is relatively straightforward as to what the avoidable costs are because it is the payments to factors such as pilots in order to provide the flight. Note that this characterization represents costs as factor costs rather than the opportunity cost of using the aircraft and crew on one route rather than another. The opportunity cost may be higher than the factor payments or factor costs because there may be a large amount of high yield traffic on that route. This was the type of argument, forgone profit, that the DOJ used in the American Airlines case. In removing a flight the costs of the aircraft and crew are avoided because the factors, labor and capital, can be used elsewhere, redeployed, in the system. Conceptually one can treat a flight as a product, for example a Toronto Moncton flight. If the carrier is not producing this particular product it can, in a sense, sell its factors such as the flight crew and aircraft to another part of its system in order to produce another product, a flight from Toronto to Winnipeg. So redeployment is like placing your factors back into the marketplace, it just happens to be your internal marketplace.

Variable, Fixed and Incremental Costs

In the articles by Baumol as well as other academics there is reference to a number of different cost terms. **Fixed costs** are costs that must be incurred in a lump sum in order for any output to be provided and they

do not vary in magnitude as output varies. These costs are not variable in either the short or long run. Any cost not fixed is defined as **variable**. A sunk cost however is a cost that cannot be avoided for some limited period of time, but after that it becomes avoidable or escapable. A cost that is fixed may or may not be sunk, and a cost that is sunk may not be fixed.

Marginal cost refers to the increase in a firm's total expenditures resulting from a small increase in the amount of output. **Incremental cost** is a cost concept that is related to marginal cost. **Average Incremental cost** is a generic concept referring to the addition, per unit of the additional output in question, to the firm's total cost when the output of some product expands by some preselected increment. Marginal cost will be the same as incremental cost if the increment in question is small. But the marginal cost and incremental cost can differ significantly because the ranges of output in the two calculations are not the same or because the increment refers to the addition of a new product. For example, one can think of the marginal cost of serving an additional passenger whereas if we were referring to flight it might be an incremental cost because the unit of output is larger and lumpy.

Incremental cost in the regulatory economics literature is also sometimes referred to as the additional cost of expanding the number of products that a firm is producing. For example, if an airline is currently providing services between Toronto and Vancouver and it decides to offer flights from Toronto to Montreal, the cost of the new product, the Toronto Montreal flight, is referred to as an incremental cost. Notice if the number of flights were added to the existing Toronto Vancouver route this might be referred to as a marginal cost although as we indicated above because there is lumpiness in adding flights as opposed to passengers to a flight one may refer to this as an incremental cost.

Average incremental cost, a concept cited by Baumol and others in the literature, is defined as the difference in a firm's total costs with and without a particular product being supplied divided by the amount of output in question. In other words, it is the cost per unit of some product X that is added to the firm's total expenditures as a result of its supply of the current output of X. Average incremental cost is sometimes equated to average variable cost. The two cost concepts are similar and yet different. They can be used to mean the same thing but they can also refer to different things. Average variable cost is sometimes used to refer to short run cost with capacity not adjusted to the output volume; in other words the plant or capital is fixed. Average incremental cost is the lower long run cost figure that one obtains once capital or plant and equipment had been adjusted so as to minimize the average cost of the particular output, X. Average incremental cost will contain product specific costs including any fixed costs that must be incurred in order to produce that product alone.

A little technology may help here. Consider a firm producing one product, flights from Edmonton to Calgary. The average costs would be the total costs defined by some time period (week, month, year) divided by the unit of output; passenger miles, available seat miles or flights. As in:

$$ATC = TC / Q$$

$$AVC = TVC / Q$$

ATC is average total costs and AVC is average variable costs. The difference between the two is the inclusion of fixed cost in the former but not the latter. Now consider the firm adds a new route (a new product) from Calgary to Vancouver. There are two products, Q_1 and Q_2 that are produced by the firm. The average incremental cost (AIC) of product 2 would be

$$AIC = \frac{C(Q_1, Q_2) - C(Q_1, 0)}{Q_2}$$

that is, how much do costs change when I add (or subtract) the new product, Q_2 (the YYC-YVR route) from the firm.

In Baumol's article from the *Journal of Law and Economics*, 1996, there is reference made to average variable cost, average incremental cost and avoidable cost. Average variable cost is a concept that was developed in the literature in which firms were considered to be producing one product that was homogeneous. This concept does not apply easily in the context of the multiproduct firm and airlines are certainly multiproduct firms. There are two reasons one would want to use an **average incremental cost** as opposed to an **average variable cost** when there are multiple products. First, it is difficult to think of an average when there are many (more than one) products involved and it is not clear what one would use as a denominator in calculating the average. Secondly there can be product specific fixed costs. These are costs that are incurred exclusively on behalf of one particular product but the magnitude does not change when the output of the product changes. Average incremental cost will always include product specific fixed costs and secondly the average is calculated by including all of the output of that specific product as the denominator (as in the second equation above)

There is an additional point to be made in looking at average avoidable costs and average incremental costs. First, whether one is incrementing or decrementing does matter. If you are incrementing there are some costs that may be sunk which are avoidable if you do not increment the output, for example add a flight. On the other hand, if you are decrementing, removing a flight, those sunk costs may in fact not be recoverable over the time period in question and therefore are not avoidable. As I stated earlier, people seem somewhat careless by treating an increase and a decrease synonymously. When one is expanding output by a given increment it is sometimes necessary to incur some sunk costs, which may be substantial that cannot be escaped in whole or in part in the very long run. Average incremental cost would include the sunk outlays whereas average avoidable cost would not.

10. IN A REVENUE (PRICE)-COST TEST WHAT IS THE CORRECT REVENUE?

There is the question of which revenues to include in the cost and revenue comparison in the first stage of the price-cost test.. On any given flight, revenues can be generated from a number of different sources, including:

- (1) "local passengers" who are flying just between the origin and destination of that flight, and are not connecting to or from any other flight; the fares paid by local passengers indicate the revenue that they generate for the flight;
- (2) "connecting passengers" who fly on the given flight for one segment of their journey, but they have connected from or are connecting to other flights; these passengers pay a single fare for the entire journey, so the revenue attributable to the given flight is prorated using an airline prorating formula.

Two additional sources would be cargo carried and miscellaneous revenues, such as beverage alcohol sales on board the flight. In conducting the avoidable cost analysis, none of these revenues has been

excluded. The passenger revenue figures that are appropriate to use for the avoidable cost test are those that include both the local and connection revenue from the passengers of a particular flight on a route.

Beyond revenue consists of the prorated portions of the fares of connecting passengers that are allocated to the other flight segments of the trips of connecting passengers. An issue that arises in comparing air carrier revenues to avoidable costs for operating capacity is whether or not “beyond revenues” should be included in the evaluation. Beyond revenue is the term used to describe the revenue that is earned on the rest of an airline’s schedule route network that is attributable to passengers that are carried on a single flight segment. It is also called network contribution or system feed.

The rationale put forward by proponents of using beyond revenues when evaluating routes is that a single flight segment might be important to the financial health of an airline’s overall operation and the performance of that flight segment perhaps should not be judged only on its sector revenue. Such importance might be considered, for example, for short haul flight sector feeding to a longer haul sector. The long haul sector’s revenue may be three to five times greater than the short haul sector under consideration.

There are two major fallacies associated with including network contribution or beyond revenues in assessing flight performance. One is that it results in double counting revenues, triple counting in the case of passenger trips with three flight segments, etc. The end result of such double counting is that all or most flights could show financially positive results, while overall the airline might be losing a great deal of money. This type of approach could put an airline into financial trouble, simply because the sum of the parts are significantly bigger than the whole.⁸ Second, in the case where there is a dominant carrier (Air Canada, Lufthansa, KLM, BA, for example) this has an important implication for the way in which one should look at beyond revenue. Consider a flight segment served by multiple dominant carrier flights. If a badly performing flight is canceled on the route, it does not imply that beyond revenue will necessarily be lost. Rather, connecting passengers might simply switch to other dominant carrier flights where they can make the desired connection. The implication is that if a particular flight has local and connecting passenger revenue that does not cover costs, it would not make economic sense to retain the flight on the grounds that the addition of some portion of beyond revenue makes the flight profitable. Profits would be higher with the flight cancellation because the beyond revenue would not be lost, and the losses attributable to the flight would not be incurred. Third, the calculation of beyond revenue or beyond contribution of a particular route segment might assist a carrier in evaluating whether to continue service on a particular route given the route’s contribution to the network. It is not counted as part of a flight’s core revenue. A final but perhaps most important point is that the fares (prices) that are under consideration as being predatory were aimed at a point-to-point market, connecting passengers never had access to the cheaper fares. This should not be lost as a general point in the assessment of predation.

One of the key issues in both the American Airlines case and the Air Canada-Westjet case is the inclusion of beyond revenues. The judge in the American Airlines decision agreed with American that beyond revenues should be included because American used, were able to demonstrate in presentation of their simulation models, these values in their planning and pricing decisions.

⁸ Counting revenues of other products or services is a practice that would not be accepted in other industries when assessing whether or not prices have been set below avoidable costs. I know of no example from the economics literature on predatory pricing which either recommends or accepts such a practice.

A METAPHOR FOR THE AIRLINE CASE

Predatory Pricing: An illustrative hypothetical case.

XYZ Corporation.

- XYZ produces two products – beer and pretzels, which are considered complementary products.
- A main capital requirement in the production of each product is a vat in which ingredients are mixed.
- XYZ currently own two large vats and one small one. These vats can be deployed in the production of either product and can be switched if required.
- The company's market research (and independent industry research) shows that many of the customers that buy its pretzels also buy its beer. However as the beer and pretzels are sold at different stores, XYZ cannot identify specifically which pretzel customers also buy beer.
- XYZ includes a coupon with its pretzels that provides a discount on the purchase of XYZ beer.

January

XYZ employs one large vat in the production of beer and one small vat in the production of pretzels. The other vat is kept to ensure continuous production and for extra capacity should demand conditions require it.

The average variable cost per bag of pretzels (not including the cost of the vat) is 25 cents

The average avoidable cost per bag of pretzels (including the cost of the vat) is 75 cents

Each bag of pretzels sells for \$1

Most of the company's profits come from sales of beer.

March

A rival company (ABC Inc.) in snack food enters the market with a rice cracker product.

ABC cannot state categorically that consumers who purchase its product do not drink XYZ beer, however the product is marketed as a snack food for wine drinkers.

The rice crackers are sold in the same store as XYZ's pretzels.

ABC's rice crackers also utilize a vat in production. The average avoidable cost (including vat costs) of a package of rice crackers is 30 cents per pack.

The rice crackers sell for 45 cents per pack.

May

XYZ responds to ABC's entry with the following actions:

The price of a bag of pretzels is lowered to 45 cents (matching the ABC price) and some bags are specially marked with a purchase price of 40 cents.

XYZ deploys the spare large vat into pretzel production and switches the small vat as a spare. As a result of the increased capacity and economies of scale, the average avoidable cost (including vat costs) falls to 50 cents per bag.

Overall, XYZ remains profitable due to beer sales.

July

XYZ is accused of predatory pricing:

1. Pricing at or below its average avoidable cost
2. Increasing capacity
3. Engaging in a program of pricing that has the effect of substantially lessening competition

XYZ's defence:

1. The vats should not be counted in the calculation of average avoidable costs.
2. The revenues from beer sales should be included because the pretzels are a complementary product that is used (via the coupon and its product characteristics) to promote beer sales.
3. That it was only matching the prices of a rival firm and since it dropped its price, it had to increase capacity to keep up with demand.

Issues:

1. Beer is a stand-alone product. A pretzel is a stand-alone product. Is it legitimate to pursue a strategy of selling one stand-alone product purely to enhance the profits of another? Could XYZ give away "free" pretzels to promote beer sales?

a) Suppose XYZ gives away free bags of pretzels attached to its cases of beer. Here the consumption of the pretzels is tied to the purchase of the beer and there is a preset limit of how many pretzels can be consumed with the purchase on one case of beer.

b) Suppose alternatively that XYZ unloads free bags of pretzels in snack-food stores with a coupon promoting the company's beer.

While option (a) might be accepted as a legitimate pricing program, option (b) clearly has a direct effect on lessening competition in the snack food market and is far more harmful to competition.

Really this comes down to the same issues as the beyond revenues arguments. To what extent did the actions of ABC have an effect upon the beer sales of XYZ through indirectly stealing market share from XYZ in the snack food market? One would have to argue that pretzel consumers who switched to rice crackers also switched from beer to wine.

2. One argument might be that since it is hard to identify and separate customers of beer, pretzels or both products that the only way to evaluate the actions of XYZ is to look at their entire production system.

The “complex system” argument is that measurement problems make it impossible to determine accurately what the actual supply of pretzels was that competed with consumers who were only interested in snack food (with no beer). Therefore the argument goes the only thing we can do is look at the entire production system and profitability of XYZ. However, the previous issue shows that if XYZ were only intent on promoting beyond revenues with its program of pricing pretzels it would be better to tie the (cross-subsidized) sales of pretzels directly to beer sales.

3. The act of setting the price of a bag of pretzels to *match* the price of its rivals product (rice crackers) could be construed as predatory in the sense that the pretzels also contained a coupon for a discount on beer sales. That is, offering more product at an equal price is equivalent to offering the same amount of product at a lower price.
4. The analogy of beer and pretzels is incomplete in the sense that these products are *not* mutually exclusive.

LINKAGES TO THE AIR CANADA AND WEST JET

- WestJet’s flight did not compete for travelers demanding flights **beyond** Toronto or Moncton and Air Canada specifically did not price them in this way.
- Air Canada did add capacity to its eastern scheduled flights
- Air Canada did set prices equal to those of West Jet and in one case dropped price below WestJet’s price
- If Air Canada wanted to use these flights to promote beyond revenues, it should have tied the low prices to those customers who purchased ticket for travel beyond the O-D city pair in question.
- Air Canada offered a higher grade of in-flight service, more ground terminal service and frequent flyer points on these flights at a price equal to that of the discount fares of WestJet

SUMMARY AND KEY POINTS

It would appear that the key consideration in assessing predatory practices is to ask when they might be rational for an airline. And there are a number of reasons or circumstances that predation could be deemed to be rational:

1. Competition among major network carriers-predation can be seen as a means of preserving a cooperative equilibrium
2. Provide a means of maintaining hub premiums-this requires the demonstration that hub premiums actually exist.
3. Signaling-an airline's behavior in one market can be viewed as a signal of how it would behave in other markets. Therefore, the benefits from predatory practices are likely to extend beyond

just the markets where they occur. The incentives would be stronger for network carriers since the more such markets there are to protect the greater are the incentives to build and maintain a reputation to deter challenge. Some observers have noted that if the prey believes that the threat or promise will be carried out, there is no need for actual predation. Thus, like collusion, the most successful use of predatory threat or promises is difficult to observe.

4. Predation service to increase barriers to entry-the entrant, looking forward, will foresee the predatory pricing that will arise if it enters. It must therefore be prepared to suffer losses over the predation period. These may exceed the capitalization of the firm.

As Oster and Strong note, in the characteristics of network industries, in particular airlines make predatory practices a recurring possibility. Therefore, they are a legitimate concern for competition policy. A more controversial issue is that because of the presence of low-cost carriers and their impact on fares in a particularly hub premiums, predatory practices are likely to be targeted at these firms. But competition policy is not designed to protect competitors but rather competition. Should low-cost carriers be given special treatment? Some would argue that since many of the continuing gains from airline deregulation arise from the presence of low cost carriers, indices essential that the airline industry provide opportunities for the entry of such firms and that it is essential to continuing consumer gains from deregulation and the competition that it has generated.

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**Regulations respecting anti-competitive acts
of persons operating a domestic service****Anti-competitive acts**

1. For the purposes of paragraph 78(1)(j) of the Competition Act, the following acts or conduct of a person operating a domestic service, as defined in subsection 55(1) of the Canada Transportation Act, are anti-competitive acts:

- (a) operating capacity on a route or routes at fares that do not cover the avoidable cost of providing the service;
- (b) increasing capacity on a route or routes at fares that do not cover the avoidable cost of providing the service;
- (c) using a low-cost second-brand carrier in a manner that is described in paragraph (a) or (b);
- (d) pre-empting airport facilities or services that are required by another air carrier for the operation of its business, with the object of withholding the airport facilities or services from a market;
- (e) to the extent not governed by regulations respecting take-off and landing slots made under any other Act, pre-empting take-off or landing slots that are required by another air carrier for the operation of its business, with the object of withholding the take-off or landing slots from a market;
- (f) using commissions, incentives or other inducements to sell or purchase its flights for the purpose of disciplining or eliminating a competitor or impeding or preventing a competitor's entry into, or expansion in, a market;
- (g) using a loyalty marketing program for the purpose of disciplining or eliminating a competitor or impeding or preventing a competitor's entry into, or expansion in, a market; and
- (h) altering its schedules, networks, or infrastructure for the purpose of disciplining or eliminating a competitor or impeding or preventing a competitor's entry into, or expansion in, a market.

Essential facilities and services

2. (1) For the purposes of paragraph 78(1)(k) of the Competition Act, facilities and services that are essential to the operation in a market of an air service, as defined in subsection 55(1) of the Canada Transportation Act, are those

- (a) that are required in order to provide a competitive air service;
- (b) that cannot reasonably or practicably be purchased, acquired, provided or replicated by another air carrier on its own behalf;
- (c) that are effectively controlled by the air carrier who denies access to them or refuses supply of them; and
- (d) that can be feasibly provided to another air carrier, having regard to operational or safety considerations, or legitimate business justifications of the air carrier referred to in paragraph (c).

(2) For the purpose of subsection (1), facilities and services may include, but are not limited to, take-off and landing slots, interline arrangements, airport gates, loading bridges, counters and related airport facilities, maintenance services, and baggage handling infrastructure, equipment and services.

Coming into force

3. These Regulations come into force on the day on which they are registered.
