JOURNAL OF THE TRANSPORTATION RESEARCH FORUM

Volume XXX Number 2 **1990**

TRANSPORTATION RESEARCH FORUM

Applying the New Competition Legislation To The Deregulated Airline Industry: The Case of Computer Reservation Systems

*by Witold B. Jankowski**

INTRODUCTION

Following a wave of mergers, the last of which has been the acquisition of Wardair by CAIL, the Canadian airline industry has become a virtual duopoly. The duopoly leaves public policies in a difficult dilemma. The remaining regulatory authority over prices covers only northern routes and monopoly routes in the south. On all remaining routes, fares are not regulated (see Jankowski, (1988). Competition policy, therefore, remains the only policy tool that can be used to promote competition in the industry.

On June 1, 1987, Air Canada and Canadian Airlines International (CAIL) entered a partnership agreement to merge their computer reservation systems (CRSs). The transaction can potentially introduce elements of monopoly in the already highly concentrated industry. Under the terms of the agreement, the management of the newly created system will be the responsibility of the GEMINI Automated Distribution Systems Inc., in which Air Canada and PWA, the owner of CAIL, are to be equal partners.

The proposed merger was challenged by the Director of Investigation and Research of the Development of Consumer and Corporate Affairs on the grounds that it "prevents or lessens or is likely to prevent or lessen competition substantially in the provision of computer reservation systems services to airlines, travel agents and consumers in Canada within the meaning of section 64 of the Competition Act." The Director asked the Competition Tribunal to dissolve the merger.[1]

In defence of the merger, Air Canada and CAIL claim that the transaction is necessary in order to achieve the available economies of scale. Other defences used are that of import substitution and that PEGASUS was about to fail.

This paper examines the positive and negative consequences of the proposed merger. The provisions of the new Competition Act are related to the economics of the computer reservation systems and specific policies are proposed.

THE MERGER PROVISIONS OF THE NEW COMPETITION ACT

The past Canadian competition legislation was widely considered as being ineffective in dealing with mergers and monopolies. (There has never been a conviction in a contested merger case.) One of the basic weaknesses of the structure of the "Combines Investigation Act" was the assessment of complex economic activity in a criminal law setting. Under the new Competition Act of 1986, mergers are to be examined under a civil law framework where the adjudicator can issue remedial orders that will maintain or restore competition in the market.

The merger provisions of the Competition Act aim at reconciling the reduction in competition with the potential efficiency gains related to the economies of scale. Although the new legislation states that the potential anticompetitive effects of the merger should not be assessed solely on the basis of market shares (Section 64.2), concentration ratios, nevertheless, remain an important part of the analysis of a merger. Other factors to be included in the evaluation of the merger are as follows: the extent of foreign competition, the availability of substitutes, conditions of entry and the extent to which effective competition remains in a market and the possible impact on innovation (Section 65). The legislation contains provisions allowing for the defence on the grounds of increased efficiency which would outweigh the possible anticompetitive effects. Part of the efficiency defence is the possibility of increased exports or import substitution (Section 68). The legislation also provides the failing business defence which applies when one of the parties to the merger was about to fail.

THE COMPUTER RESERVATION INDUSTRY: AN OVERVIEW

The Nature of CRS Services

A computer reservation system consists of a periodically updated central database.

CRSs distribute information on airline schedules, fares, rules and seat availability to subscribers, mainly travel agents. The CRSs allow the travel agents to list the flights, make reservations and issue travel documents to the customers. CRSs also distribute information and allow to book the services of participating hotels, car rentals, tour operators and other travel related businesses. Distribution of information is done electronically through a cathode ray tube terminal which is located on the subscriber's premises. Travel agents generally lease the necessary computer terminal and ticketing equipment from a vendor.

An airline can be represented in CRS either as a "hosted" or a "participating" carrier. The "hosted" airline stores its complete inventory of seats in the CRS which then acts as the carrier's internal reservation and management systems. For the "participating" carrier, CRS does not operate as the internal reservation and management system, which means that the information on the availability of seats of the "participating" carrier is less accurate than on the "hosted" one.

CRSs receive revenues from the two principal sources: (a) subscription fees paid by travel agents; (b) booking fees, paid by airlines and other travel suppliers whose services are sold by means of CRSs. CRS vendors charge booking fees for each flight segment, which is defined as one takeoff and landing (a journey with several stops will therefore have more than one flight segment).

The importance of CRSs in the distribution of airline services arises from the fact that the vast majority of passenger tickets are sold by travel agents. Approximately 90 percent of all Canadian travel agencies use a CRS to make airline reservation and print tickets. Before CRSs were introduced, travel agents had to use published paper guides for information about flights and fares, or had an option to call the carriers directly. CRSs, by providing travel agents with instantaneous information about flights, seat availability, fares, hotels and car rentals, and other relevant information, can substantially reduce the time and the costs of search.

The CRS vendors compete with each other to provide subscribers with the state-of-the-art software and enhancements. However, the most important feature of the system remains the completeness, accuracy and timeliness of information on airlines which the travel agents book. The airlines "hosted" on a given CRS can provide complete information on their seats because the CRS plays the role of an airline internal management system. Because of delays in sending messages, information on participating carriers is less accurate. To provide the travel agents with an additional information about seat availability on participating carriers, several means of improved access to carriers' internal inventory of seats have been developed. One measure, which allows the agents to read information directly from an airline internal system, is called "direct access." "Direct access" requires that different CRS are connected with one another. A comprehensive form of "direct access," which allows travel agents to directly access data banks of each participating airline or other entity, to obtain schedule, pricing, seat availability and other reference material, is "parallel hosting" ("Texas Air Spawns a Major Force in Airline Automation," *Air Transport World*, 1/87).

The most complete access, however, is guaranteed by the "last seat availability" feature, which, in addition to providing up-to-date information, allows agents to withdraw seats from airline inventory and receive confirmation from that airline's internal reservation system. All U.S. systems offer "direct access" feature to one another. In Canada, RESERVEC and now GEMINI have refused to offer "direct access" and "last seat availability" to other CRSs.

The Structure of the CRS Industry and Its Impact on the Airline Industry

The CRS industry world wide is dominated by a small number of vendors owned by airlines or by consortia of airlines. At present, in addition to the GEMINI system, there are nine CRSs in the world (Table 1).

Since their introduction, computer reservation systems have been criticized for their anticompetitive effects on the distribution side of the travel industry and on the airline industry in general.[2]

On the distribution side, the owners of CRSs may charge travel agents excessive subscription fees. The ability to do that will be a function of industry concentration and the conditions of entry into CRSs market as well as the bargaining position of travel agents.

CRSs can also have a number of anti-competitive effects on the airline industry.

First, the program which runs the system may be designed to favor the host airline's flights, which has been called a "display bias."

Second, pricing for CRSs services may be a part of raising rivals' costs strategy. The U.S. Department of Transportation has found the evidence of this strategy in the U.S. The booking fees charged by the owners of the

TABLE 1

Computer Reservation Industry

CRS	OWNERS
Sabre	American Airlines
Apollo	United Airlines, USAir, KLM, British Airways, Swiss Air, Alitalia
SystemOne	Continental Airlines, Eastern Airlines
PARS	TWA, Northwest Airlines
DATA II	Delta Airlines
Gemini	Air Canada, CAIL
Amadeus	Lufthansa, Iberia, Air France, Air Inter, SAS, Finnair, Braathens, Islandair, Athia, JAT
Galileo	British Airways, Alitalia, SwissAir, Olympic, KLM, Sabena, TAP, Aer Lingus, Austrian
Abacus	Thai, Cathay Pacific, SIA
Fantasia	Quantas, JAL, All Nippon Airways

Source: ("Will CRS Revolutionize International World Travel, *Air Transport World*, August 1988).

two largest reservation systems were about double the costs that the owner incurred, including the provision for a profit (DOT, 1988). Also price discrimation may be used and charges be set depending on the degree of competition that the airline has with the owner of the CRS.

Third, CRSs create the informational advantage for the owner. The data generated by the virtue of operating the system may allow the host carrier to identify changes and shifts in the market, sooner that its competitors.

Fourth, CRS may also affect competition in the airline markets through the impact of code-sharing. Code-sharing is a procedure of listing the flights of more than one airline under the same computer code. It has been applied mainly to flights of small commuter airlines being listed under the code of a major airline. A study by Oster and Pickrel (1989) suggests that code-sharing does not offer benefits to the customers, but instead, in combination with selective withdrawal of joint fares, may eventually reduce competition in the regional airline markets with an accompanying reduction in travel alternatives for travellers to and from small communities. Selective code-sharing also reduces potential competition by making an entry of small commuter carriers more difficult.

In addition, code-sharing can be part of the "display bias" strategy. For example, flights of commuter carriers owned by Air Canada will be listed as on-line connection and receive priority display compared to flights of independent carriers. Although consumers generally do prefer on-line over inter-line connections, there is a point where time savings due to shorter times between flights will more than compensate consumers for the disutility of having to switch carriers. Arbitrary priority listing of on-line connections will not reflect consumers preferences and will put the independent carriers at the competitive disadvantage.

Fifth, the airline that owns a CRS is typically able to sell more airline tickets by virtue of its CRS ownership (the so called "halo" effect).

The U.S. DOT study reveals very high levels of CRSs profitability (DOT, 1988). The owners of the systems invoke the argument that high rates of profits merely reflect high risk involved in developing the systems and

are a simple reward for innovation. Such a claim, however, is only partly correct. At a time when the systems were developed, the major airlines in the U.S. and in Canada, were protected from competition by regulation. It was the dominant position of the major carriers that made the only viable founders of the CRS industry. Thus, the profits earned on the systems are at least to some degree post-regulatory rents.

In the U.S., as early as 1984, Civil Aeronautic Board adopted rules aimed at reducing anticompetitive effect of CRSs. Specifically, the rules require the following: (a) all systems must offer displays showing the services of all carriers, and all displays must be free from bias; (b) CRS owners cannot unjustly discriminate in the setting of fees; (c) CRT owners can retain exclusive use of service enhancements such as automated boarding passes, but they must offer them to all carriers on non-discriminatory terms once they are offered to one; (c) CRS owners cannot require the purchase of services as a condition of participation; (d) travel agents must be able to use multiple systems and also to switch systems. CRS contracts would be limited to five years; (e) CRS owners must offer any booking and sales data generated by the systems to other carriers. Fees may be charged for such data but they have to be nondiscriminatory (Brenner *et al.*, 1984).

In Canada, the CRSs are not subject to similar regulations, even though there have been complaints abut the anticompetitive conduct of the vendors. A commuter carrier City Express, for example, claims that its flights have been subject to a display bias on the RESERVEC system.[3] Air Canada also used the dominant position of RESERVEC as means of increasing CP's costs. (Air Canada refused to pay fees for its bookings done on the PEGASUS system). Finally, RESERVEC and now GEMINI has refused to grant "direct access" to SABRE and other U.S. vendors in an effort to forestall the growth of these systems in Canada.

The Technological Developments in the CRS Industry

The CRSs vendors compete extensively with one another in terms of the service features and enhancements. The CRSs now offer features that allow the system software to be used to handle accounting, managerial, and other back offices functions. One of the emerging trends in the industry is the greater reliance on personal computers which are replacing the previously used "dumb" terminals. The development of future CRS work stations about the personal computers may have important impact on the industry. First, with standardization of the equipment will likely reduce personnel training costs, and thus make cross-entry easier. Second, the PC could be connected to more than one CRS and its computing power could be used to search among CRSs for the services and fares. Both these potential developments can increase competitiveness of the industry.

Other interesting developments involves commercial information networks (CIN). CINs allow subscribers to connect their PCs to mainframe computers and other PCs, which gives the users access to multiple data bases. In the U.S., an electronic version of the Official Airline Guide is now available through a number of CINs. It gives the consumers not only the information on fares and flights, but also allows them to request airport pickup of tickets (DOT, 1988).

The computer technology which made CRS possible is constantly evolving, and the future developments cannot be fully predicted. The CRS industry is thus intrinsically dynamic, and one expects the technological change will continue to have significant impact on industry's conduct and performance.

THE ECONOMIC EVALUATION OF THE MERGER

The first step in the assessment of the merger is the identification of the relevant product and the extent of the geographic market. The analysis of market shares, conditions of entry, potential efficiency gains, and other relevant factors may then follow.

The Definition of the Product, Geographic Market and Concentration Ratios

The definition of the product is relatively easy. It includes the computer reservation services, such as providing information about flights, fares, availability of seats, car rentals and hotel reservation and other relevant information. The CRSs can also provide office automation features such as accounting. At present the CRSs have no close product substitutes, the closest alternative being the electronic version of the published Official Airline Guide.

In their submissions to the Competition Tribunal, the Director and the parties to the merger have not been precise as to what constitutes the relevant geographic market. Thus, Air Canada states: "For many CRS issues, the relevant geographic market is national. However, for some purposes it may be more appropriate to consider smaller regions or urban centers, and for others (e.g. the potential suppliers of CRS services in Canada), the relevant geographic market will be North America." The Director estimates market shares on the basis of the travel agents locations and terminals. This would suggest Canada to be the relevant geographic

market. However, the Director also states: "as a result of this merger GEMINI will have nearly 100% market share in non-urban areas and 77% in urban areas." This in turn suggests a narrower definition of the market.

In defining the relevant market one risks two types of errors. If the definition of the market is too narrow, calculated market shares will overestimate the extent of current market power. On the other hand, if the definition of the market is too broad, potential anticompetitive effects of the merger may be overlooked. Thus, considering that, at present, North America is the relevant geographic, the proposed merger will have only marginal impact on the level of concentration in the industry. On the other hand, considering regions or even cities as being the relevant markets would overestimate the impact of the merger. The demonstrated ability of SABRE to expand in Canada into new locations suggests that a regional definition of the market is too narrow.[4]

Taking a pragmatic view, we shall assume in this analysis that the relevant geographic market is Canada. Consequently, the scope of actual competition will be defined by the number of CRSs that currently operate in Canada. The extent to which potential competition may constrain firms in the market will then depend on the nature and height of barriers to entry.

The following tables provide information on the approximate market shares when the relevant geographic market is Canada. The shares used to specify the levels of concentration are defined by the numbers of locations and CRS terminals respectively.

TABLE 2

Number of Travel Agents Locations (June 1987)

System	Locations	Market Share %	Post Merger Market Share
RESERVEC	2926	72	—
PEGASUS	720	17.7	—
GEMINI	—	—	89.7
SABRE	390	9.6	9.6
APOLLO	25	0.6	0.6
SODA/SYSTEM ONE	1	0.05	0.05

Source: Submissions to the Competition Tribunal.

TABLE 3

Number of CRS Terminals in Travel Agencies (June 1987)

System	Locations	Market Share %	Post Merger Market Share
RESERVEC	6025	71	—
PEGASUS	1362	16	—
GEMINI/ PARS	—	—	87
SABRE	1100	13	13

Source: Submissions to the Competition Tribunal.

The industry, thus, is highly concentrated with the proposed merger significantly increasing the industry concentration.

Conditions of Entry

Concentration ratios provide the indication of current market power. The conditions of entry then define the ability of firms to sustain market power in the long run. Barriers to entry can be defined as factors or conditions of the market that give the incumbent firms a persistent advantage over the new entrants and consequently allow the incumbents to earn above normal profits (Fisher, 1983). Barriers to entry may be determined by the technology, cost structure and demand characteristics, and may also be created by actions of incumbent firms. The typical examples of the structural entry barriers are economies of scale and scope, and sunk costs.[6]

In general, entry into a given geographic market can originate from two sources – the new start-up firms and the established firms operating in other markets. Typically, entry barriers facing the start-up supplier will be higher than those experienced by the existing firms.

Economies of scale will be a source of entry barriers if entry has to be gradual and cannot take place at the minimum efficient scale of operation. The minimum efficient scale of operation in the provision of CRS services can be inferred from data in Table 4.

As indicated in Table 4, costs per booking decline with output. The decline of costs, however, is very small once the size of approximately 50 million bookings is reached, which would indicate that PARS, the third largest vendor in the U.S. operates at the minimum efficient scale. The small start-up entrant therefore is likely to encounter significant cost disadvantages versus the established vendors. Economies of scale, however, should not constitute an entry barrier for the already established vendor operating at the minimum efficient scale.

In addition to economies of scale defined over the CRS output, the systems operated by the airlines are also characterized by the presence of economies of scope. Economies of scope arise primarily because the computer hardware can be shared between the system used for internal needs of the airline and the system sold to the travel agents. There is also an overlap in the personnel and learning required to operate both systems.

Finally, entry of a new firm into CRS industry involves incurring substantial sunk costs related to the development of software, labor training and promotional expenditures. These unrecoverable costs increase risks and put the new entrants in a strategic disadvantage versus the established suppliers (Table 5).

The presence of sunk costs, significant economies of scale and scope suggests that the relevant type of entry that may constrain the existing vendors in Canada is that of the existing vendor operating in the U.S. The existing U.S. vendors are not likely to suffer significant disadvantages related to scale and scope diseconomies. Their systems are

TABLE 4

Economies of Scale in the Provision of CRS Services

	APOLLO	SABRE	PARS	DATAS II	SYSTEMONE
Average expense per booking (1986)	$1.81	$1.62	$1.74	$2.64	$2.36
Total reservations processed during 1986 (millions)	113.3	144.1	46.6	20.3	36.9

Source: U.S. Department of Transportation (1988).

TABLE 5

Estimated Unamortized Value of Non-Recoverable Investment By CRS Vendors at End of 1986 ($ Million)

Type of Investment	APOLLO	SABRE	DATAS II	SYSTEMONE	PARS
Programming and Product Development Costs	$43.7	$41.7	$38.3	N.A.*	N.A.
Marketing Expenses	59.7	49.1	31.1	24.0	17.8
Subscriber Conversion, Retention, and System Use Incentives	16.4	18.2	19.2	7.1	3.1
Subscriber Training	91.2	89.2	12.6	17.9	N.A.*
Total	$211.0	198.2	101.7	49.0	20.9

Source: U.S. DOT (1988); [* Not Available].

already developed and are larger or comparable in size to that of GEMINI. The structural barriers therefore should not impede entry of American vendors. (European and Asian systems are still in their development stage and may become vigorous competitors in the future. Given the unclear status of GATT negotiations on trade in services, however, the ability of non-American vendors to compete in Canada remains unclear.)

The American systems, however, may suffer from barriers created by the conduct of the Canadian vendors.

The first obstacle to entry and growth in Canada is the lack of complete information on seat inventory of the available seats. In Canada, the ability to provide accurate and up-to-date information on Air Canada's and CAIL's flights is crucial for the viability of the system. Refusal to grant direct access or last seat availability on airlines that together account more than 90% of the industry output in Canada reduces the value for a competing system to the travel agents.

Air Canada and CAIL may also refuse to pay for the bookings done through other systems. This would force the competing vendors to increase travel agent fees and become less competitive or incur losses. The ability of American, the owner of SABRE, to retaliate is limited since Canadian CRSs do not operate in the U.S.

The ability of travel agents to switch the systems is also important in assessing the strength of potential competition. Switching costs may arise because of the need to retrain staff. At present, the CRSs rely primarily on personal computers as their terminals (e.g. PEGASUS, SABRE), operation of which is an essential part of travel agents' training in any case, thus training costs may not be substantial. More important than the technological constraints are the conditions of the travel agent – CRS vendor agreement. The U.S. Department of Transportation study (DOT, 1988) has found the terms of the contracts travel agents sign to be the most important obstacle to starting a new CRS. For example, SABRE's travel agency contracts usually contain five-year terms with liquidated damage provisions and minimum booking requirements. Such contacts clearly reduce the possibility of early termination and switching the systems. RESERVEC's and PEGASUS's contracts have been less restrictive than those of SABRE, but in the absence of regulation this may change in the future.

The CRSs industry in Canada is thus characterized by the presence of entry barriers for the established U.S. vendors. The merger, by creating a system which has the exclusive and superior information on flights of both Air Canada and CAIL, makes entry of other systems into Canada even less likely. It should be emphasized, however, that barriers facing the U.S. vendors in Canada are primarily created by the practices of Canadian carriers and can potentially be reduced or eliminated by government regulations (e.g. allowing "direct access" to full inventory of Air Canada and CAIL to other CRSs). In evaluating effective remaining competition after merger, one therefore should include the effects of

possible policies aimed at reducing conduct related barriers to entry.

Efficiency Gains, Failing Business and Import Substitution Defences

All merger proposals will promise cost savings in overhead expenses, duplication of facilities, etc., but diseconomies of scale may also be present. Table 6 relates the size of RESERVEC and PEGASUS to the size of the U.S. vendors.

The combined Gemini system would, therefore, be similar in size to DATAS II, the smallest U.S. vendor. Given that data in Table 3 indicates that the minimum efficient scale of operation is that of PARS, the economics of scale argument in favor of the merger appears justified.

The efficiency gains have been "rediscovered" in the recent antitrust literature (see Williamson, 1988). Ideally, improvements in efficiency should lead to a reduction in prices. Even if the prices go up, however, there may be net efficiency gains. In simple terms, the net welfare effect of the merger depends on how much prices will go up as a result of increased market power compared to the reduction in costs. Increased prices, and consequently, the reduced output lead to the usual loss of the consumer surplus. On the other hand, the economies of scale allow average costs to decline. The net efficiency gain or loss depends on both the shape of the average cost function and demand elasticity (Figure 1 and Table 7).

The data in Table 7 indicates that even relatively small reductions in cost would have to coincide with much greater increases in prices for the efficiency gains to be negative. The issue of income distribution (consumers always lose when long prices go up), however, remains and may have to be considered in evaluating the merger.

Given that the CRSs do not have close substitutes, it is reasonable to assume that demand for their service is relatively inelastic and, therefore, the potential efficiency gains may be significant, even if the cost savings are relatively small.

In a dynamic sense, a merger may reduce the product rivalry between the firms. This type of rivalry has been very important in the CRS industry. The problem is that both present and future diseconomies related to product innovation are very difficult to estimate. However, should the actual and potential competition from the U.S. vendors be preserved, the effects of the merger on product innovation and dynamic efficiency are likely to be small.

The Competition Act states that the merger might not lessen competition if one of the parties to the merger was about to fail (Section 65(b)). Both Air Canada and CAIL argue that Pegas was not viable in the long run.

PEGASUS entered the Canadian market in 1984, and between 1984 and 1987 established its systems in approximately 720 travel agencies. However, in the two years prior to the merger with RESERVEC, PEGASUS lost $15 million on gross revenue of approximately $3 million, and similar

TABLE 6

Size of North American CRS Vendors (1986)

CRS Vendor	Estimated Segments Booked (millions)
SABRE	132
APOLLO	98
SYSTMEMONE	31
PARS	30
DATAS II	15
RESERVEC	14
PEGASUS	1

Source: Submissions to the Competition Tribunal.

FIGURE 1

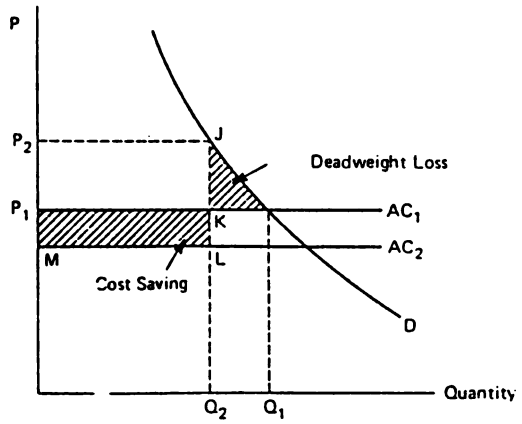

TABLE 7

Percentage Cost Reduction Sufficient to Offset Percentage Price Increases for Selective Values of Demand Elasticity

($\Delta P/P$)*100	ELASTICITY OF DEMAND 3	2	1	1/2
5	0.44	0.27	0.13	0.06
10	2.00	1.21	0.55	0.26
20	10.38	5.76	2.40	1.10

Source: Williamson (1979).

losses were forecasted in the future. Although, in addition to merging with PEGASUS, had other options, namely teaming up with the American, PWA claims that the conditions of the proposed agreement with SABRE were unsatisfactory. Under the proposed agreement, CAIL was to become a "prime-host" on SABRE which did not give CAIL an equity position and, consequently, were inferior to that of Air Canada's offer.

The application of the competition policy faces a dilemma as to whether there have been alternative arrangements which could have allowed a economies of scale and preserve competition at the same time. The Director in his submission speculates that there were other viable options:

"In addition to SABRE option, there are a number of other possible joint ventures that would be less anticompetitive than the current proposal. SYSTEM ONE, for example, has recently concluded a deal with the AMADEUS group in Europe while APOLLO is involved in the GALILEO consortium. CAIL, together with PEGASUS, would be an attractive joint venture partner."

Since those transactions were not considered, there is no information on how attractive such an arrangement might have been. (The "important substitution" defence clearly indicates that the application of competition policy should help the domestic industry in dealing with foreign competitors, if such dealing do not come at the expense of the consumers. By closing the GEMINI option to PEGASUS, the competition authorities would put CAIL in a weak bargaining position with other vendors.)

The slow growth and low profitability of PEGASUS resulted, at least in part, from the anticompetitive practices of Air Canada (such as denying "direct access" RESERVEC system and refusing to pay for Air Canada's bookings done on PEGASUS). On the other hand, PEGASUS had superior information on the second largest carrier in Canada, which gave it an advantage over other systems.

Given that it is practically impossible to simulate how the industry might have developed if the two systems had granted each other "direct access," and alternative arrangements between PEGASUS, and other international vendors are subject to speculation on what their conditions might have been, it is probably best to exclude the "failing" business defence arguments from the analysis.

The preference for the Canadian based CRS, however, can be justified using import substitution defence provisions of the Competition Act: "In considering whether a merger or proposed merger is likely to bring about gains in efficiency described in subsection (1), the Tribunal shall consider whether such gains will result in (a) a significant increase in the real value of exports; or (b) a significant substitution of domestic product for imported products" (Section 68). It appears that, compared to PEGASUS-SABRE venture, or other similar ventures, the merger, by creating a stronger Canadian CRS, is likely to lead to import substitution in the meaning of Section 68(2).

The Impact of the Airline Industry and Effective Competition Remaining After the Merger

One of the potential negative effects of the merger is increased cooperation between Air Canada and CAIL in the airline markets. Imperfect information is a market feature which reduces the likelihood of reaching and preserving cooperation between oligopolists. Information exchange may facilitate collusion by reducing uncertainty about rivals' actions. Some restrictions on traffic related information access, however, can be imposed. For example, carriers may be allowed access only to data on their own traffic. In addition, the notion that cooperation in some aspect of the business leads to collusion and inefficiency is incorrect as a generalization. There are many examples of firms engaging in cooperation in R&D and competing vigorously in other dimensions of the product or service (D'Aspremont and Jacquemin, 1988). It is important, however, that the measures to preserve "arms length" relationship between GEMINI and the carriers are taken. The carriers, as their submissions suggests to the Competition Tribunal, do not seem to object to that and insist that GEMINI will be operated as a separate entity.

The remaining competition in the industry depends on to what degree the U.S. CRS vendors can expand into the Canadian markets. If GEMINI is allowed to continue to refuse to provide "direct access" to other systems, and other potential abuses (such as refusing to participate in and paying booking fees to other systems) are not eliminated, the merger will lead to a virtual monopoly in reservation systems in Canada and, therefore, should be disallowed under the provisions of the Competition Act. Such a decision, however, has to come with a cost, since the available efficiency gains would not be captured. Given that barriers to entry facing the U.S. vendors are related to the conduct of GEMINI, the question is whether it is possible to design policies that would preserve effective competition in the market and at the same time allow the economies of scale to be exploited.

POLICY OPTIONS

Policy considerations should include the possible effects on both the CRS industry, and on competition in the airline markets.

One of the often suggested options is divestiture. Divestiture of CRS from airlines would eliminate the anticompetitive effects of CRSs on the airline industry. However, because of the presence of economies of scope between the internal airline reservation systems and CRSs divestiture would likely increase the overall cost of reservation. Divestiture option also does not resolve the problem of market power in the CRS industry itself and would have to be supplemented by regulation of booking fees. This system would likely introduce all the usual inefficiencies of price regulation.

It is sometimes suggested that divestiture should lead to the creation of the industry wide system in which all airlines would participate (Gillen *et al.*, 1988). This option has the following limitations: First, it may be difficult to agree on the distribution of shares. Second, the benefits of Schumpeterian competition whereby reservation systems compete by providing new features would be lost.

In proposing policies towards CRSs, we shall assume that these policies cannot solve all the problems of the airline industry that originate from duopoly. The policies towards CRSs should ensure, however, that vertical integration in CRSs does not increase market power beyond the level already enjoyed by the airlines. The policies proposed in this paper are designed to satisfy the following objectives: First, the realization of the potential efficiency gains related to economies of scale. Second, the preservation of the Canadian based and owned high-tech industry. Third, the preservation of effective competition in the CRS industry.

The following policy package, in our view, satisfies these objectives:

1. The merger leading to the creation of the GEMINI system should be approved on the grounds of potential efficiency gains. As a condition of granting approval to the merger, the following constraints on the conduct of CRS in Canada should be imposed:

2. Airline booking fees should be disallowed. This would force the vendors to recover their cost from travel agent's subscription fees which would include a fixed equipment and service charge and a variable component related to the number of bookings. Such a policy would prevent airlines from using booking fees to raise their rivals' costs. It would also ensure that Air Canada and CAIL will not use the strategy of refusing participating in and consequently paying booking fees to SABRE. (This strategy was used by RESERVEC in the past when Air Canada refused paying fees to PEGASUS.) Such conduct is very difficult to deal with under the provisions of the Competition Act which bans refusal to sell, but cannot force an unwilling party to buy a service. In addition, the CRS vendors are not as strong in relation to travel agents as to other airlines. This is because it is easier for the travel agents to switch the vendors than for the airlines not to participate in the major CRS. Furthermore, given that most travel agencies bookings, including those through SABRE, are on Air Canada and CAIL, the two carriers prefer the travel agencies to use GEMINI to other systems. The carriers, therefore, have an incentive to increase the number of agencies using the GEMINI system, which is likely to put a pressure on the level of travel agents' subscription fees; assuming, of course, that SABRE and possibly other U.S. vendors remain viable competitors in Canada.

3. The length of the contracts between CRS vendors and travel agents should be restricted to a maximum of 2 years. In addition, liquidated damage clauses for early termination of the contract should be restricted to the expenditures incurred by the CRS vendor in setting up the system at the travel agent's location (e.g. labor training costs).

4. Travel agents should be allowed to subscribe to more than one system and travel agents' commissions should not be tied to their participation in GEMINI. The minimum-use clauses should be disallowed. In the absence of such a clause, agents can gradually switch to the alternative system, even before their contract with the original vendor expires.

5. Carriers should not be allowed to exchange information on each other's revenues and other relevant operational statistics. Airlines access to information generated by the CRS should be restricted to data on its own operations.

6. "Direct access" should be granted by the GEMINI system to other vendors including SABRE.[7] If "direct access" is allowed, SABRE, given its size in the U.S., could remain as a very effective competitor in Canada.[8]

CONCLUSION

This paper has examined the consequences of the recent merger between PEGASUS and RESERVEC computer reservation systems. On the positive side, the merger may lead to efficiency gains. On the negative side, the merger may raise entry barriers in the reservation industry and lead to the domination of a single reservation system. The proposed merger, therefore, addresses the fundamental dilemma of competition policy in a small country, which is how to reconcile the requirements of economies of scale and vigorous competition in the domestic market. Since, the possible negative effects of the merger are related primarily to the past and possible future conduct of the Canadians CRS, rather than to the industry structure itself, the appropriate regulation of the conduct of CRSs may reduce or eliminate the negative effects of the transaction.

The trend towards consolidation and greater concentration is not a unique feature of the Canadian markets, but characterizes the trends in the industry world-wide. If one does not want to reintroduce a comprehensive price regulation, freeing trade and increasing the size of the relevant market appears to be the solution. Since trade in CRS services is free under the conditions of the Canada-U.S. Free Trade Agreement, the elimination of firm created barriers facing the U.S. vendors should make them more effective competitors in Canada. The GEMINI system, rather than being a monopoly in Canada, would become a part of the broader North American market and could seek further expansion in the U.S. While one may still have misgivings about oligopoly, and excessive profits earned by the firms (see DOT study), the effect of the merger on the effective competition in the

whole North American market will likely be small. The past growth and performance of SABRE in Canada suggests that with rules regulating the conduct of the CRS systems, the merger, while allowing for economies of scale to be realized, need not lessen competition unduly.

ENDNOTES

* Assistant Professor, Department of Economics, Lakehead University, Thunder Bay, Ontario.

1. The same action was also requested by Wardair, City-Express, American Airlines, and the Consumer Association of Canada (CAA). CAA, however, stated that it would not oppose the merger if some constraints on the future conduct of the GEMINI system were imposed.

2. It is revealing that the airlines did not hide that creating CRSs was strategically motivated. R. Crandal, president of American Airlines has said: "The preferential display of our flights, and corresponding increase in market share is the competitive *raison d'etre* for having created the system in the first place" ("Reservation Systems likely to be Disciplined" *Air Transport World*, 9, 1983).

3. City Express claims that Air Canada refused to permit its RESERVEC management to display City Express flights operating in and out of Toronto Island Airport in the display availability for Toronto. The problem of this alleged bias has not resolved even after City Express became a "hosted" carrier on RESERVEC (City Express, Submission to the Competition Tribunal, 1989).

4. The lack of precision in identifying the exact boundaries of the market, however, may not be a problem if one considers the reason for defining the relevant markets. The real issue is not whether the firms, or products are *in* the market, but what are the constraints on the ability of firms to increase prices, reduce quality or fail to innovate. Thus, market definition, which organizes the analysis, is a useful tool in assessing effects of mergers, but is not the end in itself Fisher (1983).

5. The above data provide a proxy of market shares. In its submission Air Canada suggested that a proper indicator of market share is the percentage of segment bookings. Unfortunately, such data is not available. Air Canada provided its estimate of the shares: 70% for RESERVEC, 7% for PEGASUS and 22% for SABRE.

6. Economies of scale may not be a barrier if an instanteneous entry at the minimum efficient scale is possible (Baumol *et al.*, 1982). When only small scale, gradual entry is feasible, the new entrant will experience a cost disadvantage versus the established firm.s

7. In its submission to the Competition Tribunal, Air Canada states: "last seat availability' is a resource over which GEMINI has a proprietary right. As such, it has value. Access to "last seat availability" on Air Canada and CAIL, is a matter for commercial negotiations between SABRE and GEMINI. SABRE has never directly approached GEMINI to commercially negotiate "last seat availability." The fact that there has been no commercial negotiation or resolution does not constitute a barrier to entry" (sic). Exactly opposite is true. Barriers to entry are defined as cost that have to be incurred by the entrants but not by the incumbents. If an entrant has to buy "last seat availability" from GEMINI, it implies cost asymmetry. The denial of timely and accurate information on Air Canada and CAIL's flights to SABRE has forced more of two thirds of its subscribers to instal RESERVEC terminals for the sole purpose of accessing information not available on SABRE (information based on submissions to the Competition Tribunal). Such duplication is clearly wasteful and its cost will ultimately be paid for by the travelling public. It could be avoided if "direct" access was granted to SABRE. In the U.S., where because of government regulation conduct determined barriers have been reduced, there is evidence of vigorous competition between the systems. For example, in 1986 1,107 of 8,022 (14%) agencies that renewed their contracts with CRS vendors switched the systems, which indicates that cross-entry may provide a mechanism to reduce at least some of the inefficiencies associated with high concentration (DOT, 1988).

8. Since its entry into Canada, SABRE has created competitive pressure on RESERVEC both to reduce prices and to improve the features of the system. Thus, in January 1987, in response to competition from SABRE, RESERVEC reduced its booking fees by 30% (information based on the statement of ground and material facts submitted by the Director of Investigation and Research).

REFERENCES

Baumol, W., J. Panzer and R. Willig (1982) *Contestable Markets and the Theory of Industry Structure* (N.Y.: Harcourt, Brace, Jovanovich).

Brenner, M., J. Leet, and E. Schott (1985) *Airline Deregulation* (Westport: Eno Foundation for Transportation).

Competition Act (1986), Ottawa: Minister of Supply and Services.

D'Aspermont, C., and A. Jacquemin (1988) "Cooperative and Noncooperative R&D in Duopoly with Spillovers' *American Economic Review,* 78:5:1133-1137.

DOT (1988) "Study of Airline Computer Reservation Systems" Washington DC, U.S. Department of Transportation.

Fisher, F., J.J. McGowan, and J.E. Greenwood (1983) *Spindled and Mutilated: Economic Analysis and U.S. v. IBM* (Cambridge: MIT Press).

Gillen, D.W., W.T. Stanbury and M. Tretheway (1988) "Duopoly in Canada's Airline Industry: Consequences and Policy Issues," *Canadian Public Policy,* 14:115-32.

Jankowski, W.B. (1988), "Market Contestability Theory and the Deregulation of Canadian Air Transport," in *Research in Changing Environment,* Proceedings of the 23rd Annual Meeting of the Canadian Transportation Research Forum, University of Saskatchewan Press.

Oster C. and D.H. Pickrell (1989), "Code Sharing, Joint Fares and Competition in the Regional Airline Industry," *Transport Research, forthcoming.*

Williamson, O. (1979) "Economics as an Antitrust Defence Revisited," in Calvani, T. and J. Siegfried, eds., *Economic Analysis and Antitrust Law* (Boston: Little, Brown and Company).

_____ (1988) *Antitrust Economics: Mergers, Contracting, and Strategic Behavior* (N.Y.: Basil Blackwell).