REGIONAL AIR CARRIER ECONOMICS AND CANADIAN PUBLIC POLICY WITH PARTICULAR REFERENCE TO TRANSAIR LIMITED

A Thesis Submitted in Partial Fulfillment of the Requirements for the Master's Degree in Economics of the University of Manitoba

Jack Rink

March, 1973.

TABLE OF CONTENTS

ABSTRACT

This thesis is a study of certain aspects of Canadian public policy and the economics of commercial aviation in Canada. More specifically the study concentrates on Canadian regional air carriers: particular consideration is given to TransAir Limited. Basically the thesis explores "the economy, efficiency and adequacy" (cf. The National Transportation Act) of the regional air carriers with special reference to TransAir Limited in the Canadian air transport system.

In the Introduction the development of the Canadian air transport system is explored by examination of the evolution of the route network and investigation of the basis for regional operations. In addition the position of the regional carriers in the Canadian air transport system is defined.

In Chapter 2 of the thesis airline economics are analyzed and the general economic characteristics of regional air carriers are established. Additionally the evolution of public policy and government regulation with respect to the regional air carriers is described. Finally various dimensions of the performance of the regional air carriers are presented.

In Chapter 3 the operations of TransAir Limited are described and analyzed. Alternative development strategies for regional carriers are considered and an attempt is made to identify the policy or policies followed by TransAir Limited in the period under review. Analysis is then directed to the fundamental question of the effectiveness of corporate management and of public policy and regulation in contributing to an economic, efficient and adequate solution of the transportation problems of the region in which TransAir Limited operates.

In Chapter 4 alternative public policies with respect to regional air carriers are considered in the light of the previous discussion. An attempt is made to evaluate the relative merits of these policies in terms of the public interest.

More specifically Chapter 2 involves analysis of the demand for air transportation, airline costs, airline efficiency, structural elements of the air transport industry and particular problems of the regional air carriers. Regulatory constraints and intervention are related to this economic analysis.

A study of demand for air transportation reveals that demand is generally responsive to both income and price. According to the analysis demand elasticity depends on the markets served and on the extent of inter-modal competition. With reference to these varying factors, the overall elasticity of demand is difficult to determine.

Analysis of airline costs with respect to economies of scale shows that an important relationship exists between airline size of operations and unit operating costs, particularly with respect to the regional carriers. Analysis of the individual operating costs of the regional carriers illustrates that they are operating at uneconomic levels. Within the relevant range, unit costs are higher than would be the case if their scales of operations were expanded.

The study examines criteria for measuring airline efficiency. Profit figures alone are not a sufficient measure, for the regional carriers are required to serve unprofitable routes in the public interest. Other measures of efficiency considered in this study are availability of capacity, quality of service, areas served and kinds of service provided to the public, and convenience in scheduling and timing of flights. A judgement of efficiency is made in light of these objectives.

The organization systems of airlines are also analyzed and a large airline is shown to have a more elaborate system capable of greater specialization. This system may have some bearing on the efficiency of the airline.

With respect to the structural elements, concentration, product differentiation and conditions of entry are analyzed. Analytical and empirical evidence shows a high level of concentration in the industry:

entry is restricted due to regulatory intervention. Product differentiation does not appear to be of major significance.

According to the empirical and analytical evidence in this study, the regional carriers are operating on a difficult economic basis. Investigation of their operations illustrates that relatively higher operating costs are inherent in operations of this nature.

Finally the rationale of regulation is examined. An analysis of regulation shows that constraints are imposed on airlines affecting all aspects of their operations. Governmental licencing procedure restricts entry into the industry and governs which routes are to be served or abandoned. It also dictates which carriers are to serve particular routes. Regulation confines the regional carriers to specific geographic areas and restricts them to a specific market.

In Chapter 3 dealing specifically with TransAir Limited, the study examines route acquisitions and network evolution, and investigates how TransAir Limited has acquired routes from the mainline carriers and how it has applied for licences to serve new points and upgrade its service. The analysis then focuses on aircraft acquisitions and fleet expansion, examining the policy of fleet rationalization and the attempts to acquire larger aircraft.

The study describes TransAir policies regarding route consolidations, market development, and organizational changes including merger activity as early as 1947, and as recent as 1969. The effectiveness of discount fares is examined and the rationale of this market development policy is analyzed. The study also examines the attempts to gain a stronger position in the international and domestic charter markets.

The investigation explores the problems of TransAir Limited, some of which arise in regional operations in general and some of which are peculiar to this airline. A history of the development of TransAir Limited is provided to illustrate management policies and to describe how the operations of this airline have been affected by public policy measures.

The study concludes in Chapter 4 with an overall view of TransAir Limited, the regional carriers in general and alternative public policies with respect to the regional carriers.

In the interests of the public and the airlines themselves, the position of the regional carriers must be improved. The important role of the regional carriers was described previously and in light of this role, regional operations must continue but on a more sound economic base. However, improvements cannot be effected solely by the carriers. Public policy measures need further investigation and alternatives must be examined.

A recommendation is made for the reappraisal of subsidy policy with respect to the regional carriers. The current conditions for subsidies appear to be subject to misinterpretation by airline and government officials. The regional air carriers require a more sound economic base. To this end route policy should be reexamined. An investigation should be made of routes currently served by the mainline carriers but which may actually be feeder lines and should be transferred to the regional carriers.

In view of the problems of these carriers, a merger of these five airlines may provide a feasible solution to the situation and may also better serve the public interest. The merits and implications of such a merger are analyzed and attempts are made to evaluate the proposal in terms of improving the economy, efficiency and adequacy of the Canadian air transport system.

ACKNOWLEDGEMENTS

I would like to gratefully acknowledge the assistance provided by my thesis advisor, Professor Ralph F. Harris, professor of economics at the University of Manitoba. I sincerely appreciate his beneficial advice regarding the structuring and organization of my thesis. This does not necessarily imply, however, that the evaluations and views expressed in this study are endorsed by Professor Harris.

I also wish to express my appreciation to representatives of TransAir Limited, with special acknowledgement to Mr. R. A. Morrison, Vice-President in charge of marketing, and Mr. D. R. Scott, Public Relations Officer for the information they provided by personal and telephone interviews. I also received booklets, charts and other pertinent material regarding the operations of TransAir Limited.

CHAPTER 1

INTRODUCTION

A. The Canadian Air Transport System

The air transport system in Canada today is composed of different groups or levels of air carriers*. Of particular importance to this study are the mainline or first level carriers, the regional or second level carriers and a group of smaller local service or third level carriers.

Mainline aviation refers to "air transport activities providing the service between the major population centres in Canada, in competition with surface transport."[1] On the other hand the regional carriers serve mainly the smaller communities and outlying regions of Canada, providing local air services, developmental air services, feeder services to the mainline carriers and charter services. The third level carriers are almost entirely confined to providing local air services to small communities and isolated areas in Canada.

Whether an airline is privately owned or owned by the government, it is forced to operate under strict governmental

*See Appendix A for a definition of the different levels of air carriers.

regulation which affects every phase of its operations. Regulation applies to air fares, routes which are served, route abandonments and route acquisitions. A separate section of Chapter 2 deals with the area of regulation.

Airlines provide a variety of air services to the public, including scheduled or non-scheduled commercial air services on a unit toll basis and bulk transportation services.* Various alternatives may be considered when an airline is deciding which type of service to offer and it must take account of both economic and legal factors. The possibilities confronting the airline are complex: whether to provide unit toll or charter transportation, whether to offer the service on a scheduled or non-scheduled basis if unit toll transportation is the choice, whether an all cargo service is viable or what portion of the capacity of an aircraft is to be allotted for passenger and cargo facilities.

Various centres, communities or interest groups may request unit toll services for a particular area. Thus, the demand for such services may be so great that the airline believes this type of service is warranted. Such a situation arose in Manitoba when the Department of Industry and Commerce of the Province of

*See Appendix B for a more complete discussion of airline services.

Manitoba submitted a request to the Canadian Transport Commission for additional unit toll services to be provided to small communities in Northern Manitoba.[2]

Other considerations involving governmental licencing requirements will be discussed when examining the area of regulation.

Air Canada, which is today the largest mainline carrier in Canada and our national flag carrier, was organized in 1936, under the name Trans Canada Airlines and was licenced to provide transcontinental air service carrying passengers, cargo and mail.

Prior to the organization of Trans Canada Airlines, there had been a number of small airlines operating in Canada and referred to as bush operations. They provided mail service and passenger and cargo transportation, and were particularly useful in northern operations. These were the early forms of regional operations.

Then between 1939 and 1942, Canadian Pacific Railways purchased ten of the major bush operators and thus began Canadian Pacific Airlines (C P Air).[3] C P Air was actually organized in 1942, and was initially flying bush operations in the frontier regions of Canada while Trans Canada Airlines dominated mainline aviation in Canada. Traffic in the mainline

market grew steadily, stimulated by economic development, population growth and the increasing supply of economical equipment. There were also changes in the pattern of growth of frontier traffic. The rate of growth of Canadian air transportation in southern regions of Canada was related to

> ... the growth of the traffic market and an increasing rate of market penetration induced by the increasing economy and capabilities of the modern aircraft ... Air transport growth in Northern regions has been related to resource developments and large defense construction and, consequently, has shown a considerable degree of instability. In addition, the seasonal factors produced serious variations of aircraft utilization throughout the year and, therefore, introduced a further destabilizing effect.[4]

These two separate lines of development, however, became increasingly linked by the development of strong regional carriers in the late 1950s, and throughout the period of the existence of C P Air.[5]

Following a decision by the Air Transport Board to separate the mainline type of service from the frontier or local services, by 1949, C P Air had abandoned all its purely bush-type operations.[6] However, such frontier operations were important in the development of Canada and for meeting the transportation requirements of people in outlying regions. Hence, they could not be abandoned when C P Air expanded the scope of its operations. Consequently, they were taken over by the local service carriers which later developed into our present system of regional carriers.

B. Definition of the Regional Carriers

Although some of the C P Air routes had been transferred to other local service carriers, in the 1950s C P Air was still classified as a regional carrier. Although this classification was arbitrary, it included any carrier which was in the $800,000 a year revenue class and operated large and medium size aircraft.[7] The carriers thus classified served important route networks, primarily South-North, but were also engaged in charter and contract flying. Due to the large volume of contract flying in the 1950s, these carriers were able to expand their organizations and acquire larger aircraft. Their route network continued to expand as new areas were opened up.[8]

During the 1950s, C P Air was serving transcontinental routes in Canada and in 1955, route exchanges occurred between this airline and Trans Canada Airlines. The carriers referred to as regional carriers continued, and in fact were required to serve small centres in outlying regions in northern parts of Canada. As opportunities arose, they had acquired routes from C P Air, even while this airline was still serving frontier regions in Canada. As an example, TransAir Limited began operations in 1947, as Central Northern Airways Limited and took over the equipment and operated the routes given up by C P Air at Sioux Lookout, Pickle Lake, Lac du Bonnet, Norway House, Ilford, Gods Lake, Flin Flon and Sherridon.[9] More

recently, in 1963, TransAir Limited took over the Canadian prairie routes of Air Canada.

> Routes which, because of volume of traffic or size of airports and related facilities did not fit the type of mainline operations of Air Canada or C P A, were reserved for regional carriers or, in some cases, transferred to them ...[10]

The five airlines currently classified as regional carriers are Pacific Western Airlines, Eastern Provincial Airways Limited, TransAir Limited, Quebecair and Nordair.

Pacific Western Airlines, originally Central British Columbia Airways Limited, began operations in 1946. With its main operating base at Vancouver International Airport, it now serves British Columbia, Alberta and the Northwest Territories. Eastern Provincial Airways Limited began operations in 1949, and merged with Maritime Central Airways in 1963. It serves the Maritime provinces and Labrador. Quebecair was founded in 1946, under the name Le Syndicat d'Aviation de Rimouski, and now serves Quebec and Labrador. Nordair, originally Boreal Airways, began operations in 1947. It now operates in Quebec, Ontario and Canada's Arctic regions.[11] TransAir Limited began operations in 1947, as Central Northern Airways Limited, taking over certain routes from C P Air. TransAir Limited, with its main operating base at the Winnipeg International Airport, now serves Manitoba, Saskatchewan, Northwestern Ontario and the Northwest Territories.

These carriers were officially named regional carriers in 1966, by Mr. J. W. Pickersgill who was the Minister of Transport at that time.[12] In his statement of 1966, concerning regional carriers, Mr. Pickersgill announced that

> The role of regional air carriers is to operate local or regional routes to supplement the domestic mainline operations of Air Canada and C P A and to provide regular and scheduled service into the north.[13]

This statement sets forth very briefly some of the important reasons for maintaining the services of the regional carriers. On another occasion they were defined as

> ... a small group of carriers providing scheduled or regular air services on routes which link together either major centres of population with the secondary centres or which link larger centres of population with more remote areas of the country.[14]

This definition expresses another important reason for maintaining regional air services. They link smaller population areas to major urban centres. However, this definition fails to consider other major operations of the regional carriers, such as charter and developmental air services. These important areas will be examined in the following section.

C. Position of the Regional Carriers in the Air Transport System

The position of the regional air carriers will be examined in terms of their operations and the services they render in comparison with and supplemental to mainline services.

For purposes of analysis, the operations of the regional

carriers may be grouped into four major categories. These carriers provide charter services, both domestic and international and to remote areas in Canada. They also provide feeder service for the mainline carriers, which refers to transporting passengers from remote areas and secondary centres to larger urban centres for connections with the mainline carriers. Additionally, the regional carriers themselves supply local air service to and from small communities and larger cities. The fourth category deals with the provision of developmental air services in such important areas as the development of northern Canadian communities and natural resource deposits in outlying regions. These operations shall also be examined later in this study when dealing specifically with TransAir Limited.

The charter operations of the regional carriers are becoming an ever increasing part of their total operations. TransAir Limited provides charter and contract services to northern communities both for business and recreational purposes. This airline flies groups of businessmen and government officials to northern Manitoba towns and communities, providing such groups with reduced air fares common to charter flights. Groups of sportsmen may use charter flights to carry them to remote hunting and fishing areas in northern Manitoba.

Recent developments in charter operations have seen some of the regional carriers expand their charter operations to an international level. In some respects these services are competitive with mainline operations and it has been argued by representatives of the mainline carriers that charter flights of the regional carriers can interfere with regularly scheduled mainline service which are higher priced. To what extent this has happened in the past or is likely to happen in the future will be examined later in this study.

Feeder service refers to the transport of passengers, freight and express, and mail on a regular basis from smaller secondary centres to major airports for connection with mainline carriers. In this sense, the regional carriers "feed" traffic to the mainline operators.

In providing local air service, the regional carriers provide service on a regular scheduled or non-scheduled basis for passengers, cargo and mail between major urban centres and smaller towns and communities. The local service function is extremely important when considering the public interest aspect of air transportation. Certainly the residents of the smaller Canadian centres which are now receiving air service would be in a most unfortunate position if such local services were to be discontinued or had not been provided in the past.

Developmental air services perform a vital function in the interest of not only regional development but also the entire national economy. Year round service is provided to isolated and semi-isolated communities as well as to important natural resource locations.

This examination of the operations of the regional carriers and the position which they occupy in the transport system illustrates the importance of these services both to the public and to the mainline carriers.

Several objectives of a transportation system were expressed in the National Transportation Act. The Act states that

> ... an economic, efficient and adequate transportation system making the best use of all available modes of transportation at the lowest total cost is essential to protect the interests of the users of transportation and to maintain the economic well-being and growth of Canada ...[15]

In light of these objectives, several questions may be asked. How successful have the regional carriers been in helping to fulfil these objectives for a transportation system? Are they contributing toward an economic, efficient and adequate transportation system for Canada? Are the regional carriers themselves characteristic of economic and efficient organizations? Are the operations of the regional carriers being performed in the best interests of the users and in the best interests of the economic well-being and growth of Canada? By empirical and

analytical investigation, this study will attempt to answer these important questions.

The financial positions and levels of operations of the five regional carriers vary greatly. Although they developed from small bush operations, they have had to operate under different conditions. Not all of the regional carriers were awarded special contracts to provide service to the DEW Line. Not all of them have developed international charter operations. Some have been fortunate to acquire important city-pair links and have entered more lucrative markets than those involving local service to small towns and communities.

However, the regional carriers all face the problems of diseconomies of small scale operations. They are operating on a weak economic basis. When examining the disadvantages of the regional carriers, it is important to note that

> They all faced the major change of the character of the operations from bush-type, irregular, V.F.R.* flying to the operations with larger, multi-engined equipment, extensive use of I.F.R.** and development of traffic handling procedures to the regular airline standards. This changeover of the operational characteristics had produced, at the time, serious strains and stresses on the carriers.[16]

* Visual Flight Rules.

** Instrument Flight Rules.

Thus, there were many similarities in the development of the regional carriers as well as many differences. Some of the regional carriers developed into stronger airlines than others. The answer to this discrepancy may lie partly in the efficiency of the airline managements and partly in the different kinds of operations performed by the carriers.

When attempting to analyze the performance of these carriers, a difficulty arises for their performance is affected by government regulation and public policy. If public officials seek to alter the performance of an industry, it is argued[17] that they must attempt to change the structure of the industry and in this way effect changes in performance. One of the elements of structure (cf. Chapter 2) is the degree of concentration of firms in the industry which takes into consideration the degree and effectiveness of competition. With the regional carriers the pressures exerted by competition are

> ... extremely uneven and undependable and .... the prospect of substantial size of firm is remote. The emphasis then shifts to the appropriate design of public policy and regulatory measures and the encouragement of the best possible managerial performance.[18]

The overall performance of the regional carriers is adversely affected by diseconomies of their small scales of operations. Up to the point of capacity on existing flights, average cost per unit of business handled falls as traffic increases for, in general, there is better utilization of equipment

and personnel as business increases.[19] In other words, the marginal cost of additional units of business is relatively low, at least in some important cost categories which will be examined in Chapter 2.

Due to the low traffic density on local service routes, the regional carriers have had difficulty in generating sufficient traffic to help lower their operating costs. Their unit costs for comparable services lie above those of the mainline carriers. Low traffic density also adversely affects station utilization, load factors* and the ability to utilize larger equipment.[20] If the regional carriers used larger aircraft, they may be able to achieve the lower per unit operating costs associated with such aircraft. However, as long as they operate in limited markets and face the problem of low traffic density, larger aircraft are not feasible. Too large a portion of the aircraft would be unused. Thus, the carriers are left with the problem of trying to increase traffic flows or gain access to larger markets. This study will be examining such endeavors in the past and will present some alternative proposals.

This foregoing section has examined the development of the

*The load factor refers to the portion of an aircraft that is filled and is computed by dividing the number of revenue passenger miles by the number of available seat miles of the aircraft.

Canadian air transport system and the evolution of the route network. The beginning of the regional operations was described and the expansion of these operations was investigated. Then the regional carriers were defined and their position in the air transport system was examined.

This study will now present a more detailed analysis of the economics of the air transport industry, with special reference to the regional carriers.

NOTES TO CHAPTER 1

[1]K. W. Studnicki-Gizbert, "The Structure and Growth of the Canadian Air Transport Industry," Papers, Canadian Political Science Association Conference on Statistics, 1960, p. 4.

[2]Department of Industry and Commerce, Manitoba, "Submission of the Manitoba Government on the Requirement for and Adequacy of Fixed Wing Commercial Air Services in Northern Manitoba," Province of Manitoba, April, 1971.

[3]Studnicki-Gizbert, "The Structure and Growth of the Canadian Air Transport Industry," Papers, p. 46.

[4]Ibid., p. 122.

[5]Ibid., p. 49.

[6]Ibid., p. 54

[7]Ibid., p. 80

[8]Ibid., p. 82

[9]J. R. K. Main, Voyageurs of the Air, Queen's Printer, Ottawa, 1967, p. 238.

[10]Ibid., p. 235.

[11]Ibid., p. 236 - 246.

[12]Air Transport Board Circular No. 62/66, Ottawa, October 31, 1966, p. 2, quoted in Ralph F. Harris, The Economic Efficiency of Regional Air Carriers in the National Transportation System, Center for Transportation Studies, University of Manitoba, Winnipeg, Manitoba, January 1969, p. 1.

[13]Statement of Principles for Regional Air Carriers, tabled in the House of Commons, Ottawa, October 20, 1966, quoted in Ralph F. Harris, The Economic Efficiency of Regional Air Carriers in the National Transportation System, p. 1

[14]K. W. Studnicki-Gizbert, The Regional Air Carriers' Problem, Queen's Printer, Ottawa, September 1966, p. 1.

[15]National Transportation Act, Queen's Printer, Ottawa, February 9, 1967, p. 595.

[16]Studnicki-Gizbert, The Regional Air Carriers' Problem, p. 5.

[17]Joe S. Bain, Industrial Organization, John Wiley and Sons, Inc., New York, 1968, n. p.

[18]Harris, The Economic Efficiency of Regional Air Carriers in the National Transportation System, p. 3.

[19]John H. Frederick, Commercial Air Transportation, Richard D. Irwin, Inc., Chicago, 1951, p. 116.

[20]Studnicki-Gizbert, The Regional Air Carriers' Problem, p. 6.

CHAPTER 2

GENERAL ECONOMICS OF THE AIR TRANSPORT INDUSTRY

A. The Demand for Air Transportation

Demand for Individual Air Services

The demand for air transportation consists of particular demands for particular types of air services such as unit toll transportation, charter services, all passenger services, cargo transportation or a combination of passenger and cargo services. In recent years charter services have become more popular because of the cost saving provided by such flights compared to unit toll services. The number of charter groups has increased greatly and airlines have responded to this increased demand by making more charter flights available and by flying to a greater number of locations.

Air transportation offers a great advantage to shippers of perishable products. Due to the speed at which cargo may be shipped, air transportation provides the consumer with a greater assurance of receiving fresh produce.

When deciding which type of service to provide the airline must consider not only the effect on its own financial position by providing a particular type of service, but also the

demands of particular communities and interest groups. It may be in the public interest to provide a new unit toll service or to add new points to an already existing route. In either case, if it is in the public interest to provide a service, there also will exist a demand for air transportation.

The Element of Time

The element of time is an important factor in the demand for air transportation for air transportation has the great inherent advantage of speed. This section will examine this saving factor with reference to passenger transportation. Over medium and long range trips, over 1,000 miles, as far as the time element is concerned, air transportation is virtually without competition from other modes of transportation. The implicit cost of time when travelling by air is lower than it would be when travelling a long distance by another mode of transportation.[1]

The demand for air transportation in this instance may be considered to be positively correlated to the value a person places upon his time. Even though the air fare may exceed the price of transportation by another mode, the implicit cost is lower. Hence the total cost by air may be equal to or lower than the total cost of a trip by another mode. However, it is difficult to place a numerical value on a person's time.

One might consider a value of 1.5 times a person's hourly wage rate but such a value is purely arbitrary.

As an example, let us say a traveller must make a trip of 1,500 miles one way; 3,000 miles return. His hourly wage rate is $4.00 per hour and the value of his time, for purposes of analysis is 1.5 times his hourly wage rate. Time spent while travelling is time lost to him and his employer. Hence, his time becomes valued at $6.00 per hour. The air fare on such a trip is $150.00 return. Allowing for time lost on the ground, the total time of the air trip is five hours one way and ten hours in total. However, if he travelled by rail, the person would spend four days travelling to his destination and back. If he only considered his working day he would lose 32 hours (8 x 4). His time cost by rail is $192.00 (32 x $6), and by air it is $60.00 (10 x $6). The total saving of the implicit cost is $132.00 when travelling by air. This reduces the total cost of his air trip to $18.00 ($150 - $132).

Over shorter distances the time saved by air travel on the actual flight may be negated by the time lost getting to and from the airport in a large congested city and the time lost at the airport waiting for arrivals and departures of the aircraft. The total time of the complete trip may more closely approach the travel time by another mode of transportation.

Thus, over short distances such as those serviced by the regional carriers air transportation faces a greater degree of competition from other modes. In recent years much of this competition has appeared in the form of the private automobile. The traveller tends to give major emphasis to the explicit financial cost of the trip which is greater by air than by road.

Reliability and Availability of Air Service

Another important element in the demand for air transportation is the availability of flights. Flight scheduling must be convenient to the travelling public as well as to the airlines. If a person is travelling a distance of 1,500 for business purposes, it is more convenient for him to arrive at his destination during the working day. Scheduling between two airlines must be arranged so that the traveller is not caused any untimely delays bearing in mind, however, that some delays are beyond the control of the airline. This aspect of connecting flights is of particular significance to the feeder services provided by the regional carriers. In providing feeder service the regional carrier brings a passenger from a small community or town to a larger urban centre for connection to a mainline carrier. The time tables of the regional carriers list the relevant mainline flights with which they will be connecting and scheduling is arranged so that the regional and

mainline flights will coincide.

The availability of a flight may also be considered to affect the demand for air service on a particular airline. In Canada, for instance, there would be a greater demand for Air Canada services if Air Canada provided non-stop service between two cities and the other competing mainline carrier did not. Such would also be the case if Air Canada offered more flights than did its nearest competitor, for the potential traveller would be provided with a greater variety of flights from which to choose in the case of Air Canada scheduling.

The availability of flights may also be an important consideration for a potential traveller when deciding which mode of transportation to choose over a short distance. The demand for air transportation is more likely to be higher if a daily flight connects two points than if the air service is available only twice a week.

Reliability of aircraft for air travel also affects the general demand for air transportation. With fewer and fewer air accidents, scepticism concerning air travel has been declining and more and more people are overcoming their fear of flying. Government safety regulation and public information concerning such regulation has also helped to increase the demand for air transportation.

This aspect of reliability also affects the demand for the services of particular airline. A large well-known airline may have a great product differentiation advantage over a small relatively unknown carrier. In Canada, the two mainline carriers have built up a reputation of reliable and safe air service. The aircraft which they operate are used by mainline carriers in other countries and these aircraft, such as the DC-8, DC-9 and Boeing 707 have developed a reputation of their own and are relatively well known by the travelling public.

The regional carriers in Canada are smaller and less well known. Due to these factors, therefore, the fear of flying may be greater when considering a regional carrier. This fear may be completely unfounded but it is difficult to convince the travelling public of this. Even the aircraft operated, such as Beechcraft, HS748 or YS11 are relatively unknown compared to the larger aircraft mentioned above. These are serious problems faced by the regional carriers in markets where there might be an opportunity to compete with a mainline operation.

The Elasticity of Demand

A question which is often debated is whether the demand for air transportation is elastic or inelastic. If demand is elastic, is it highly elastic or moderately so? What effect do changes in air fares have on the demand for air transportation?

The demand for air transportation is a complex matter affected by several factors such as the price policy of an airline, variations in the quality of service, different aircraft being utilized and the reputation of the airlines also taking into consideration any degree of product differentiation which may exist. It is also necessary to consider individual markets, as demand varies according to the market or geographical area which is being served. Thus, it is difficult to speak in terms of an overall coefficient of elasticity. If demand is elastic, it is to the advantage of the airline to lower the air fares and, thus, exploit the full potential of the air transportation market. However, if demand is inelastic and not responsive to changes in air fares, a decrease in fares would result in lower total revenue for the airline.

Knowledge of the elasticity of demand will affect the pricing policy of an airline. However, since this knowledge is imperfect, the airlines may adopt a trial and error method of determining the elasticity of demand. Nevertheless, the experience learned in one market cannot simply be applied to all markets in general for travellers' responsiveness to changes are not uniform from market to market.

In the Canadian air transport industry demand may be

expected to be relatively more elastic on lucrative southern routes linking large city pairs than on northern routes to isolated areas and communities. Account must also be taken of possible different elasticities of demand between short haul routes and medium to long haul routes.

On the short haul routes the total time saved on the complete trip by air may be negligible compared to travel by another mode of transportation. If other modes are available the potential traveller may be indifferent as to which mode to choose. An increase in air fares may swing him away from air transportation for the explicit cost is then more significant than the implicit cost. In this case the demand for air transportation is elastic. The degree of elasticity depends on several factors such as the amount of air fare increase, the purpose of the trip and the availability of other modes of transportation.

In the medium to long haul market the speed of the aircraft and the time saving element become more significant. On a trip of 1,500 miles an air trip may take three to four hours compared to two to three days by rail or automobile. It is not evident that an increase in air fares on such routes would swing many potential air travellers to other modes of transportation.

Of particular importance to the regional carriers are flights to small communities and outlying regions. Such routes may provide a virtual monopoly to the air carrier for in some instances access by other modes is impossible or impracticable.

Some areas in northern Manitoba have neither roads nor rails and air provides the only viable means of travel for persons in northern towns wishing to move to other towns or urban centres in search of employment or for social, educational or medical purposes. In other areas the terrain is even too rough for airstrips and lakes and rivers are used for take-offs and landings. Air transportation is without competition from other modes and the potential traveller must rely on air transportation if he wishes to leave his area. In this case the demand for air transportation is inelastic.

In spite of this discussion, it is difficult to determine exactly what the elasticity is for any particular market. It has been argued[2] that short haul carriers in fact dispute the view that demand for their services may be price inelastic because they feel that they are in close competition with surface transportation. There may be some justification for this view of the short haul carriers but consideration must be taken of the type of market or geographical area which is being served.

R. E. Caves expresses the view that no clear evidence on the value of elasticity of demand for air transportation exists and there is equal uncertainty about whether it is rising or falling.[3] One may speculate about either case. The steady deterioration of passenger rail service appears to be reducing much of the substitutability of and competition between rail and air and, thus, reducing the elasticity of demand for air transportation. Caves also indicates, however, that the portion of people who are using air transportation services are becoming more and more price-conscious. "The balance of these forces is certainly hard to strike."[4]

B. Airline Costs

The air transport industry is not an industry with a high proportion of fixed costs, although a large initial investment is required on the part of the airlines. It has been estimated that a new carrier offering scheduled service requires five or six long range jets, at a total cost of over fifty million dollars to operate efficiently and compete successfully.

However, in terms of fixed costs, the "way" is provided. The air is readily available for use by the airlines, its use being governed to some extent by the regulatory authorities. Moreover, airports, airfields and other facilities are provided

by the government. The airport facilities may be utilized by any airline, taking into consideration any governmental restrictions which may exist or be imposed.

This situation may be compared to the case of railroads where each railway company has a large proportion of fixed expenses in establishing a station for passengers and cargo and in laying rails. In the air transport industry the air carriers help to cover the cost of providing airport facilities by paying landing fees or charges. These fees vary according to the type of aircraft which are using the facilities and this total cost to the airline varies.

Members of the air transport industry face high costs of making frequent stops on local service operations, due in part to the time lost on the ground. This is of particular importance when considering the short haul, local service operations of the regional carriers. While on the ground, there is a decrease in the service that can be secured from an aircraft and there is an increase in the overall fuel consumption and working time of the flight crew.[5] Other determinants of cost to the airlines, again with particular reference to the regional carriers are revenue passenger load factors, route density, route structure and stage length. More specific elements of cost will be examined when analyzing the operations of TransAir Limited.

The greatest proportion of total costs to the airlines are in the form of operating costs or variable costs. These are costs arising out of actual operations and include fuel costs, landing fees and wear on the aircraft and engines which require servicing and maintenance. For purposes of analysis, the following cost categories are grouped under operating expenses: flying operations expense, maintenance expense, passenger services expense, aircraft and traffic services expense, promotion and sales expense, general administration expense and depreciation and amortization.

Maintenance expense involves the actual aircraft including cost for labor and materials, and engine maintenance also including cost for labor and materials. General and administration expense covers the central administrative and managerial function. Aircraft and traffic services expense includes expenditures for airport-station facilities and reservations systems. It is claimed[6] that possible significant cost disadvantages for smaller carriers lie in aircraft and traffic services, promotion and sales and general administrative expenses.

Indirect flying expenses include such items as the cost of ground facilities, cost of communications, meteorological expenses, cost of miscellaneous station equipment and a portion of traffic expenses.[7] There are also costs of a more temporary

nature in the phasing in of a new type of aircraft into a carrier's fleet and the initial operation on a newly authorized route.[8]

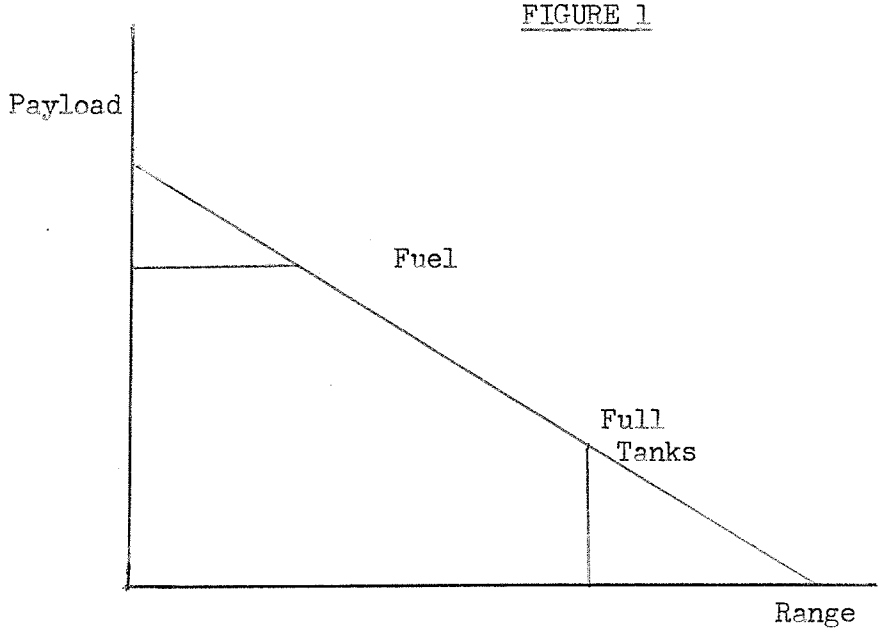
Aircraft Selection and Utilization

When deciding whether or not to purchase a new aircraft, careful consideration is given to the range of the aircraft. The range may be specified in terms of short, intermediate or long. A trade-off occurs between range and payload for in order to fly long distances some payload must be traded for fuel. This is depicted in the following diagram. Also shown are diagrams dealing with the productivity and utilization of aircraft. An aircraft is rated to carry a definite amount of weight. This total figure includes payload (passengers and cargo) and fuel. The longer the flight, the more fuel is required on board the aircraft and as shown in Figure 1, an inverse relationship exists between payload and range.

Figure 4 shows the relationship between aircraft utilization and cost to the airline. As the number of hours of aircraft utilization increases, lower costs are possible for the entire cost curve is lowered. In addition to this decrease, further cost reductions are possible on each scale as the time of flight increases. The regional carriers face higher costs in this respect, relative to the mainline carriers, for the time of flight is shorter

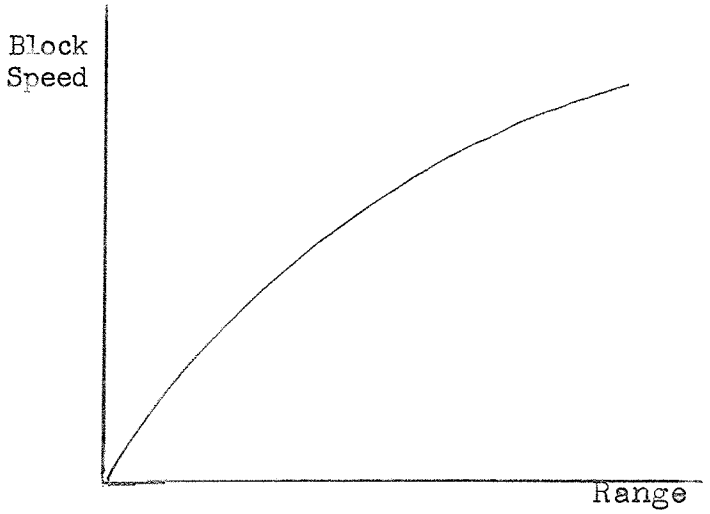
on the short haul routes which they serve and aircraft utilization is lower on the low density routes of local service operations.

FIGURE 1



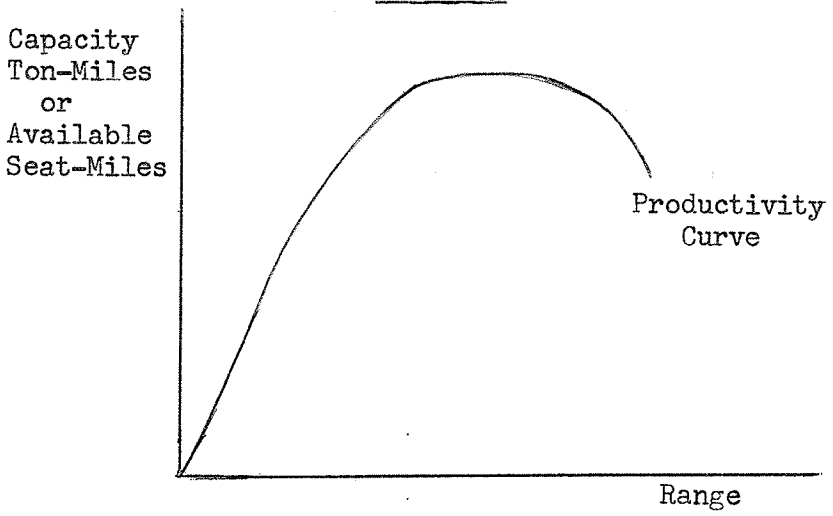
Similarly, as the block speed of an aircraft increases, the range also will be larger, as shown by the following figure.

FIGURE 2



In the following diagram, the productivity curve shows a typical relationship between range of the aircraft and capacity ton-miles or available seat-miles. It is noted that after some maximum range, productivity will decline resulting perhaps from a loss of payload due to fuel.

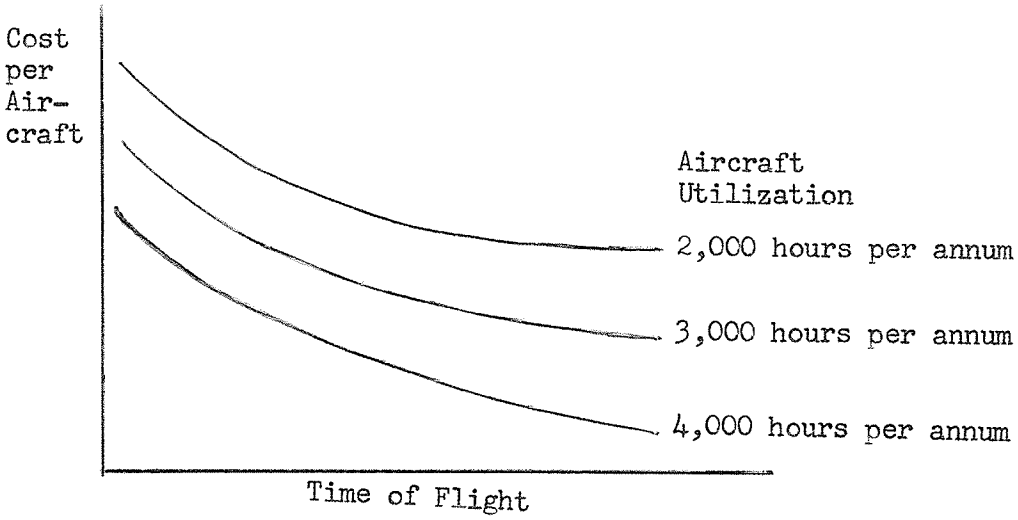
FIGURE 3



One additional graph is presented illustrating the importance of optimal utilization of aircraft.

FIGURE 4

Productivity of Aircraft



Economies of Scale

This study examines the relationship between airline operating expenses and the level of airline operations in order to determine whether or not there are cost advantages of large scale operations. The analysis also attempts to determine in which range of operations the average operating costs are declining and whether or not it is to the advantage of an airline to increase its scale of operations. The cost elements which are analyzed are flying operations expense, maintenance expense, aircraft and traffic services expense, general and administration expense and total operating expense.

Economies of scale may be possible for several reasons permitting an airline to

> ... exploit mass-production techniques that involve (a) the specialization of labor to specific narrow tasks; (b) the use of specialized machinery and other capital equipment, including units of equipment which are available in only very large minimal sizes; and (c) the specialization of management and supervising personnel to narrow and detailed tasks. Exploitation of all these opportunities as the plant becomes bigger will result in lower unit costs.[9]

Although these three techniques may apply to any industry, for the air transport industry items (a) and (c) may be of particular significance when comparing a small airline to a large operation. Item (b) is an important factor involving the use of larger more economical aircraft allowing an airline to provide more seats, have a greater number of available seat miles and, thus, increase its level of operations.

Although small aircraft cost more to operate per seat mile than large planes[10] and limit the scale of airline operations, the use of small planes on the local service routes operated by the regional carriers is linked with the paucity of business on such routes. It is so far ineluctable that large cities are capable of furnishing more air passengers per day than smaller towns and communities.

> The size of an optimal plant ... depends both on the extent of economies of large plants and on the size of the market which the industry supplies.[11]

The market for air transportation is limited in that only a limited amount of passenger traffic can be generated. The ability of the Canadian regional air carriers to expand their scales of operations is seriously affected by the paucity of their share of an already limited market. Two of their great problems are manifest in the unstable traffic flows and the low traffic density with which they must contend. The debility of these carriers remains and they are faced with higher operating costs; their scale of operations being in the range of the downward sloping portion of the average cost curve.

It has been argued[12] that economies of scale in airline operations, if they do exist at all, are very small. If this is the case, then the answer to achieving lower unit operating costs does not lie solely in increasing the scale of operations. However, it is important to note that

> ... the regional carriers all appear to be in the "very small" size range where a marked increase in the size of operations would help to increase efficiency.[13]

The regional carriers cannot attain reasonable scales of operations to secure such economies as do exist.

> Their size of operations is too small to assure the economies of scale and tends to put their unit costs for comparable services above those of the national carrier.[14]

One author purports[15] that the economies of the air transport industry are largely determined by not just one but three factors. These are the scale of operations, the length of haul and the traffic density. The regional carriers are at a disadvantage in all three areas. Another view[16] holds that efficiency does not depend as heavily on economies of large scale as it does on the route structure. In spite of these other considerations, it would be to the advantage of the regional carriers to increase the size of their operations. The approach adopted in this study of analyzing individual cost components shows the particular areas in which a large airline has cost advantages over a smaller operation.

There have been several studies conducted in this area of economies. One investigation[17] found that economies of scale exist in the areas of ground operations expense and general and administration expense.

From studies done by Harold D. Koontz, economies of size appear to be most evident in the case of direct maintenance of flight equipment, ground operations expense, traffic and advertising expense and general and administration expense. For ground operations expense, economies of size were particularly evident where high traffic volume made possible the distribution of these expenses to many available ton miles.[18]

Both John B. Crane[19] and Harold D. Koontz[20] found that any diseconomies which did exist affected only carriers of very small size. Although Koontz did discover possible economies of large scale in flying operations expense his study indicated that these economies were due to differences in route structure and not large size per se. Even with this discovery the regional carriers are still at a disadvantage for they operate shorter flights than the mainline carriers. "Larger carriers typically fly longer hops and ton miles can be produced more cheaply ... on longer hops."[21]

This study uses the number of available seat miles as its measurement base. The mainline carriers as well as the regional carriers have been examined, thus providing a basis for comparison of a large and a small airline. Certain economies do appear to be evident in such important cost categories as flying operations expense and maintenance expense in particular although the other cost categories which were examined also show positive results. The complete results of the analyses are shown in Appendix C of

this chapter and in the following graphs.

According to the findings of this study the cost in certain cost categories per available seat miles (ASM) is lower as the number of available seat miles increases, at least up to a particular range. Thus, economies of scale are possible for the regional carriers which are presently operating on the downward sloping portion of the average cost curve. This may be compared to the lower unit operating costs of the mainline carriers on the relatively flat portion of the average cost curve.

The graphs on the following pages show the relative positions of the Canadian air carriers. Their scales of operations and unit costs are plotted and then compared to a typical average cost curve. This depicts the relationship between the size of airline operations, measured in terms of available seat miles, and per unit costs of operations. The number of available seat miles refers to the total for 1970 and the total for 1971. The results are quite similar for both these years.

Substantial economies may not be evident beyond the size of 400 million available seat miles per year but they are important as an airline expands up to that size. The regional carriers are operating in a range of 50 million to 400 million available seat miles, the range of the downward sloping portion of the average cost curve, and are unable to obtain such economies as do exist.

RELATIONSHIP BETWEEN AIRLINE SIZES
AND UNIT COST

X - 1970 figures
. - 1971 figures

FIGURE 5

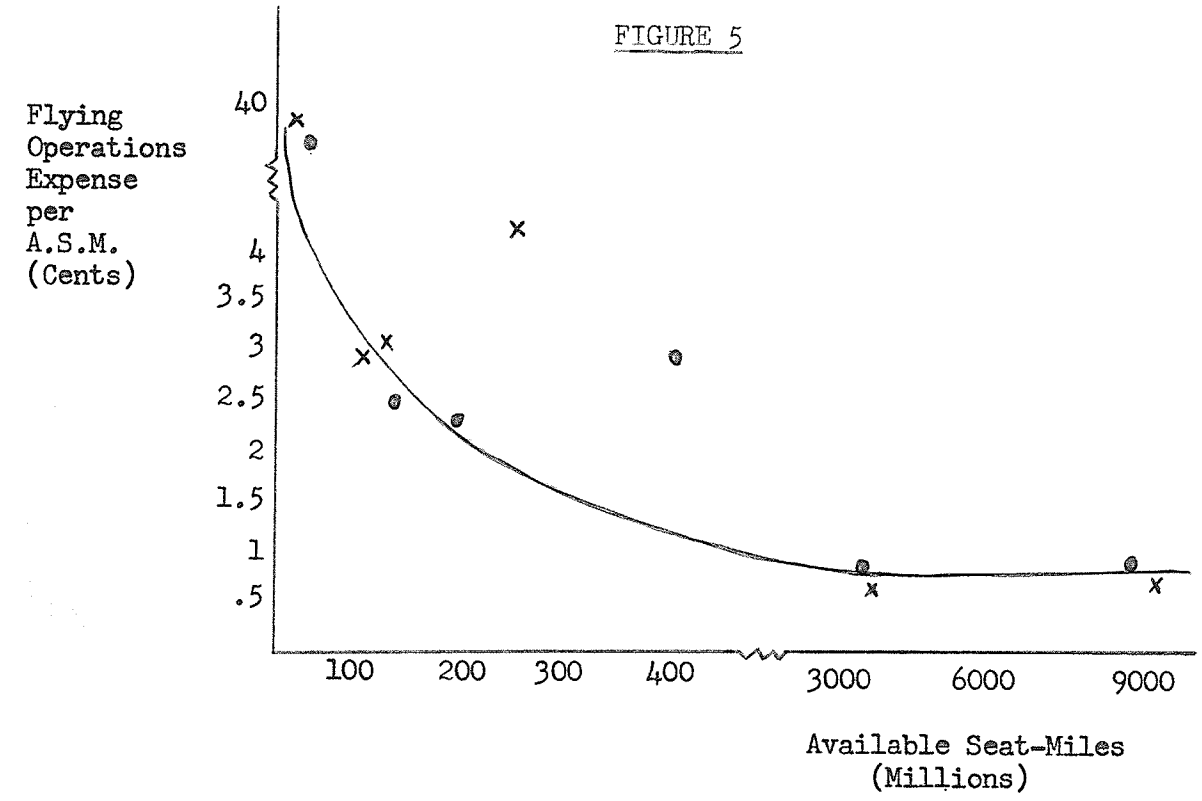


FIGURE 6

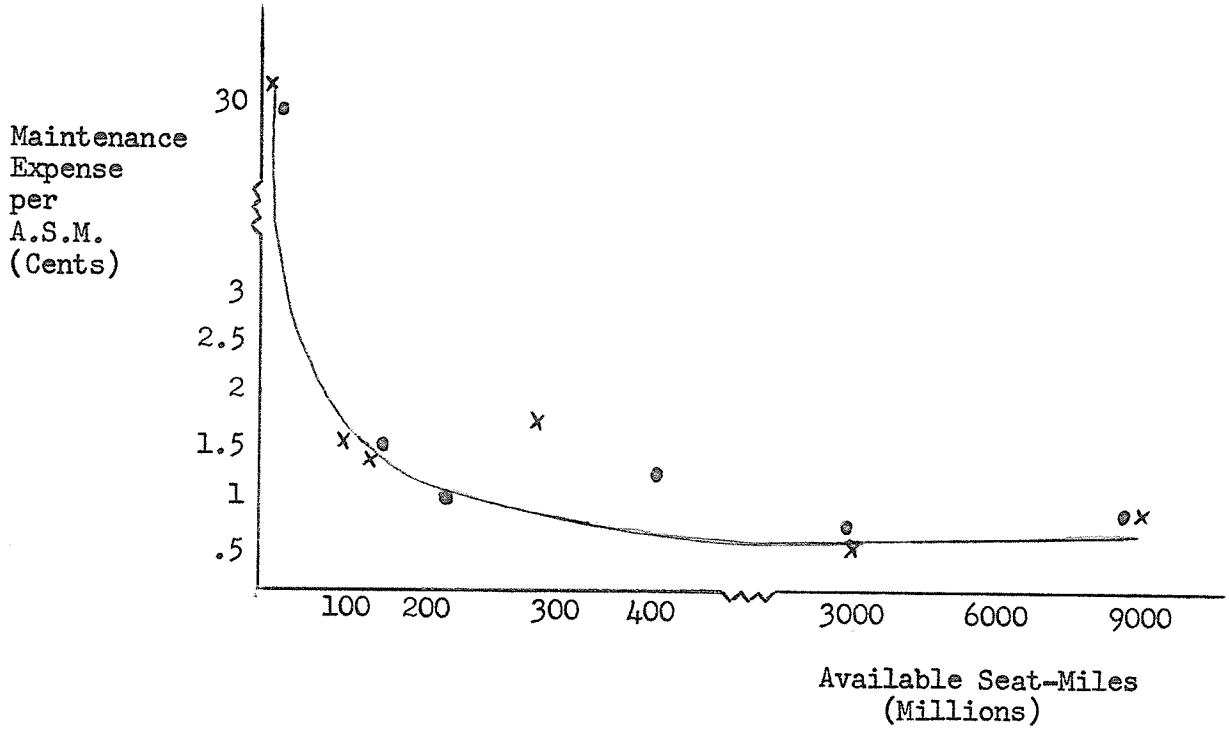


FIGURE 7

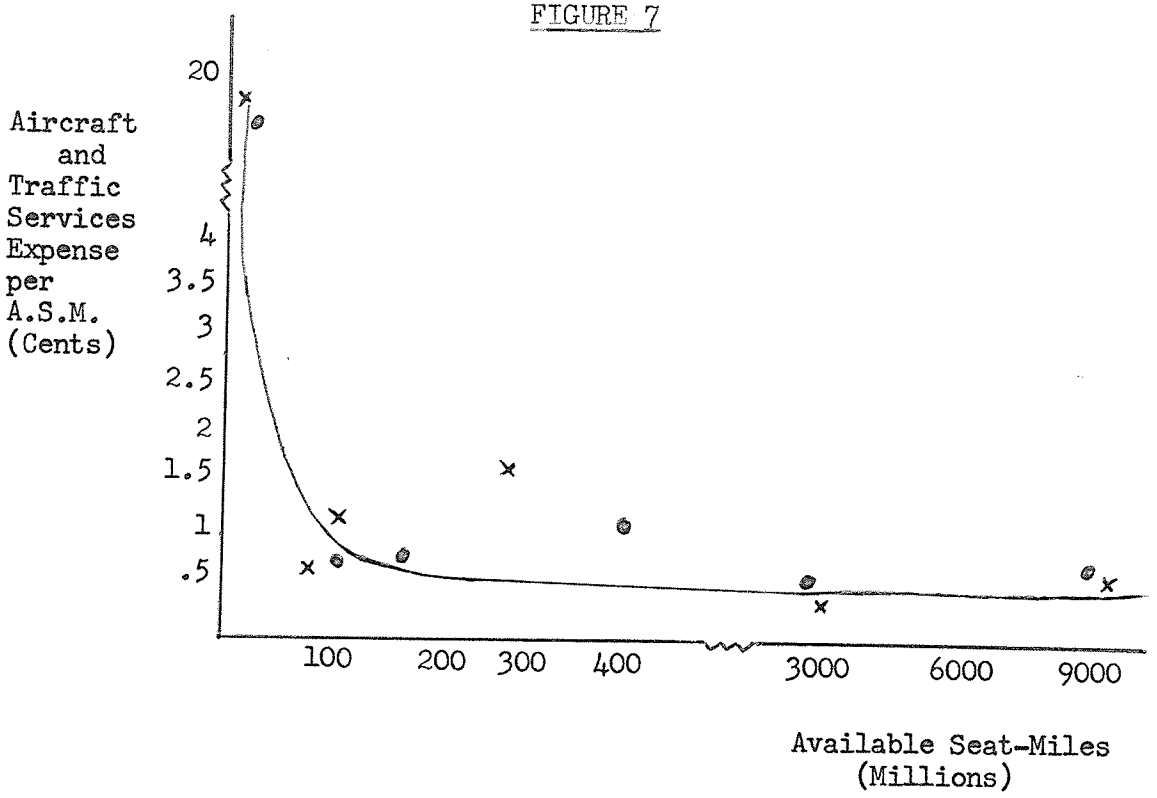


FIGURE 8

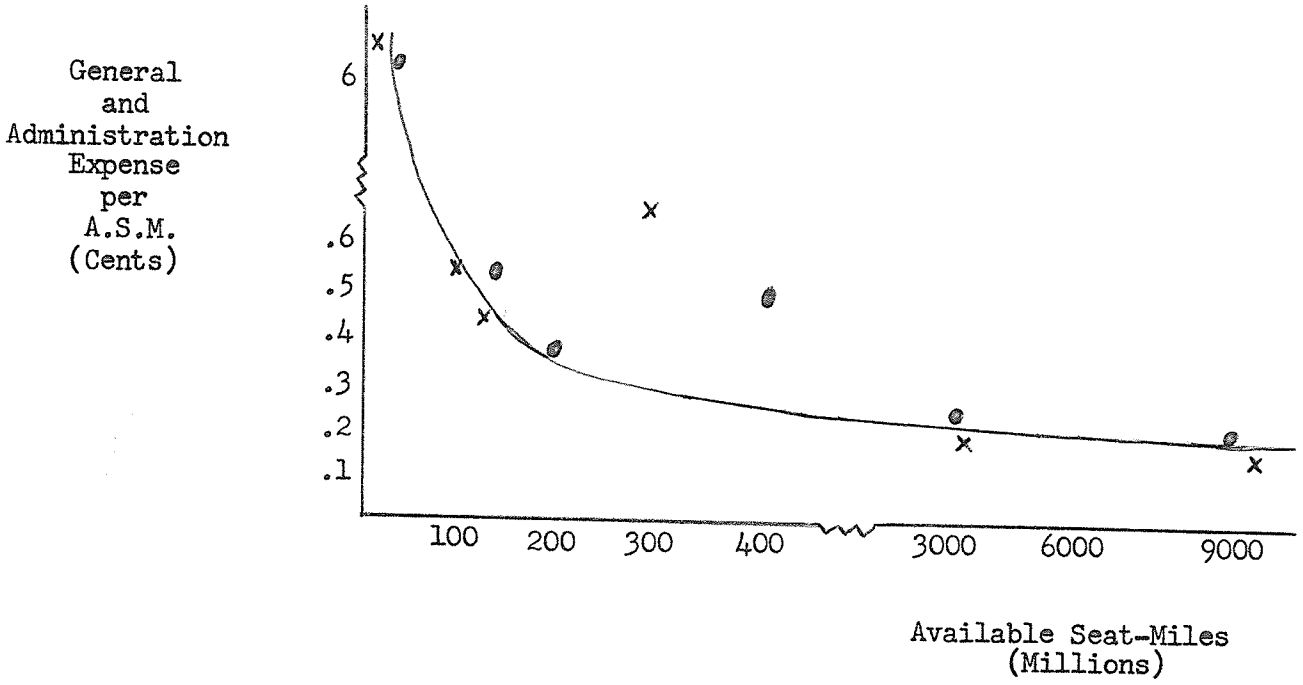
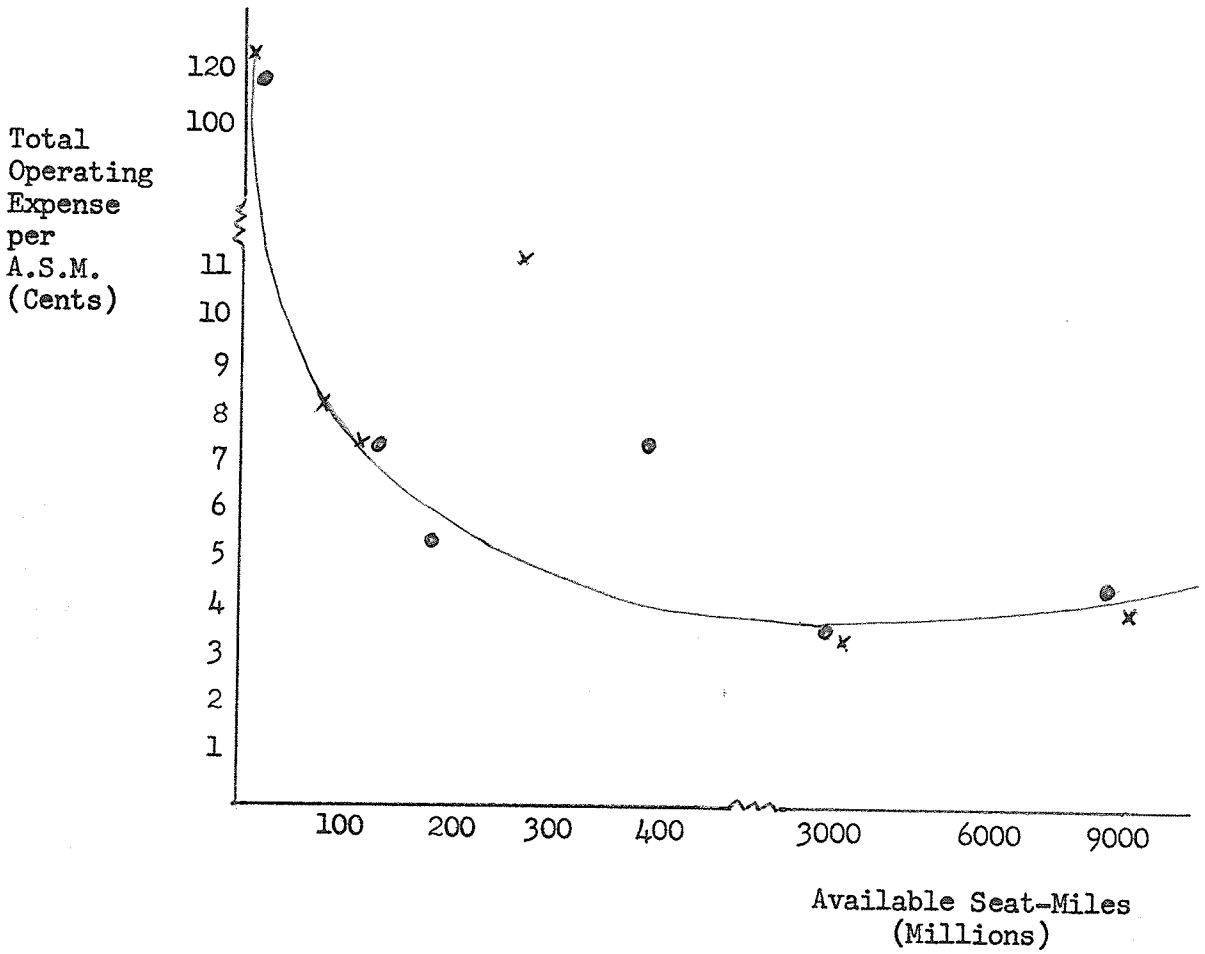


FIGURE 9


Total Operating Expense per A.S.M. (Cents)
120
100
11
10
9
8
7
6
5
4
3
2
1
100
200
300
400
3000
6000
9000
Available Seat-Miles (Millions)

There may be no great advantage in expanding output along the flat portion of the average cost curve, but it would be beneficial to the regional carriers to expand up to that level, beyond their current range.

If the other aforementioned studies did not find concrete evidence of economies of scale in airline operations, it is because they were studying relatively large size airlines. Certainly economies would not be significant for an airline already operating on the flat portion of the average cost curve. These studies were not examining airlines as small as the regional carriers. This study has found that with such a small scale of operations as that of a regional carriers lower unit operating costs would be possible if the scale of operations were increased.

Specific Costs of Regional Operations

Other cost determinants include route turnover referring to the number of daily plane-miles per route mile, average length of the passenger's journey, average length of airplane hop, amount of traffic per terminal operated, average size and speed of aircraft, the number of aircraft operated, the number of hours per day during which the planes are used, the size of the metropolitan areas served, climatic conditions in the region where the carriers operate, and the extent to which the carrier faces direct competition from other carriers.[22]

When relating these cost determinants specifically to the regional carriers, it is apparent how serious their problems are. They operate on short average stage lengths and an inverse relationship exists between stage length and operating costs. In regional operations the average length of the passenger's journey is relatively short resulting in short average airplane hops. There are more take offs and landings which add to the cost of operations, and more time is spent on the ground than would be the case if longer hops were flown.

The regional carriers serve small communities incapable of generating sufficient passenger traffic to warrant the acquisition of large capacity aircraft although the per unit operating costs of the aircraft now being used are higher than the costs of operating the type of aircraft being used by the mainline carriers. Any cost advantage to the regional carriers from operating large capacity aircraft would be negated by the low load factors on local service routes. Furthermore, the large capacity aircraft used by the mainline carriers are medium to long range aircraft and would not be feasible on the short range local service route.

The climatic conditions in regions being served by the regional carriers adversely affect their cost levels. However, this aspect will be analyzed more closely when examining the employee costs and fuel costs of TransAir Limited in its northern Manitoba operations.

In conclusion, the major sources of economic weakness of the regional carriers are the short average hauls and the low traffic density problem. In the short run the length of haul influences the cost of operations. In the long run it determines the choice of equipment.

> ... the principal determination of airline costs appears to be length of haul coupled with sufficient volume of traffic to permit a relatively long average length of hop.[23]

A study of short haul airlines in Europe[24] indicated that an inherent advantage of a short haul airline should be its high intensity of operations.

> It is precisely this high intensity which allows the short haul airline to concentrate upon devising special techniques for dealing with large numbers of passengers in the reservations, ticketing and accounting fields...[25]

However, this argument assumes high traffic density and, hence, even this advantage of operating on short haul routes is not possible on the local service routes of the regional carriers. As typically occurs in regional operations on routes of lower traffic density, a minimum frequency often needs to be maintained despite variations in the traffic demand and the average load factor consequently suffers. On more dense routes a normally adequate frequency can be supplemented by duplicate services at peak times and the average load factor thereby maintained at a high level.[26]

Seasonal Variations in Traffic

Although virtually all airlines face problems of seasonal traffic variations, the problem is more acute for the regional carriers. They are faced with low traffic density on many of their routes during any season whereas the on-season traffic in the mainline market will help to cover the costs of off-season operations.

Traffic may fluctuate on an hourly, a day-to-day or a seasonal basis. However, at least in the short run, airline capacity is relatively fixed. If an airline is to be able to satisfy peak demand periods, a substantial volume of unused capacity results during the off-peak season.[27] Not only does the profitable exploitation of short haul air services require a high intensity of operations[28] but also relatively stable flows of traffic.

> The introduction into service of large short-haul aeroplanes, which could produce more capacity ton-miles per hour, and offer lower operating costs, depends not merely upon the stimulation of larger volume traffic flows but also upon their relative constancy throughout the years.[29]

Airlines offer a perishable product in that a seat mile generated must be consumed immediately or not at all. In this respect variations in traffic flows pose difficult problems both on a day-to-day and on a seasonal basis. This is true particularly on all except the heaviest traffic routes because

it is necessary to provide a reasonably complete schedule pattern, including through or express service and also local service at appropriate hours of the day.

It may be argued that both day-to-day and seasonal fluctuations can be dealt with by variations in the schedules and the volume of service offered. However, in consideration of the demands of schedule patterns and the high cost of maintaining idle or under-utilized equipment and facilities, these devices have their limitations.[30] Therefore, the air carriers are constantly faced with the problem of trying to build up the demand for their services in slow periods, even to the extent of offering reduced fares as an incentive to potential air travellers.

The tables presented in Appendix F show the seasonal variations in passenger traffic during an entire year. The results of these fluctuations are variations in load factors and may result in seasonal operating losses, particularly for the regional carriers. This problem will also be examined when studying the operations of TransAir Limited.

The regional carriers have been attempting to combat the problem of seasonal variations in traffic flows not only by reducing air fares and providing special discount fares but also by offering more charter flights. However, Air Canada, Canada's national flag carrier, receives protection from charters on its

regularly scheduled routes. Thus, depending on the success of the various techniques employed by the regional carriers, seasonal fluctuations of traffic flows may remain as much of a problem to them in the future as they have in the past.

C. Airline Efficiency

When studying airline efficiency, it is important not to place sole emphasis on profit figures. Due to the intervention of regulation and public policy, an airline is required to serve routes which are not in themselves profitable, but which link small communities to each other and to larger urban centres. Such service is necessary to serve the public interest and cannot be abandoned, despite the low traffic density on local service routes. This aspect must not be ignored when investigating the economic efficiency of an airline.

The efficiency of an airline refers to the efficiency with which it provides air service and how it serves the public interest. It may be judged in terms of the convenience of timing of flights, the availability of capacity, regularity and punctuality, ease of booking a flight, the areas which are served and the kinds of service which are provided. It may also be concerned with the share of total traffic carried and how rapidly an airline is increasing its share of total traffic and how rapidly it is expanding in new markets.

The provision of air service in the public interest may present problems which adversely affect the efficiency of an airline. These problems are more apparent in the operations of regional carriers than in a mainline operation. In serving local

service routes, the regional carriers are faced with short stage lengths. The shorter the stage length, the more time is spent on the ground which adversely affects aircraft utilization. This in turn results in low total production for the entire aircraft fleet. Furthermore, short stage lengths increase the number of flights operated relative to the flying hours and, thus, increases all terminal costs and landing fees. There are increased maintenance costs per flying hour and the overall result is higher total costs of production.

Route density affects efficiency by affecting achievable load factors, aircraft utilization and the unit costs of production. A mixture of low and high density routes affects station utilization and aircraft size. Load factors are affected by many factors outside of the control of an airline such as traffic density and aircraft size, the frequency of service required, seasonal, monthly and daily traffic variations and directionality of traffic flows. An airline could perhaps restrict capacity in the peak periods in order to improve the average load factor and, thus, have a higher load factor during off-peak periods. Although such a policy could be dangerous where there was a possibility of an airline losing its future market to a competitior, since the regional carriers are restricted to a specific region intra-modal competition among them would not present a problem. A problem could arise, however, if there were insufficient capacity to meet a normal peak-

season demand for air services.

Convenience in booking for flights on regional carriers has been improved by including some of their departure and arrival times on the flight schedules of Air Canada. These feeder flights have been timed to coincide with certain Air Canada flights on mainline routes. Thus, a person may arrive, via a regional carrier, in a larger urban centre, transfer to Air Canada, and continue on to his ultimate destination. Furthermore, on the TransAir system timetable the departure times of Air Canada flights are listed, as well as the flight number of the Air Canada flight with which the TransAir flight is connecting.

Availability of capacity may be measured by the number of available seat miles offered by an airline. This figure refers to the number of seats available multiplied by the number of miles flown. Thus, even though the number of miles flown remains unchanged, capacity may be increased by increasing the size of aircraft and offering more seats. To some extent the regional carriers have been improving capacity by utilizing larger aircraft. They are, however, hampered in this respect because on some routes with low traffic density, larger aircraft are not feasible. The load factors on such routes are too low to warrant the use of aircraft as large as those being used by the mainline carriers. Nevertheless, many of the small bush-type aircraft have been

phased out and larger turbo-prop equipment is now in use on local service routes.

The investigation of TransAir Limited in Chapter 3 examines the efficiency of this airline with respect to such objectives as the service of local service routes with respect to the economic problems involved, route development and expansion programs, market development policies, fleet changes and organizational changes within the company.

It must be emphasized that it is difficult to set standards and measurements of efficiency when considering all the functions of an airline. It is necessary to examine the organization and responsibilities of the airline to ensure that all levels of airline management are aware of the objectives of the company in order to enable them to set or accept individual objectives which contribute to the overall objectives and performance of the airline.

In order to perform its various functions efficiently and in the best interests of the carrier and the travelling public, it is essential that an airline have efficient management. If an airline fails to provide efficient, adequate and economic service, it is to the airline management that one looks for remedial action. It is of the utmost importance that management be aware of every phase of the various operations and to this end, the most

efficient organization of management is essential.

"It is impossible to judge any one department of an efficiently operated airline as being of more basic importance than another."[31] Coordination of all departments is important and they must all work together as a team. There is a close link today between management, legal, public relations, treasury, engineering and other departments.

> Of the utmost importance, however, is maximum efficiency in airplane routing to the end of securing maximum utilization between maintenance inspection periods, maximum utilization of maintenance personnel, and minimum delays from withdrawals of aircraft from service. In order to perform the function of airplane routing most efficiently, it is necessary for personnel responsible for this function to have a broad background in all phases of airplane operations - maintenance, flight dispatch, flying communications, and station operations.[32]

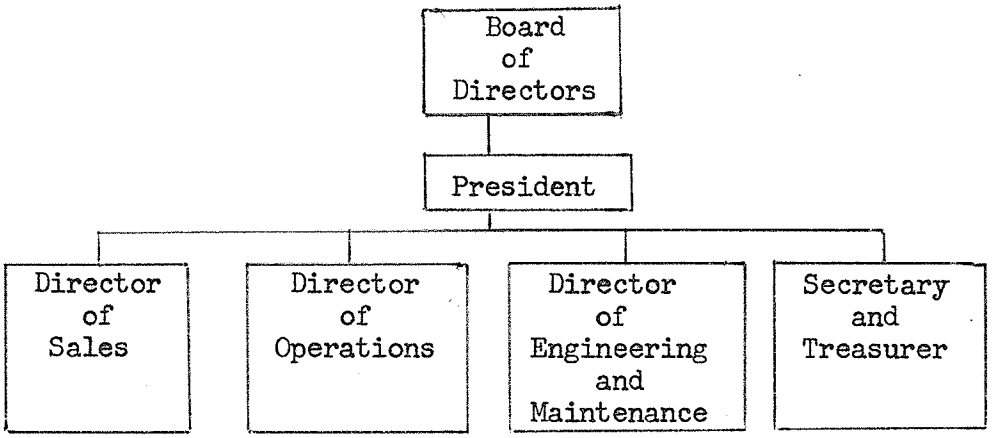
Airline Organization

The organization of an airline must be suited to the type of operation that is involved in order to encourage the maximum productivity of all personnel with a minimum duplication of effort. "The character of airline organization varies according to the size of company, personnel qualifications and route coverage."[33]

The diagrams following on the next two pages show typical organization systems for a small airline and a large airline. These diagrams also list the various functions and responsibilities of each department.

The small airline displays a more compact organization with four basic divisions and each division is responsible for certain functions which are given in broad terms. In the case of the large airline the responsibilities are broken down into finer categories and are of course spread among a larger number of divisions. With this larger organization system, it becomes easier for the large airline to assign specific functions to more specialized departments and teams.

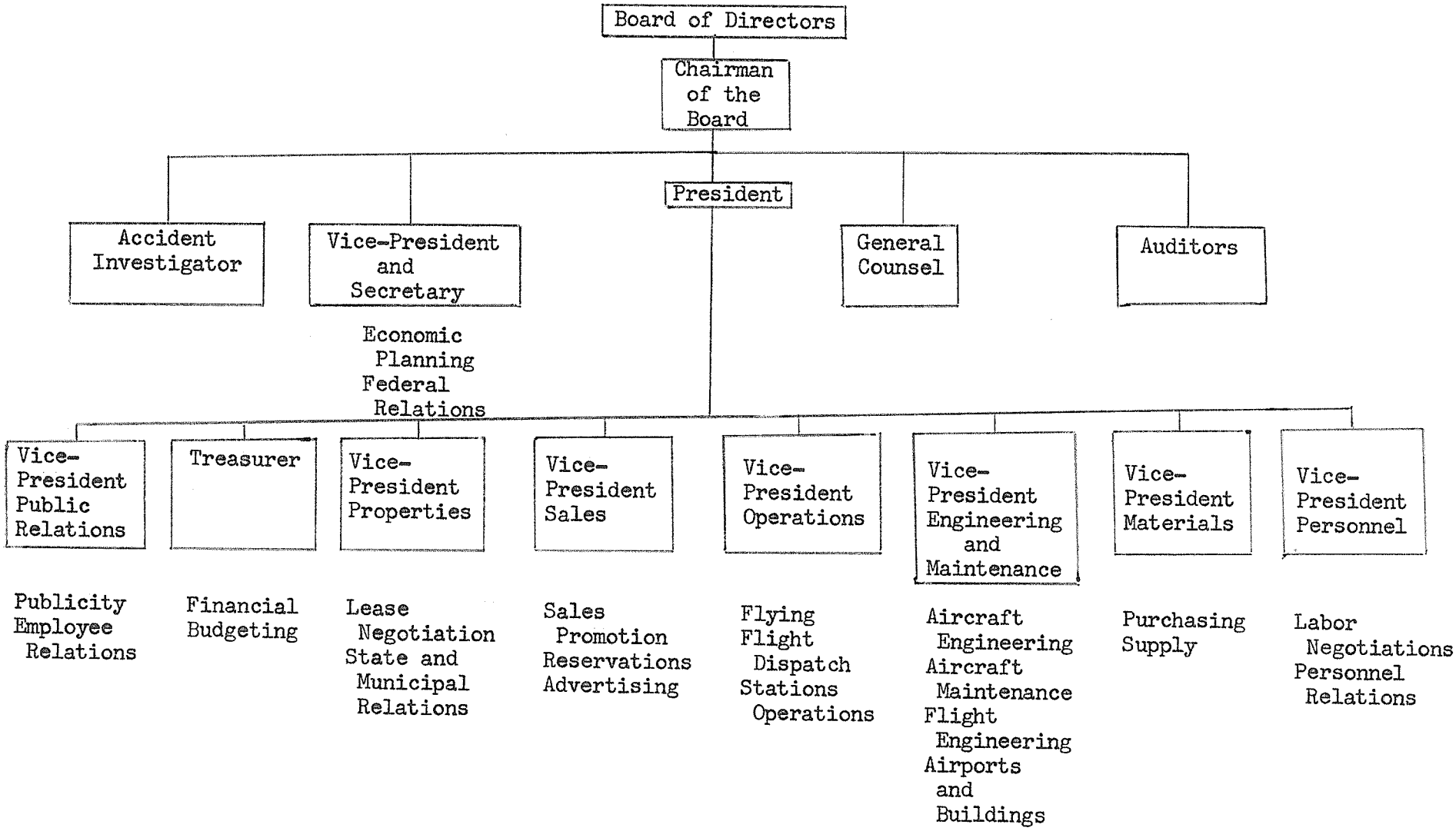
Typical Organization of a Small Airline



SOURCE: R. Dixon Speas, Technical Aspects of Air Transport Management, McGraw-Hill Book Company, Inc., New York, 1955, p. 34.

The next diagram illustrates the more elaborate organization system of a typical large airline.

Typical Organization of a Large Airline



SOURCE: Speas, Technical Aspects of Air Transport Management, p. 35.

Although there are differences in the organization systems of a small airline and a large airline, there are certain characteristics common to the air transport industry in general, characteristics which exist regardless of the size of the airline.

It is important to realize that an airline is only small or large in relation to another. For instance, the regional carriers are considered to be small relative to the mainline carriers. This size refers to the size of operations, the number of employees, size and number of aircraft operated and the size and type of market which the airline is serving.

The regional carriers in Canada do not serve the prime markets. Their operations on lucrative mainline routes are restricted. The scope of their operations is small relative to that of the mainline carriers. Hence, the system of organization for a small airline need not be as large or as complex as that of a mainline carrier.

However, there are certain areas which must be dealt with whether the airline is large or small. The difference lies in how much emphasis is placed on a particular aspect. In a large system, each function may be allocated to a separate department which can become more specialized in that particular field. In comparison, the small system does not have this high degree of separation of duties, and each department is more general.

As shown in the foregoing diagrams, the small system has only four major divisions to deal with the important areas listed. Although somewhat more extensive, almost the same areas are listed for the large system but there are eight basic divisions to deal with them with a vice-president in charge of each one, excluding the financial area.

This is not to argue that every airline regardless of size should have this number of divisions in its organization system. We are merely pointing out that the difference does exist, as does the opportunity for increased efficiency for the large airline, in terms of a more efficient allocation of resources for each department. The problem lies in the size of a small airline for it would not be reasonable to expect a regional carrier, with a relatively small scope of operations to have or need as extensive an organization system as a mainline carrier.

Looking at a particular case, that of TransAir Limited, the investigation shows that this airline is organized in a similar way to that of the small airline in the diagram. In view of what has been said regarding the operations of regional carriers, this system employed by TransAir appears to be justified. Actually no criteria were given to determine just how large an airline must be to be considered "large", or vice-versa. Compared to a third level operation, TransAir is a large airline. Besides the Board of

Directors and President, TransAir has three major departments. The marketing department, with its own vice-president, is responsible for such items as sales and public relations; the finance and administration department deals with personnel and accounting matters. The operations department, without a vice-president at present, is divided into two parts: Flight Operations dealing with such things as dispatching, stewardesses and pilots under the supervision of a director; and the Maintenance section, supervised by a director, dealing with maintenance staff, line maintenance and shop work. TransAir also has its own legal staff, employing one lawyer on a full time basis.

Thus, all the important areas of airline operation are looked after. Changes have been made, throughout the history of TransAir, in the organization system of the company, until the existing system was derived, keeping within the scope of the company's operations dealing with markets other than the prime international and trans-continental markets.

An important issue deals with the questions of what the optimal size of an airline is and how efficiency may be measured and achieved. Any number of criteria may be used to measure the size of an airline, a few of which are the number of employees, the number of aircraft in the fleet, or the capacity of the operation. This study has used a measure of available seat miles and available

ton miles to measure size. As can be seen by the data provided, the size of the regional carriers is below the optimum. An increase in size would result in lower per unit costs and increased efficiency as the company moves along the downward sloping portion of the average cost curve.

In a freely competitive market, profit figures would be a suitable measure of the efficiency or inefficiency of an operation. However, free competition does not exist in the air transport industry and, hence, it is argued[34] that profits by themselves are not a true measure of efficiency. Public regulation interferes in airline operations to promote service in the public interest but which is often unprofitable for and detrimental to the air carriers involved. If airlines were free to compete, in the absence of regulation, there would be a tendency for them to serve only lucrative, profitable routes and ignore the unprofitable routes where passenger traffic is extremely thin.

In view of the reduced role of competition, "the emphasis then shifts to the appropriate design of public policy and regulatory measures and the encouragement of the best possible managerial performance."[35] Efficiency or inefficiency can be displayed by the ability of top management of an airline to assess the requirements of markets which the particular airline serves. If the airline has a highly intensive network of services in a relatively small geographical

area, such assessment of market requirements will present a smaller problem than would be the case for an airline which operates a world-wide network of services. Management in the former case is likely to be more capable of assessing the preferences and needs of its customers than in the latter case.[36] This reasoning may apply to an airline that has already reached a certain optimum size, but it does not appear to apply to a range such as that in which the regional carriers are currently operating.

D. Elements of Market Structure

In investigating the market structure of the air transport industry, this study examines the degree of seller concentration, product differentiation and conditions of entry into the industry.

Seller Concentration

The degree of seller concentration refers to the number of airlines in the industry offering air service and competing for passengers in the market for air transportation.

The air transport industry tends to be oligopolistic. In many countries there is only one major airline which serves as the national flag carrier. Generally concentration is high although there may be a fringe of smaller airlines also competing for potential air travellers. This fringe, however, may be excluded from operating in the lucrative mainline market of the chosen instrument.

In Canada the chosen instrument is Air Canada. Also competing with it in the mainline market is C P Air and these two airlines constitute the oligopolistic core in the Canadian air transport market. The regional carriers form a fringe around this oligopolistic core. Due to the intervention of regulatory authorities, their operations in the mainline market are restricted and, hence, they provide only a very limited degree of competition for the oligopolistic airlines. For the most part, the regional carriers are assigned to serve specific regions in Canada and competition among the regional carriers is also limited.

In an industry such as manufacturing, an oligopolistic core may be able to earn above normal profits by collusion in price or output policies, market sharing agreements or price discrimination. However, in the air transport industry, the mainline carriers, as well as the regional carriers are strictly regulated in terms of air fares, routes which are to be serviced in the public interest, new route acquisitions and route abandonments. This subject of regulation will be examined more fully in the following section. However, the market of the air transport industry is not one that would yield abnormally high profits under unregulated operations.[37] As discussed earlier, the market for air transportation is limited. Furthermore, in setting air fares particularly in the mainline market account must be taken of the price elasticity of demand. Hence, the industry does not lend itself toward high profits.

Product Differentiation

The possibilities of effective product differentiation in the air transport market are relatively limited.[38] Although product differentiation can be based on actual differences in products or services or on psychological factors, air travellers generally find it difficult to differentiate between the product for an available seat mile on one airline is pretty much the same as an available seat mile on another airline.

Of more importance is differentiation in the service provided by different airlines. Airline A may serve better meals during a flight than Airline B, or at least passengers may think that the meals are better on Airline A. The fact that all meals are prepared in the same kitchens may be an unknown fact to air travellers.

When considering the regional carriers, product differentiation may adversely affect their ability to compete with the mainline carriers. This aspect was discussed earlier in the study of the demand for air transportation.

In spite of this argument the following study of TransAir Limited shows that in several important cases this airline did not suffer any product differentiation disadvantage when entering a lucrative market and serving Sault Ste. Marie and Toronto. However, perhaps the attitude of the air travellers concerned can be accounted for by the great need for air services which existed on that route.

Conditions of Entry

Barriers to entry may be of a legal nature or an economic nature. The legal barriers will be examined in the following section which deals with regulation.

Economic barriers consist of economy of scale barriers, product differentiation barriers and absolute cost barriers.

Economies of scale do not act as a natural barrier to new entry.[39] As the scale of airline operations increases lower per unit operating costs are possible parti cularly when considering the range wherein the regional carriers operate. However, even though their unit operating costs are relatively higher than those of the mainline carriers, they are not prohibited from entering the industry because of their small scale of operations.

Likewise product differentiation does not act as a barrier to new entry into the air transport industry. The aspects of product differentiation have already been discussed and if this factor has any significance, it appears to be only when a small carrier attempts to enter a market being served by a larger, well known airline.

Absolute cost does not block entry into the industry although a large initial investment is required on the part of the airline. This aspect was discussed earlier in the section dealing with airline costs.

E. Regulatory Constraints and Intervention

Regulation affects every phase of airline operations. Such intervention has created an oligopolistic industry by the licencing requirements of the Canadian Transport Commission. In addition to regulating fares, route acquisitions and route abandonments, the government has also asked the airlines to consult with it before acquiring new aircraft.

Prior to serving a new route the airline must submit an application to the Commission for approval to operate a particular service. Generally, before a decision is reached, the Commission will hold a public hearing during which the airline will present its case and state why it feels the particular service should be provided. During the hearing the Commission may hear from representatives of the communities or centres affected, and from competing airlines who may present very strong cases in opposition to the applicant's request for a licence. If the Commission decides that the particular services does not meet the requirements of the public convenience and necessity, or will require too large a subsidy to make the operation feasible, the application will be rejected and no licence will be issued. If the Commission decides in favor of the applicant, it will grant a licence either to operate exactly as requested or according

to restrictions placed upon the licence by the Commission. Hence, in the hands of the Canadian Transport Commission lies the power to increase or reduce competition in the industry.

Some important questions may be raised at this time. Do federal regulatory officials concern themselves more with attempts to decrease costs and increase revenue for the air carriers and should this be their fundamental concern, or should they also be concerned with providing a public service regardless of the financial costs involved? To what extent are the regulatory authorities concerned with social costs and benefits, and if they do take these factors into consideration, should this area receive more or less emphasis than has been the case in the past? Are there possibilities of federal-provincial conflicts over goals such as profitable air carrier operations and regional development and the satisfaction of public needs?

Which issue is or should be of prime importance - that of efficiency or that of factors exogenous to the air transport industry. When attempting to answer these questions, one should bear in mind that a goal of public policy was to provide an efficient, economic and adequate transportation system for the development and wellbeing for Canada as a whole.

Judgement on this latter issue will be reserved for the concluding section of this paper but many of the answers will make themselves known as we discuss the actual role and impact of regulation in the industry as a whole and more specifically how it has affected the operations of TransAir Limited.

The air transport industry does not display the characteristics of a natural monopoly as the public utility industry. Thus, it cannot be regulated from a public utility point of view. However, there are both economic and safety reasons for regulation.

This industry is regulated so as to preserve its inherent advantages, promote the highest degree of safety and sound conditions in the industry, improve relations among air transport companies, coordinate transportation by air carriers, to promote adequate, economical and efficient transportation service by air carriers at reasonable rates (unjust discriminations, undue preferences or advantages and unfair or destructive competitive practices being specifically prohibited) and to improve competition to the extent necessary to assure the sound development of an air transportation system.[40]

Since airlines are not natural monopolies, substantial competition could develop in the absence of regulatory policies which prevent such a situation from arising. Thus, regulation restricts entry into the air transport industry.

Public authorities also regulate rates and service, they limit profits to a fair return on investment figure, and they oblige airlines to perform particular services whether profitable or not. The airline on the other hand must

> maintain and continue the development of its system to the extent necessary to furnish satisfactory service, to set reasonable nondiscriminatory rates, to perform the required postal services, and to maintain preparedness of assistance in national defense.[41]

It is only to be expected that airline managements will seek to attain the maximum profits possible. However, if some situation should allow an airline to earn an excess return, a real conflict can arise for the regulatory agencies will attempt to keep the actual rate level below the level which is desired by the airlines. In this respect, it might be argued that the regulatory authorities are acting in the public interest.

On the other hand, the forces of competition that do

exist in the air transport industry may lead airlines to set rates at lower levels, particularly if an airline has high constant costs and wishes to maintain or increase volume. Regulation is then called upon to prevent such rate reductions which could prove disastrous to the members of the industry.

When discussing rates, one may argue along several lines. Two views which have been expressed on this subject are that, from the standpoint of both the companies and the public welfare the rates on each type of service should be set at levels which maximize the contribution of the service to the profits of the firm; and, the rates on each service should be set at the level equal to marginal cost.[42] Marginal cost refers to a change in total cost resulting from supplying one more unit of output and can be computed by dividing the change in total cost by the change in output.

It is important to note, in this second view, that up to this point of capacity of existing flights, average cost per unit of business handled falls as traffic increases, as was shown earlier by the illustrated average cost curve when discussing economies of scale. This phenomenon generally occurs for there is better utilization of equipment and personnel as business increases. In other words, the marginal cost of additional units of business is relatively low.

> Because of the nature of the cost behavior, the airlines have particular incentives to gain additional business by all possible means, especially in order to increase the average load factor on their flights. This situation is an incentive toward lower rate levels than might be desirable if total costs increased in proportion to business handled.[43]

Thus, regulation may be thought of as acting in the carriers' own best interests and at the same time, since it is promoting the continued existence of airlines,is acting in the best interests of the public as well.

It is argued further that sound rate policy is essential, for air transportation is more and more in direct price competition with surface carriers which have traditionally charged rates and fares below the air carriers, and air passengers are drawn from an increasingly price-conscious market.[44]

It was also mentioned that regulation was concerned with safety factors in air transport. Some important considerations in this area are seeing to it that equipment is properly maintained, ensuring skillful dispatching and adequate flight control, establishing and maintaining adequate airway and airport facilities, and providing for adequate weather forecasting and reporting.[45]

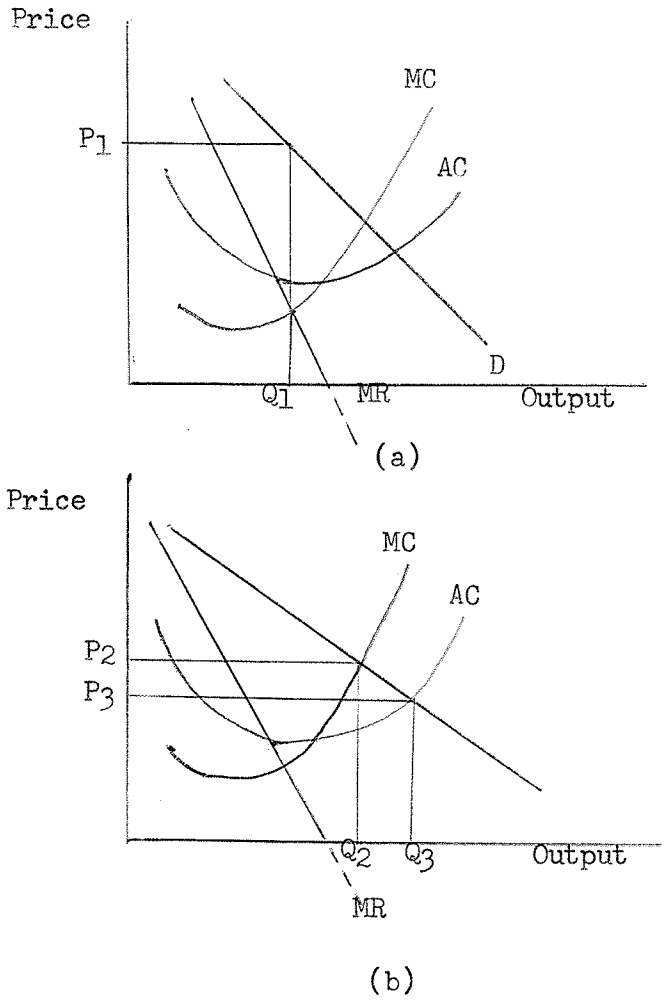
It may be argued that since competition does exist in this industry to some extent, in the absence of regulation

airlines may attempt to cut short on certain safety features in order to cut costs. Furthermore, there may still be some degree of public feeling that air travel is dangerous, and to the extent that such a feeling exists, regulation regarding safety factors and public information about such regulation is in the best interests of the air carriers. Safety regulation may also help to solve the problem of product differentiation which could affect a smaller air carrier.

To sum up the rationale of regulation, it may be argued that public regulation is required to protect the public interest since we are dealing with public transportation. "Public control of business is justified whenever the public interest is clearly discernable and the means of protecting that public interest are available."[46]

Before leaving this discussion of regulation, one more aspect should be examined. Should the government allow airlines to earn profits via monopoly pricing, or should regulation provide for more service either by a competitive solution or by marginal cost pricing? These three possibilities may be illustrated by the following diagrams.

FIGURE 10



The above graphs depict typical monopoly situations, whether natural monopolies or regulated monopolies. In figure (a) the firm or airline is allowed to charge a monopoly price and earn monopoly profits, but the amount of output or service is restricted. To maximize profits the firm will produce where marginal cost (MC) equals marginal revenue (MR). In figure (b) the competitive solution yields an output level of Q_3 and a price of P_3. This is

derived from the intersection of the average cost (AC) curve and the demand (D) curve. Marginal cost pricing yields an output level of Q_2 and a price of P_2. These levels are determined by the intersection of the marginal cost (MC) curve and the demand curve. In these latter two situations, the prices or fares are lower than in the monopoly pricing model and more output or service is available to the consumer. The competitive solution offers the best solution as far as the passenger is concerned but it may not be in the best interests of the airline as far as profits are concerned. Some combination of the two situations in figure (b) would appear to be desirable, perhaps implying a government subsidy to help cover the costs of operation.

NOTES TO CHAPTER 2

[1]Report of the Transportation Workshop, Air Transportation 1975 and Beyond: A Systems Approach, M.I.T. Press, 1967, p. 2.

[2]Richard E. Caves, Air Transport and its Regulators, Harvard University Press, Cambridge, 1951, p. 35.

[3]Ibid., p. 36.

[4]Ibid., p. 36.

[5]William F. Ogburn, The Social Effects of Aviation, Houghton Mifflin, Boston, 1945, p. 223.

[6]Caves, Air Transport and its Regulators, p. 59.

[7]Ogburn, The Social Effects of Aviation, p. 131.

[8]Caves, Air Transport and its Regulators, p. 61.

[9]Joe S. Bain, Industrial Organization, John Wiley and Sons, Inc., New York, 1968, p. 166.

[10]Ogburn, The Social Effects of Aviation, p. 226.

[11]Bain, Industrial Organization, p. 168.

[12]Harold D. Koontz, "Economic and Managerial Factors Underlying Subsidy Needs of Domestic Trunk Line Air Carriers," Journal of Air Law and Commerce, Spring, 1951, pp. 127 - 156.

[13]Ralph F. Harris, The Economic Efficiency of Regional Air Carriers in the National Transportation System, p. 6.

[14]K. W. Studnicki-Gizbert, The Regional Air Carriers' Problem, p. 6.

[15]Ibid., p. 6.

[16]Koontz, "Economic and Managerial Factors Underlying Subsidy Needs of Domestic Trunk Line Air Carriers," Journal of Air Law and Commerce, pp. 127 - 156.

[17]Koontz, "Economic and Managerial Factors Underlying Subsidy Needs of Domestic Trunk Line Air Carriers," Journal of Air Law and Commerce, pp. 127 - 156, cited by Caves, Air Transport and its Regulators, p. 56

[18]Koontz, "Economic and Managerial Factors Underlying Subsidy Needs of Domestic Trunk Line Air Carriers," Journal of Air Law and Commerce, p. 133.

[19]John B. Crane, "The Economics of Air Transportation," Harvard Business Review, Vol. XXII, Summer, 1944, pp. 495 - 508.

[20]Koontz, "Economic and Managerial Factors Underlying Subsidy Needs of Domestic Trunk Line Air Carriers," Journal of Air Law and Commerce, pp. 127 - 156.

[21]Koontz, "Economic and Managerial Factors Underlying Subsidy Needs of Domestic Trunk Line Air Carriers," Journal of Air Law and Commerce, pp. 138 - 140, and Koontz, "Domestic Air Line Self-Sufficiency: A Problem of Route Structure" American Economic Review, March, 1952, pp. 108 - 113, cited by Caves, Air Transport and its Regulators, p. 57.

[22]Caves, Air Transport and its Regulators, citing Paul W. Cherington, Airline Price Policy, Harvard University, Boston, 1958, p. 49, and Stephen Wheatcroft, The Economics of European Air Transport, Harvard University Press, Cambridge, Massachusettes, 1956, Chapter 3.

[23]Paul W. Cherington, Airline Price Policy, p. 62.

[24]Stephen Wheatcroft, The Economics of European Air Transport, p. 48.

[25]Ibid., p. 48.

[26]Ibid., p. 51.

[27]Ibid., p. 447.

[28]Ibid., p. 100.

[29]Ibid., p. 100.

[30]Cherington, Airline Price Policy, p. 304.

[31]R. Dixon Speas, Technical Aspects of Air Transport Management, McGraw-Hill Book Company, Inc., New York, 1955, p. 24.

[32]Ibid., p. 27.

[33]Ibid., p. 34.

[34]Wheatcroft, The Economics of European Air Transport, p. 68

[35]Harris, The Economic Efficiency of Regional Air Carriers in the National Transportation System, p. 3.

[36]Wheatcroft, The Economics of European Air Transport, p. 69.

[37]Caves, Air Transport and its Regulators, p. 136.

[38]Stephen Wheatcroft, Air Transport Policy, Michael Joseph, Ltd., London, 1964, p. 47.

[39]Ibid., p. 47.

[40]John H. Frederick, Commercial Air Transportation, Richard D. Irwin, Inc., Chicago, 1951, p. 86.

[41]Ibid., p. 105.

[42]Ibid., p. 116.

[43]Ibid., p. 117.

[44]Ibid., p. 206.

[45]Ibid., p. 241.

[46]Samual B. Richmond, Regulation and Competition in Air Transportation, Columbia University Press, New York, 1961, p. 11, citing Irston R. Barnes, The Economics of Public Utility Regulation, Crofts, New York, 1942, p. 151.

CHAPTER 3

TRANSAIR LIMITED AND PUBLIC POLICY

TransAir Limited was named a regional carrier in 1966, and as such has been required to provide the services of a regional carrier, as described in Chapter 1. However, TransAir was operating in the capacity of a regional carrier long before 1966.

Important questions may be raised concerning this airline. What types of operations was TransAir engaged in during its early development? What role has TransAir been playing in the Canadian air transport system? What type of aircraft does TransAir operate and what was the basis for the changes which have occurred in its aircraft fleet? What routes does this airline serve and what efforts have been made by TransAir officials and regulatory authorities to change its route structure? How has TransAir dealt with the problems which appear to be inherent in regional operations?

These questions are of fundamental importance to this study and are examined in detail throughout this section.

A. Early Development of TransAir

The regional air carrier known today as TransAir Limited began its operations in 1947, as Central Northern Airways Limited. Among its other duties, TransAir provided essential air service to the far North on DEW Line operations, and already as early as 1955 under the name of Central Northern Airways Limited, the airline commenced services to the DEW radar line in the Arctic regions. At this time negotiations were underway for the acquisition of all the shares of a small air carrier, Arctic Wings Limited. This merger was finalized in 1956, at which time Central Northern Airways and Arctic Wings Limited united under the new name of TransAir Limited.

The complete aircraft fleet at December 31, 1955, consisted of thirty-two aircraft, including the additional purchase of two Curtiss-Wright C-46 Commando aircraft, two Bristol Freighters, one DC-3, one Canso, and three Norseman aircraft.[1] The DC-3 was purchased because of its proven reputation as a reliable aircraft, while the Bristol Freighters were necessary for transporting machinery and other cargo to the Arctic regions. The Norseman is a float plane, enabling landings where air strips are not available, but where rivers and lakes abound.

TransAir then established new major facilities at Churchill, Manitoba, an investment totaling nearly $600,000. One DC-4 aircraft, equipped with long range tanks was added to the fleet. The DC-4, which carried a maximum of eighty passengers, was used for carrying both passengers and cargo.[2] Then to achieve the benefits of fleet standardization, TransAir began to reduce the number and type of aircraft in service. The number of types was reduced from eighteen to eleven.

In 1960, TransAir was awarded a contract for all DEW Line resupply flying out of Winnipeg and Churchill and by 1961, new DEW Line revenue for the airline amounted to $1,192,036. Also, three additional aircraft were acquired for DEW Line purposes, on a lease option basis. Two of the five DEW Line DC-4s were bought outright. The extended DEW Line operations commenced on July 1, 1961 and a contract was signed for one year, until June 30, 1962.

In 1965, TransAir expanded passenger and cargo charter operations due to the introduction of DC-6 and DC-7 aircraft, which were longer range planes than the airline had previously operated and could carry more passengers and cargo. Furthermore, group charter flights were planned between Central Canada and Europe for the spring, summer and autumn of 1966.[3]

As stated earlier, in 1966, TransAir was officially recognized as one of the five regional air carriers in Canada. Its sphere of operations were, and still are, based on Winnipeg and covered the provinces of Manitoba, Saskatchewan, Northwestern Ontario and the adjacent portion of the Northwest Territories. The provision of the vertical air support for the DEW Line was also part of TransAir operations.

In the same year, TransAir initiated action to dispose of its unprofitable bush operations. The first portion of this program was commenced and a contract was signed in December of 1966. The program was finalized early in 1967.[4] This withdrawal resulted in a substantial reduction in the various types of aircraft operated, which in turn was reflected in economies in maintenance costs, since TransAir retired old and obsolete aircraft.

Also in 1966, TransAir began a new program for re-equipment, when it began operating transcontinental routes during an Air Canada strike, for the high density airline operation on which TransAir was embarking was absolutely dependent upon the high utilization of modern, easily maintained and efficient jet-powered equipment.

Later in October of 1966, it was indicated in the Statement of Policy of the Minister of Transport that

> ... regional air carriers in the near future may be able to operate more profitably if approval is given, with subsidies for uneconomical segments which are flown in the community interest, and that opportunities will be presented for increased charter operations.[5]

During 1966, prairie services were operated on a special agreement, after expiration of a three year contract. The new agreement included a government subsidy to permit a break-even operation until a public hearing on the future of the prairie service could be held in the spring of 1967.

In providing air service in the public interest, TransAir has been faced with unprofitable operations and in spite of statements that subsidies would be made available, subsidies have been hesitant in forthcoming.

The foregoing is intended to provide a brief history of the development of TransAir. Specific aspects such as route development, fleet acquisitions and market development will now be examined and analyzed in detail.

B. Route Acquisitions and Development

Throughout the history of TransAir, many attempts were made by the airline to acquire new routes and institute new services, and these efforts by the carrier shall now be examined in detail. TransAir has made numerous efforts to provide service which it was ill-equipped to provide and to enter markets where it could not compete successfully with larger airlines. See Appendix D for a list of TransAir operations and the services which it is licenced to perform. TransAir was too small an operation and did not operate suitable aircraft for the types of routes which it was trying to obtain.

An issue that must be realized by the regional carriers, and TransAir is only one example of such a carrier, is that for regional airlines, more routes do not necessarily mean more profits. From the following analysis of TransAir route development, it appears that the level of aspiration of the airline was greater than its level of performance.

Careful and proper route development helps to develop an air system into an economic and viable operation. With careful attention to this extremely important area problems may be overcome dealing with directionality of traffic flows, inadequate linkages, low traffic density and short stage lengths. Route development if approached wisely, helps to develop the economy of the airline, helps to establish an effective pattern of operation and helps it to serve the public.

As stated above, TransAir has made many route acquisitions. One may very frequently find in a newspaper an article describing TransAir's plans for a new route. In spite of these acquisitions, the problems facing this carrier do not seem to be disappearing. Careful and wise route development will help to reduce the problems faced by regional carriers. Thus, it appears from this line of argument, the route development policies of this carrier lacked sufficient care and planning for development of the airline and improvement of the economic base on which it operated.

The majority of TransAir service relates to northern

Manitoba. The air carrier has provided service to remote communities and regions in the North and has made constant efforts to alter routes or acquire new routes, alter frequencies and schedules and abandon some routes. These decisions were made with a view toward increasing the profitability of the airline and still maintain some measure of air service in the North. Routes were developed in an attempt to fulfill one of the major roles of a regional carrier and TransAir currently serves important major centres in central and northern Manitoba from a base in Winnipeg and serves far northern areas from a base at Churchill.

These air services were important for aiding the economic development of the North. In the 1960's the geographical areas being served were experiencing remarkable economic and industrial growth. New reserves of natural resources, necessary for the continued development of Canada, were being discovered and TransAir played an important part in this development activity. There is still enormous untapped potential in the North; potential which can become a reality with the aid of reliable and dependable air service.

TransAir did not take full advantage of the opportunities and even now, new policies are needed for the development of a sound economic base on which the airline can operate.

What had TransAir actually been doing in its endeavors to develop a route structure for the North? What were the implications and results of the actions taken by the carrier? When answering these questions, it must again be emphasized that in spite of the numerous changes in routes and service, TransAir still faces the same problems now as it did throughout its history of development.

Inadequate planning of routes seems to be a major problem of the airline with insufficient examination of the short stage length and low traffic density factors. At times it seems as though routes were acquired on a trial and error basis and after a short time, after unprofitable flights and increasing difficulties the routes were altered. Some points were removed or others were added. The new route was tried out and when problems again arose, the route again was altered.

There are also instances where the carrier made good planning decisions and instituted necessary improvements in northern air service. Such services overcame the problems of short stage lengths and also generated sufficient traffic to strengthen the northern route system. One such case arose in 1968, when TransAir began a Class 1 Scheduled commercial air service between Winnipeg and Thompson.[6] Due to the constantly expanding operations of the International Nickel Company at Thompson, the people at that

location required a direct service to Winnipeg to meet their requirements. The provisions of this service also made additional seats available on TransAir flights from Winnipeg via The Pas to other northern communities. TransAir has since further increased its service to Thompson, providing necessary service with a relatively long stage length and sufficient passenger traffic being generated.

The prairie service of TransAir has also received great emphasis in terms of policies for route development. Many of the problems encountered by the carrier on the prairie service were similar to those arising on northern routes, problems such as short stage lengths, low traffic density and low average passenger load factors. However, one distinct problem on the prairies was the difference in the nature of competition which the carrier faced. When serving remote regions in northern Manitoba, competition from other modes of transportation were virtually non-existant. Due to climate and terrain conditions, air transportation in many cases offered the only viable means of movement.

On the prairie routes, however, operating in more southern regions of Manitoba and Saskatchewan, the private automobile is a major competitor of the airline. Some points on the prairie routes are only 130 miles apart, separated by good roads and highways. Considering air service, airport access and egress

times are a relatively large portion of the total time of the flight and when considering the time thus expended, the total time of the trip by automobile does not seem considerably greater than the entire trip by air. Furthermore, there is a much greater explicit cost saving when travelling by automobile.

TransAir either failed to take adequate consideration of this competitive factor together with the other inherent problems of the prairie service or else the planning authorities thought that these problems could be overcome in time. At least these seem to be the only justifiable reasons for the great emphasis on prairie routes.

TransAir had made numerous efforts to take over the prairie routes of Trans Canada Airlines (Air Canada) and permission to do so was granted by the Canadian Transport Commission in 1963.[7] The service included points in Manitoba, Saskatchewan and Alberta. This move displayed very poor planning on the part of TransAir. Apparently the motivating force behind the decision to take over the route was the offer of $500,000 worth of equipment.

However, the DC-3 and Viscount aircraft given to TransAir were not suited to the regional role of this carrier. Bad economics of the Viscount, as applied to the type of service and operation of TransAir, combined with low traffic density moved TransAir into a worse economic and operating position. The carrier did not

benefit from the policy decision and the following year the majority of this service was suspended. Traffic was averaging 2.8 persons on a twenty-eight passenger aircraft operated by a crew of three.[8]

However, due to the lack of adequate foresight and planning and insufficient consideration for the difficulties which would arise, TransAir, in 1963, had bound itself into a three year contract to serve the prairies. Thus it had to fulfil its contract and replace the abandoned service. This service, no matter how it was altered and re-organized, could not be developed into an economic operation.

By 1967, the contract to maintain a prairie service had expired. TransAir then requested additional federal financial assistance to continue its service to prairie locations. This request was denied and as of March 31, 1968, the government terminated the temporary financial assistance which it had been providing since 1966. TransAir should have abandoned the regular scheduled service to smaller prairie communities, thus eliminating the short, low density routes. It should have retired the Viscount which offered poor economics to the size and type of operation of TransAir and which did not belong in the fleet composition of the carrier.

However, TransAir did not choose such a policy. Instead it inaugurated schedules on the prairies with improved timing and

frequency. At the same time it replaced the Viscount service with DC-3 service,[9] hoping that a profitable operation would develop. However, hoping was not sufficient for success. It is surprising that management responsible for planning decisions did not learn from past errors or that they could not realize that difficulties would continue.

A few months later, TransAir was again planning to alter its prairie service. Faced with the decision of abandoning the route or providing turbo-prop service, it chose the latter approach and re-instated the Viscount. Considering the past lack of success, this was a bad policy decision. Even if some additional traffic could have been generated, it would not have been substantial enough to develop the route into a profitable operation, to remove the problems inherent in such a service or to improve the economic basis on which the airline was operating. Later in the same year, another policy was made which this time reduced aircraft mileages on the prairies.

Finally, in 1969, after encountering difficulties and losses due to inadequate planning, TransAir realized that traffic over the prairie routes was insufficient to justify maintenance of the service. The airline was unable to place the service on a self-sufficient basis. It had encountered major financial losses on the route in 1968, and the losses were even greater in 1969.

Having been again refused a subsidy to continue the prairie service, TransAir passed the route down to Midwest Airlines, the airline with which it had merged in 1969.

TransAir was interested not only in northern and prairie routes, but also in mainline routes and charter services. Its endeavors in these areas will be examined and analyzed in the following section.

C. Market Development

TransAir's efforts at market development have been concentrated in two main areas; development of a long haul mainline market and a charter market.

The Mainline Market

It may be argued that TransAir, being a regional carrier, should not have made any attempts to enter the mainline market and did not belong there. The scope of operations of the airline was too narrow to permit success in a lucrative mainline market where it faced very strong competition from the two large Canadian trunk carriers. The product differentiation disadvantage discussed in Chapter 2 takes on a very great significance in this instance. TransAir did not have a reputation for providing a mainline service. The public recognized TransAir as a small local service carrier flying across the prairies and to the North. When it applied for a licence to provide a Class 1 Scheduled commercial air service

from Winnipeg to Thunder Bay, Sault Ste. Marie and Toronto in 1968,[10] it did not have equipment as publicly acceptable as the DC-9 and DC-8. Having jet equipment would not have helped TransAir anyway at that time because, according to the terms stated in the licence, its service to Sault Ste. Marie and Toronto, considered as a continuation of a previous service from Winnipeg to Kenora, Dryden and Thunder Bay was restricted to the use of turbo prop aircraft. The airline was permitted to use jet aircraft on its other route between Winnipeg, Thunder Bay and Toronto. However, it was initially prohibited from advertising its service to these eastern Canadian locations as a means of protecting the mainline market of Canada's chosen instrument. Whether Air Canada needed such protection or not from TransAir is a highly debatable issue.

The very nature and scope of the TransAir operation did not allow for entry into this type of market. It may have given the airline false visions of grandeur; providing some incentive to purchase large capacity jet aircraft which, if fully utilized with high load factors have good economics and a good operating performance, but in the case of TransAir were too large for the scope of a regional carrier which is designed to provide local and supplemental air service.

TransAir, however, had a belief or a hope that a route in a lucrative mainline market was the answer to their problems.

It could be considered as a cross-subsidization of their unprofitable routes over the prairies and to northern communities. The full implications of such a route could not have been fully realized. The route brought new kinds of problems with which the carrier was not familiar.

Prior to the application for a licence to provide this revised service, TransAir had been operating a service from Winnipeg through Kenora, and Dryden to Thunder Bay - a service which already then was not economically viable. However, the carrier was persistent, just as in the policy decisions concerning the prairie service. TransAir was of the opinion that the viability of the eastern service would be improved by the provision of a direct service from Kenora and Dryden through Thunder Bay to Sault Ste. Marie and Toronto. In deciding to increase the service and frequencies of flights, it should have been realized that although some periodic peak demands could not be handled adequately by this existing service, this factor alone was not a sufficient reason to increase the capacity or frequency. A direct service to Toronto, utilizing the station facilities and ground services of Air Canada may have provided a good opportunity for TransAir except that it would have been operating in close competition with Air Canada. In any event, TransAir was not permitted to provide a direct service to Toronto; a decision which increased the product differentiation disadvantage and which should have made the carrier

reconsider very carefully the implications of its original planning decision.

Another example of the market strategy employed by the airline goes back to 1964, when TransAir applied for a licence to operate a non-stop service to the Minneapolis - Chicago areas. The application was denied which may have been fortunate for the carrier. The question of whether such a service by a Canadian carrier is needed is not an issue here. The issue is that such a route is not part of the role of a regional carrier. In spite of the fact that high traffic density exists on such a route, it should not be considered by TransAir as a means of counteracting its low density routes. This carrier is not equipped to provide such service and it would be foolish for the carrier to purchase a large aircraft such as a DC-9 or DC-8 in order to handle the traffic. Such an aircraft would not fit in with the carrier's present fleet and would disrupt its entire composition. It would be equally foolish for TransAir to acquire such an aircraft in the hope that it may eventually acquire such a route.

A decision was made in 1969, which resulted in an improvement for TransAir. It merged with Midwest Airlines, a small local service and charter air carrier. This meant that TransAir could now pass on short haul, low density routes, such as the prairie routes, to its wholly-owned subsidiary and retain only those longer, direct flights between Winnipeg, and Regina and between Winnipeg

and Saskatoon. Midwest Airlines, using light, economical aircraft such as Piper Aztecs and Piper Navajos could serve the smaller prairie locations more economically than could TransAir with a DC-3 or Viscount. The merger gave TransAir the ability to use larger aircraft on longer routes between larger centres and to use smaller aircraft, via Midwest, to serve the smaller locations.

Charter Services

In addition to providing scheduled and non-scheduled unit toll air services, TransAir is also licenced to perform charter operations. These operations began in the late 1950's. The carrier attempted to serve the international charter market and in order to perform this service it acquired aircraft which were not suited to its role as a regional carrier. TransAir showed evidence of entering and attempting to enter markets which were beyond its scope of operation. However, there also has been evidence of successful development plans which have proved beneficial to its entire operation. These endeavors by TransAir shall now be examined more closely.

In attempting to enter certain areas of international charters and by using large aircraft such as the DC-6, TransAir was going beyond its scope of operations. International charters to Western Europe have fierce competition and such was the case in 1966, when TransAir began an international passenger charter service to Western Europe across the North Atlantic.[11] The large aircraft which it used were unsuited and uneconomical for a regional airline.

It was equally foolish of TransAir to plan the acquisition of a DC-8 aircraft. Certainly for long range flights, such an aircraft is needed but this kind of service should not have been attempted by TransAir. It seemed to be a case of the carrier first acquiring the aircraft and then hoping the traffic would develop. However, if no charters are available for some period of time, the aircraft would remain idle or else be utilized on local service runs where stage lengths are short and traffic density is too low to allow the aircraft to be operated economically. In spite of these drawbacks, TransAir flew a charter service, in 1966, from Winnipeg to Prestwick, Scotland via a DC-7 aircraft and announced further that the airline would begin a new international charter service in 1967 to the United Kingdom, Helsinki, Vienna, Brussels, Istanbul and Leopoldville.[12]

The problems faced by TransAir concerning strong competition and unsuitable equipment should have been foreseen before such services were implemented. This airline suffered a large financial loss on long range multi-engined operations in 1966, due to the major airlines' entrance into the North Atlantic charter service with jet aircraft. However, TransAir still did not withdraw, even when the major airlines announced their intention of continuing and expanding their services. TransAir policy officials made a great error in thinking that, since this market was attracting the large carriers, there were also profits to be made by this regional carrier.

TransAir entered a market where it did not belong. The equipment needed was not suitable for a regional carrier.

More recently, TransAir began offering charters to the Caribbean. The same arguments put forward before, apply here as well. International charter services are beyond the scope of the regional carrier. In this case, however, TransAir already operated the Boeing 737 jet aircraft which the airline utilizes on charters to the Caribbean. However, it seems that the company first acquired the aircraft and then hoped that the routes would appear. The airline, faced with a situation of having two B737s, searched for a lucrative market in which to utilize them.

More in line with the charter services of a regional carrier are the domestic charters to eastern Canada and specifically to Thunder Bay. Thunder Bay is within the region allocated to TransAir and the service can utilize the carrier's B737 jet aircraft without danger of competition from large international charter and trunk line carriers. TransAir has made efforts to develop this domestic charter market by promotion of the service and by utilization of jet aircraft. However, in the past more efforts should have been directed to this area rather than attempting to enter a highly competitive market beyond its scope of operation.

D. Aircraft Fleet Development

The efforts of TransAir in the area of aircraft acquisition and fleet development are in need of critical analysis for again, as shown in the section dealing with route development, many past policies lacked adequate consideration and planning.

Certain problems must be recognized. Although large capacity, long range jet aircraft offer good economics and a good operating performance if used on long hauls and on high density routes, the same aircraft are too costly and offer poor economics on short haul, low density routes where load factors are extremely low. It is nonsensical to assume that because an aircraft has a good operating performance in one market this performance will continue into a different size and type of market. It must be realized that a good operating performance is negated by low load factors, raising the operating cost of the aircraft. TransAir should have avoided the purchase of large capacity aircraft and should not have considered the acquisition of a DC-8 for international charters. Such aircraft could not be utilized economically on the low density, short haul routes the airline served on the prairies and in northern Manitoba.

As shown in Chapter 2, the operating cost of an aircraft decreases according to the number of hours of utilization and the time of flight. In local service operations the number of hours of utilization are insufficient to warrant a large capacity aircraft.

This applies also to the time of flight on the local service routes of TransAir. These factors cause real problems for the carrier but TransAir has not planned adequately to reduce or overcome these problems.

TransAir was originally a bush operation and for many years operated single engine aircraft and a few propeller-driven twin engine planes. Throughout its history the airline added various kinds of aircraft; small four passenger Cessna 180's, Norseman aircraft, a DC-6 and DC-7, uneconomical for a local service airline, and DC-4 which the airline used on DEW Line operations. The airline officials seemed more concerned with the immediate financial cost of aircraft, without adequate consideration for the future of the airline or for long run implications and costs arising from aircraft acquisition decisions. Such was the case with the DC-6, DC-7, the DC-3 and Viscount which were received from Air Canada for taking over the prairie service, and the Argosy freighter.

At first, when the four Argosies were acquired, airline officials made statements of how these aircraft would help service in the North. However, shortly afterward, two Argosies were sold, as they had proved to be uneconomical.[13] In 1969, TransAir bought a DC-6 from CP Air, which disrupted any plans for fleet rationalization that the carrier may have had. The result of rationalization can be economics in maintenance expense, greater efficiency and an increase in productivity.

TransAir made a statement that it was going to convert the piston fleet to turbo-prop and pure jet equipment in order to gain efficiency due to the high utilization that could be attained with jet prop and pure jet equipment resulting from improved maintainability, greater reliability and increased speed. The plan itself would have been sound except for the deviations from the plan; purchases of equipment uneconomic for an operation such as the local service operation of TransAir.

In 1969, the carrier acquired three Hawker Siddeley 748 aircraft, to meet the expected record high traffic volume in passengers and freight throughout northern Manitoba. However, expectations proved to be overly optimistic and the normal capacity proved adequate to handle the traffic. Fortunately, TransAir took the 748's on a short term lease rather than purchasing them based on the expected traffic increase.

TransAir embarked on several re-equipment programs but its plans were disrupted by the opportunity to purchase an aircraft at a reasonable price; aircraft which were not always suited to the airline's operations and routes. Once the aircraft were acquired, the company searched and applied for routes beyond the airline's scope but which were needed to provide adequate utilization for the aircraft. If the routes could not be obtained, attempts were made to dispose of the planes since they did not work out as had been anticipated.

It was not until 1966 that TransAir began to dispose of its bush operations which by then had been becoming more and more unprofitable. This withdrawal resulted in the disposal of small, obsolete aircraft which had worn out by then.

In 1970, TransAir acquired two Boeing 737 jet aircraft, at a cost of five million dollars each.[14] With high load factors, the 737 offers good economics and the greater speed advantage. This type of aircraft is economical to operate on a lucrative route such as Winnipeg - Toronto but problems of low average load factors arise on the routes to northern Manitoba. This results from a combination of low traffic density and directionality of traffic flows. Problems also arise from inadequate landing facilities in northern Manitoba locations which cannot accommodate a plane of this size.

More recently TransAir acquired two Fokker F28 aircraft. The aircraft with a sixty-five passenger capacity would again be suitable for the short haul local service routes provided that sufficient passenger traffic can be generated. The planes are well suited to rural and remote environments for they can operate from short paved or gravelled runways, such as those existing in many northern Manitoba communities.

Although TransAir has made errors in planning and policy decisions regarding aircraft acquisitions as well as in route

acquisitions and market development, the carrier has had to face very great problems. In order to operate economically and efficiently these problems had to be overcome. This task was not accomplished easily and in many cases has still not been completed. Some of the major obstacles with which TransAir has had to contend shall now be examined.

E. Progress and Problems

Although TransAir has had to cope with major areas of difficulties pertaining to the provision of local air service; problems of short stage lengths, low traffic density and resulting low average passenger load factors; this carrier has also had problems particular to its service and the routes it serves. The directional flows of traffic have resulted in low average load factors in spite of high one way load factors. See appendix E. Additionally, relatively higher prices for fuel in northern locations have caused rising costs. See Table 2.

Table E1 of Appendix E illustrates the monthly variation in traffic. These figures include all unit toll services by the carrier. Comparison of the two columns under each month depicts the directionality problem, and the lack of sufficient backhaul results in a low average utilization. Table E2 illustrates the directionality problem with cargo shipments. Although a high northbound load factor exists, it is greatly counteracted by the

low southbound load factor, again resulting in a low average load factor.

Examination of Table 2 reveals that TransAir faces fuel costs from forty-five to eighty percent higher in northern Manitoba. There are of course higher costs of transporting fuel to some of these northern centres and discounts are not offered because of the relatively small volume of fuel being used. When determining the cost of fuel, one must also consider small charges which municipal governments add to price of fuel. Capacity restrictions do not permit the aircraft to be equipped with sufficient fuel to complete a trip to and from the North. Thus, the airline cannot realize any cost reduction in this area. Perhaps the level of fuel cost in the North is an area where further research is required.

The major strategies employed by the carrier to overcome its problems relate to route development, fleet changes and market development policies. By 1970, TransAir had disposed of several aircraft uneconomical for its operation, such as the Viscount, DC-3 and Argosy. Furthermore, it was serving a route linking large city pairs on its Toronto run, which provided a longer stage length route and generated additional traffic for the airline. As a result of these changes in 1970, TransAir showed a profit, as shown in Table 1. In Table 1, the position

of the company is shown for five years. Prior to 1970, large losses were being suffered, resulting from inadequate planning by the company, utilizing unsuitable aircraft and efforts to enter markets beyond the scope of its operation.

TransAir has adopted a policy of fleet rationalization. Table 3 shows the fleet composition over a four year period, as applied to local service routes. By 1971, a high degree of rationalization was attained, permitting greater economies in maintenance expenses and contributing to a more profitable operation.

The company has established separate departments to deal more effectively with specific functions of the airline. The departments are becoming larger with more qualified expertise responsible for planning future endeavors. The company is also anticipating the establishment of a separate planning body designed to establish policies after careful research and analysis. The presence of such a body will enable the airline to examine each alternative and its implications before embarking on a new program.

In summary, TransAir has pursued and adopted several strategies to develop a profitable operation. It has been involved with international charters, lucrative mainline routes and has improved

the service to remote communities in the North. It merged with a smaller local service carrier in order to utilize the smaller equipment of this carrier and thus, maintain service on the Prairies. It has recently shown marked improvements in policy toward aircraft acquisition and fleet rationalization, and may soon have a separate department responsible for planning new strategies. It appears to have learned from past errors which, at the time, were not considered as errors. TransAir examined various methods of operating profitable services. It realized that profits were possible in the charter market. It failed to realize however that such services although profitable for large carriers were not suited to operations of this regional carrier. TransAir was not in error in looking at various possibilities for expansion, for expansion was required. However, this carrier provides an example of a carrier attempting to enter new markets with large aircraft without adequate planning and analysis of the implications and costs of such services.

F. The Position of Public Policy

Public policy regarding local air transportation services professes to be concerned with the interests of the carrier and the economy and viability of air services. In 1966, the services to be provided by regional carriers were identified. Since that time, public policy has endeavored to ensure that these services were provided, on an economic basis and in the public

interest. However, public policy has been unsuccessful in achieving its objectives, for the regional carriers continue to be faced with severe problems and must improve the basis on which they are operating.

The Air Transport Committee of the Canadian Transport Committee is responsible for the granting of licences to carriers. An airline wishing to begin a new service or abandon an existing route must make an application to the Committee and generally a public hearing is held to determine the viability and rationale of the proposed plan. Until a request is made by a carrier, the public policy officials do not intervene. There is no provision for a separate public body which could investigate possibilities for improving the efficiency of the air transportation industry. The onus is on the carriers to devise new policies and programs, following which the Committee examines the proposal and either approves or rejects it. If more initiative were taken by public policy officials in terms of presenting proposals to the carriers, the airlines would have access to the advice of experts, designed to improve the economics and efficiency of the industry. A separate economic research and planning division would identify and permit the development of practical programs designed to enhance efficiency. However, to be successful, such a division must take an active part in presenting alternatives and policies to the carriers.

There also appears to be confusion regarding the payment of

subsidies to air carriers. In 1966, conditions for subsidy payments were outlined[15] and referred to the following situations:

a) Where an air service is needed to a remote area which requires the maintenance of regular air service for its existance; and where other means of transport are inadequate or nonexistant.

b) Where a developmental activity is involved and air service is essential to the support of that activity.

c) Where a regular route operation appears to have a good chance of success but requires support during the initial period of growth.

d) Where an established route needs to be withdrawn but gradual withdrawal is needed rather than immediate cessation.

e) Where by the payment of subsidies higher costs to the federal government, for example in the development of facilities or alternate transport may be avoided.

In spite of these conditions, a policy for the granting of need subsidies has never been implemented in Canada. There have been instances where TransAir has applied for a subsidy to operate a route over the prairies and has shown each segment of the route qualified for a subsidy under the conditions stated above. The Air Transport Committee reviewed the proposal and concluded that the conditions did not apply in any of the segments. Thus, no subsidy was granted.

The conditions for subsidy are vague and may be interpreted one way by a carrier and another way by public policy officials. The end result is that the decision to grant a subsidy is left to

the discretion of the government. This situation requires a re-appraisal of the conditions in order to establish an effective subsidy policy.

The air transportation industry is a regulated industry. As stated above and as depicted by various examples, all aspects of the industry are regulated by the Air Transport Board. Since the industry provides services so closely aligned with the public interest, regulation is essential in matters of route acquisition and abandonment, aircraft acquisition and frequencies and scheduling of flights. However, in order to have effective public policy, much more than this type of regulation is required. Public policy must be a source of information and assistance to air carriers. This applies to cases not only where a carrier has first proposed a new service or submitted an application. Public policy must take the initiative as well, providing the carriers with knowledge and proposals based on a view of the entire Canadian air transportation industry. In this way, with proposals coming from both the private and the public sector, steps may be taken toward the development of a truly efficient, economic and adequate air transportation system.

NOTES TO CHAPTER 3

[1]Central Northern Airways Limited, Annual Report, December 31, 1955.

[2]TransAir Limited, Annual Report, December 31, 1956.

[3]Ibid., December 31, 1965.

[4]Ibid., December 31, 1966.

[5]Ibid

[6]Air Transport Board, Decision Serial No. 2558, Ottawa, April 5, 1968.

[7]TransAir Limited, Annual Report, December 31, 1963.

[8]Ibid., December 31, 1964.

[9]Ibid., December 31, 1968.

[10]Air Transport Board, Decision Serial No. 2954, March 9, 1970.

[11]TransAir Limited, Annual Report, December 31, 1966.

[12]TransAir Limited, Report to the Shareholders, December 28, 1966.

[13]Winnipeg Tribune, November 9, 1970.

[14]Manitoba Business Journal, April, 1970.

[15]Air Transport Board Circular No. 61/66, Ottawa, 1966.

CHAPTER 4

EVALUATIONS AND CONCLUSIONS

A. TransAir Limited

TransAir Limited provides an interesting case for study. In many instances the company differs from a theoretical model of a small airline, for it does not suffer a great disadvantage from intra-modal competition, in fact such competition exists only to a limited degree, and product differentiation did not act as an obstacle when TransAir began serving Sault Ste. Marie and Toronto. On the other hand, product differentiation was a major obstacle when TransAir attempted to enter markets beyond its scope of operation, such as the international charter market.

TransAir operates as an oligopolist in northern Manitoba, and the third level carriers form the fringe of smaller carriers. However, in this region, TransAir actually enjoys a monopoly position. The third level carriers are apparently of no concern to the regional carrier for they do not provide regular scheduled commercial air service, they do not provide as convenient a service nor do they serve the same points, and they operate smaller aircraft with more limited capacity. TransAir does not even consider itself

to be in competition with the third level carriers.

TransAir is restricted from operating on more lucrative routes by the route protection afforded to Air Canada. However, there is some competition between Air Canada and TransAir on the Winnipeg - Toronto route. Obtaining this route was extremely beneficial for TransAir for it constituted a large city-pair link. Furthermore, TransAir was not adversely affected by any product differentiation disadvantage when it began serving the points Sault Ste. Marie and Toronto for it was a situation where a large demand existed for air services. These services were used to such a high degree that even after TransAir began to serve these points community organizations requested larger aircraft to provide greater capacity.

The major type of competition which TransAir faces is inter-modal. Since many of the local service routes are of a short-haul nature, the private automobile provides a substitute for air services on these routes. This may present an even greater problem as roads are improved, particularly in northern Manitoba.

TransAir also faces competition from rail transportation. Particular reference may be made to the TransAir proposal for an all-cargo service into northern Manitoba. The airline hoped to take advantage of the value of time element and planned to fly products from the North to Winnipeg. However, the shippers

seemed to ignore the time element, being concerned only with the difference in freight rates between these two modes of transportation. TransAir could not reduce freight rates to a level competitive with the railroad and still maintain the service. Some backhaul movement is required to bring the rates down for a one-way flow of goods requires an operation at a high enough load factor to yield an average load factor sufficient for a reasonable return on investment. If this is not possible, then a government subsidy is required if the service is to be maintained. It appears to be in the public interest to receive perishable products from the North by air rather than by rail.

The problems of short haul routes, low traffic density, seasonal variations in traffic and directionality of traffic flows have plagued TransAir in the past and continue to do so. However, the airline has adopted various policies in an attempt to overcome these difficulties. A plan has been instituted providing special rates for families, youths and senior citizens. In addition, discounts of up to 40 percent of the regular air fare are provided to residents of northern Manitoba. These have been initiated to provide incentives to utilize air transportation services and they have been successful in generating air traffic for the airline.

More changes still appear to be required such as perhaps

decreasing certain unit toll fares or changing the types of meals served during a flight. On some routes the cost saving to the airline by serving a less elaborate meal may be passed on to the traveller in the form of lower air fares. A passenger may well prefer such a change. The cost of air fares seems to be the major consideration with cargo and it may apply to passenger transportation as well. It may be well worthwhile for TransAir to give further attention to various methods of reducing some of its costs in serving passengers. Any possible cost savings may result either in high revenues or may be passed on to the travelling public in the form of lower fares.

Some proposals are conflicting and cannot be applied simultaneously but they offer a range of choice for TransAir. If fares are not changed and meals are still provided, TransAir could charge for food served during a flight. Other recommendations include eliminating the special discount fares on routes where present discounts are not paying for themselves by increasing the number of air travellers, eliminating fare benefits for children, reducing the free baggage allowance and/or increasing the excess baggage charges, reducing the discount on round-trip fares and introducing a surcharge on new equipment on special non-stop flights.

On some northern Manitoba routes, it appears that the

structure of individual fares is not reasonably set to match the structure of the costs for the individual service. An important question which should be asked by the airline officials is ...

> Do we have the optimum level and structure of prices for agressive marketing and profitable operations? It is this type of question which must be continually asked and answered if airline price policy is to keep pace with industrial advances and if the carriers are to retain the initiative in price policy formation.[2]

TransAir faces a serious problem of seasonal traffic variations. Thus, off-peak or off-season fares may not cover fully the allocated costs of providing the service but they may be desirable as a potential support to a level of operations built up to meet otherwise profitable on-season traffic. That is, the on-peak traffic could bear a higher proportional share of expense than would otherwise be allocated to it.[3] This may or may not complement a reduction of air fares for off-peak travel as an incentive to travel by air during slower seasons.

The airline should decide whether a basic change in the type or level of service would result in substantially different cost levels. For example, adding more seats may lower the cost plateau which would more nearly equate the cost with the revenue.

> Too often, unfortunately, the possibilities of breaking into a new cost plateau do not seem to be seriously considered by the carriers in their examination of present or prospective services and the fares which should be charged for each service.[4]

TransAir seems justified in charging rates per mile which vary with the length of the passenger trip. These fares should not be considered as unjust or unreasonable. An investigation of whether rates are reasonable or unreasonable questions

> ... whether a rate is too high or too low in relation to costs of performing the service and perhaps in terms of the value of the service to the customer.[5]

TransAir has been striving continually for changes in its route structure. It has applied to the Canadian Transport Commission for licences to serve new points, to change the type of service, such as from Class 1 to Class 2 service or vice versa, and most recently has received permission to consolidate certain routes, as discussed in Chapter 3. Since economies in air transport depend in part on improved routes, the need for route improvements need not be met through new and additional routes for the weaker carriers, but by a definite public policy for consolidation.[6]

In providing service to Northern Manitoba, TransAir has been granted permission to serve points on new licences, offering a different class of service, and has been able to consolidate

licences regarding service to the North. Frequencies have been increased to small communities, and more comfort, convenience and capacity is available on many northern routes due to the introduction of large turbo-prop equipment and pure jet aircraft.

TransAir policy concerning recent charter flights appears to have been very successful. The "Sun tour" charters to Acapulco, Barbados and the Bahamas have been particularly successful for the airline. This is one example where TransAir is operating a profitable service and is able to utilize its B-737 jet aircraft.

Conversely, TransAir has made many policy errors in the past. It purchased equipment noted for good economics but these characteristics did not apply to local service routes where stage lengths were short and traffic density was low. Furthermore, attempts were made by the airline to enter markets beyond its scope of operation. The equipment needed to provide mainline and international charter service could not be utilized economically on local service routes. The regional carrier could not operate profitably in competition with large trunk carriers.

The airline did not plan adequately nor take into full consideration the long run implications of its actions. It appears that the major concern was for the short run. If an international charter service appeared to be profitable, the company wanted to offer such service. If larger equipment was required for such service, attempts

were made to acquire it, even though these aircraft were not suited to the role of a regional carrier providing local service to remote communities. If the particular service proved uneconomical, it was abandoned and attempts were made to utilize the larger aircraft on short haul routes. As this type of utilization was not economical, the aircraft were later disposed of. Much effort and cost could have been avoided if these implications had been foreseen initially.

In such instances, TransAir exemplifies an airline searching for any and all means of developing new services without, however, adequate research into whether or not it was suited to a particular type of service.

An important question to be answered, not only by TransAir but also by public policy officials is whether Manitoba's economic base provides sufficient demand for present and continuing regional air services. TransAir believes that the present economic environment does provide sufficient demand, and future expectations seem quite optimistic. Nevertheless, in spite of this optimism, there are problems in effective and long-range forecasting in the air transport industry. Traffic growth is affected by the growth and distribution of national income, the reduction of air fares relative to surface fares, improvements in the quality of air services taking account of

speed, comfort, regularity and safety, and the increasing acceptance of air travel as an ordinary means of transport.[7]

In attempting to determine future trip generation it is important to consider employment turnover in the mining and forestry industries of northern Manitoba, which may be considered as a major source of air travel demand in this area. Account must be taken of innovation and technological advancement. For instance, the hovercraft and track air-cushion vehicle may be possible replacements for aircraft as the future means of northern transportation. Furthermore, improvements in the northern roadway system are bound to have implications for air transportation and these changes will affect investment decisions.

In general, the further development of strong regional air carriers is the only solution for the transportation needs of smaller Canadian centres and the most realistic method of serving the public on relatively short-haul routes. More specifically, TransAir has been providing useful and much needed service over the prairies and to Northern Manitoba. It has helped greatly in the development of these areas as well as providing local air service and supplemental feeder services. This airline has been more and more successful in recent years even without direct government subsidies, and policies have been implemented to improve its financial position. With more

emphasis on research and analysis and with more assistance from public policy officials, it should be possible for TransAir to improve its economic base in the future and to overcome its major problems.

B. The Regional Air Carriers

This study has investigated the operations, positions and problems of the Canadian regional air carriers. By comparing the role of these carriers to that of a mainline operation, it becomes apparent why this former group has had a difficult time in establishing and maintaining profitable operations.

Differences exist even among the five regional airlines. Although they all tend to face a problem of short-haul flights, not all their flights are short. Pacific Western Airlines serves some routes which are short to medium range. TransAir Limited serves a lucrative route to Sault Ste. Marie and Toronto.

A very serious problem has arisen from the low traffic density in many of the areas served. These areas cannot be denied air transportation services merely because there is not as much traffic as on the mainline routes. There is an important question of public convenience and necessity. Smaller communities and isolated centers in northern Canada have the same medical, social and economic needs as large urban cities,

and perhaps their needs for air services are even more pressing since access to other modes of transportation is extremely limited or non-existant.

In the past the mainline carriers have been able to abandon services on unprofitable routes, passing them down to the second level carriers where it was felt that a definite need for air service existed. However, these routes reaching the regional carrier level, could not be passed down any further. Unprofitable or not, the service had to be provided and the regional carriers were left with the problem of providing the service and attempting to cope with the difficulties. They have had to deal with low average load factors, which result in higher operating costs and which adversely affect the utilization of larger more economic aircraft.[8]

Over the years, the regional carriers have expanded the scope of their operations tremendously. From small organizations flying bush operations, they have developed successful Class 1 Scheduled commercial air services and Class 2 services domestically, and charter operations on an international scale. As can be seen from the Air Transport Board decisions, continual requests are being made to upgrade service and expand routes. Many of the requests are denied, particularly where a subsidy is involved, for the Canadian Transport Commission tends to adhere to a

"use it or lose it" policy. That is, a particular route may not generate sufficient traffic to cover the cost of operation. When applying for a subsidy to help cover costs, the regional carriers are unsuccessful, for the Canadian Transport Commission decides that there is not enough traffic (the service will not be used sufficiently) and the cost to the government would be too high to warrant giving a subsidy, so the route is lost - lost to the air carrier and lost to the communities.

It might be advantageous to consider a proposal for the amalgamation of the regional carriers. The scheme would involve the merging of the five carriers into one large airline. The same regions which are now being covered would continue to be serviced, but by one large airline. The same type of services could also be maintained. There would however, be one central management, perhaps with representatives from the five carriers, to make all the decisions which are now being made on an individual airline basis.

There could be one large maintenance base similar to the Air Canada system at Montreal, while smaller repair and maintenance shops would exist at various locations in Canada. There would be greater possibilities of achieving economies of scale in the area of maintenance expense at the main base, while

the branch plants could look after the smaller aircraft still in use.

This one airline would be able to adopt a system of organization similar to that of a large airline as illustrated in Chapter 2, allowing for possible economies of firm size. Each airline now has a separate department for finance, marketing and other areas, but there are not enough divisions to permit the specialization that could exist. There are duplications five times over of these departments each one on a relatively small scale. Under the amalgamation scheme the duplication would be eliminated as would be the wasteful use of resources which this duplication entails. More divisions could be created allowing for the detail and specialization which could prove very beneficial to the airline.

There would be an opportunity for route consolidation among all the areas presently served, for there would be one large region. Thus, route segments would be increased to some extent, reducing the problem of short hauls. With the increase in stage length on some of the flights, the acquisition of larger aircraft would become more feasible, permitting the lower operating costs associated with these larger, short-medium range aircraft. Operating costs could then be apportioned to a

greater number of available seat miles and available ton miles bringing down the average costs of the airline.

Perhaps more air traffic could be generated, for a greater variety of routes would be available, offering flights on the same aircraft across areas which are now in separate regions. Under the present system, one regional carrier is not permitted to serve any point outside of its region. Perhaps this new proposal could also help to reduce the problem of directionality of traffic flows since any one point would be linked to a greater number of points than at the present time.

A merger could yield savings in cost, such as station costs, from the elimination of duplicated facilities, and economies may be realized through the merging of duplicate plants and operations, the elimination of operating restrictions on local service routes and the increase in revenue from system traffic growth.

The regional carriers are required to operate on some unprofitable routes abandoned by the mainline carriers, but they should be given a greater opportunity to realize profits. At least to some extent, the losses incurred by the regional carriers are related to uneconomic practices which appear to be in the interests of the public. In addition, a coordinated system of investment could secure the economies that can be achieved when an airline utilizes a uniform type of aircraft.

As far as subsidies are concerned, the Canadian Transport Commission can at present be faced with requests for financial aid from five carriers. As has been the practice in the past, such subsidies have not been forthcoming to them. There has been no system of need subsidies for the regional carriers. Under the merger proposal, either the new company would have a better bargaining position to obtain financial aid, or else through the larger scale of operations the company could become a profitable operation.

C. Public Policy

Public policy in air transportation is concerned with promoting and developing the air transport industry. It is industry-oriented rather than being concerned primarily with exogenous goals such as regional development. With such a policy, conflicts may arise between federal regulatory agencies and provincial interests who are concerned more with the development of the region. Such conflicts may make it difficult for the two levels of government to work in harmony.

A representative of the Canadian Transport Commission stated that this body is concerned with regulating public carriers. It was implied that exogenous factors if considered at all, rank only a poor second. When asked about such matters as the public interest, community and regional development and benefits and costs to particular areas, he stated that there were other departments in the ministry concerned with such matters.

According to a Royal Commission Report on Transportation in 1961, public policy is concerned with the effective use of transportation resources in Canada.

> Its primary function is to ensure that the transport system provides the comprehensive service which is economically adequate for the transportation needs of the country as a whole.[9]

In Canada, transportation services are being provided to small communities lying outside of large urban centres, as well as to large cities. However, when discussing regional air carriers one may question whether the service is indeed economic, for the economic base of these carriers is weak. There were requests made by TransAir Limited for subsidies over prairie routes because these routes were not profitable in themselves. Yet the Canadian Transport Commission ruled against subsidizing the service. Perhaps if such service is not utilized, the transportation system will still be adequate even without this particular route. If this is the case, one cannot argue that transportation services in Canada are not adequate even though a particular route is not being served.

In reality, the goals of public policy may be conflicting. There is a wish to provide service for the public convenience and necessity, and also to meet the needs of the commercial air carriers. As stated by the Royal Commission in 1961,

> The principal requirements for an effective national transportation policy are:
> It should permit access to markets by the most direct routes and by the most efficient means;
> It should provide that combination of transportation facilities which yield maximum economies to producers and consumers and reasonable returns on invested capital.[10]

Conflicts can arise between public policy officials and the carriers themselves. For instance, the regional carrier policy of 1966 permitted some competition between mainline and regional carriers but Air Canada was still to be protected. In contrast, the regional carriers desire the removal of mainline carriers from short but lucrative links which are really feeder lines. Such a transfer would assist the regional carriers financially and permit them to develop air traffic which could feed the larger airlines or tie in with other carriers. Such a desire appears to be sound but who is to decide which routes should be taken from the mainline carriers? If it is left up to the discretion of the Canadian Transport Commission, the decision may not be in favor of the regional carriers. Perhaps more study is needed to determine exactly what length of route or which specific routes, by name, could qualify for transfer to the regional carriers.

The Canadian Transport Commission was given the responsibility to decide upon matters of subsidization. In the National Transportation Act, it was given the power and duty to

> ... inquire into and report to the Minister upon possible financial measures required for direct assistance to any mode of transport and the method of administration of any measures that may be approved ... [11]

The Commission judges on matters of subsidy according to conditions

set out in the regional carrier policy of 1966, as listed previously in this paper. However, even with these conditions outlined, problems may arise in particular cases. As in the case of TransAir Limited, the airline officials showed how various points on the proposed prairie service met the conditions, while the Canadian Transport Commission ruled that none of the conditions were met. Perhaps the airline was misinterpreting these conditions to suit its own purpose, or perhaps the conditions themselves are so vague that some changes are required in the policy regarding subsidies to regional air carriers.

The regional carrier policy of 1966 also has provisions for government involvement in aircraft acquisitions by the carriers.

> Steps will be taken to assist regional carriers to deal with acquisition of aircraft by development of a scheme for consultation between government and the carriers regarding plans for new aircraft; and by a special investigation designed to explore the possibility of developing a joint approach to this problem on the part of the carriers.[12]

The National Transportation Act states that it is most likely to achieve the objectives of an economic, efficient and adequate transportation system for the economic well-being and growth of Canada when all modes of transportation can compete under conditions where:

(a) regulation of all modes of transport will not be of such a nature as to restrict the ability of any mode of transport to compete freely with any other modes of transport;

(b) each mode of transport, so far as practicable, bears a fair proportion of the real costs of the resources, facilities and services provided that mode of transport at public expense;

(c) each mode of transport, so far as practicable, receives compensation for the resources, facilities and services that it is required to provide as an imposed public duty ... [13]

Condition (a) does not appear to apply in the case of the regional carriers for they have been restricted from competing on lucrative routes. This is the case unless condition (a) refers to inter-modal competition and not intra-modal competition. In such a case condition (a) holds, for in their specific areas, the regional carriers are free to compete with water, rail and road transport.

As for condition (c), reference could be made to government subsidies, in which case this condition does not apply in the case of regional carriers. As stated earlier, no system of need subsidies has been developed. However, this condition may merely refer to compensation in the form of air fares which should yield sufficient revenues to the carriers to pay for the services. However, in the case of many local service routes even this interpretation does not apply. In spite of all the legislation regarding public policy, the government should

support the regional carriers if it is the government's intention to support the regional services as a public service to small communities.

Public policy claims to want to develop air services but not only for reasons of commercial profit. It desires to meet the needs of the travelling public, to ensure the highest standards of service, the lowest possible fares, and the maximum amount of choice. These goals are desirable, but more active intervention is required to accomplish them. For instance, TransAir cannot reduce fares in Northern Manitoba, facing the costs it does (as discussed in Chapter 3), and still continue to operate.

The government should investigate the matter of airport and runway facilities, for instance in Northern Manitoba. Many improvements are still needed, and lack of them entail inconvenience for the public and interference with regional carrier plans for aircraft acquisition and utilization. An investigation should also be made into the nature of fuel costs in Northern Manitoba. This problem is seriously affecting TransAir and perhaps some methods could be found of lowering these costs.

Finally, it may be of practical interest to consider a scheme for the amalgamation of the regional air carriers. The benefits of such a merger have already been outlined, but the proposal may imply a change in the policy governing the operations of these carriers. In view of the difficulty of forecasting the future for air transport, it is difficult to say in what position these carriers will be in a few years time. Certainly the major difficulties have not disappeared over the past years. Perhaps a viable solution is the formation of a single company which will continue to provide regional air services but which may not have to face the problems which currently affect the regional carriers adversely and which would be likely to extend into the future. This proposal as well as the other foregoing public policy alternatives are made in accordance with the objectives of providing an economic, efficient and adequate transportation system for Canada.

NOTES TO CHAPTER 4

[1]Paul Cherington, Airline Price Policy, Harvard University, Boston, 1958, p. 427.

[2]Ibid., p. 456.

[3]Ibid., p. 65.

[4]Ibid., p. 66

[5]Ibid., p. 114.

[6]Ibid., p. 153.

[7]Stephen Wheatcroft, Air Transport Policy, Michael Joseph, Ltd., London, 1964, p. 64.

[8]D. A. Anderson, "Airline Self-Sufficiency and the Local Air Service Problem," Journal of Air Law and Commerce, Vol. XXI, Winter, 1954, pp. 1 - 14.

[9]Royal Commission on Transportation, Vol. II, Queen's Printer, Ottawa, December 1961, p. 180.

[10]Ibid., p. 438.

[11]National Transportation Act, Queen's Printer, Ottawa, February 9, 1967, p. 602.

[12]Air Transport Board, Circular No. 62/66, Regional Aviation Policy, Ottawa, 1966.

[13]National Transportation Act, p. 595.

TABLE 1

OPERATING STATISTCIS
TRANSAIR LIMITED

	Year Ending 1970	1969	1968	1967	1966
Operating Revenue	$14,023,737	11,028,544	6,363,437	5,739,787	6,011,522
Operating Expenses:					
General and Administrative	11,605,588	10,384,743	5,910,657	5,137,770	5,373,451
Depreciation and Amortization	1,601,953	1,551,182	877,688	768,902	881,385
Income (Loss) Before Income Taxes	22,984	(1,411,707)	-	-	(256,470)
Net Income (Loss) for the Year	21,984	(2,058,964)	(651,868)	(184,624)	(256,470)
Balance at End of Year	(917,464)	(939,448)	182,531	876,579	-
Total Current Assets	3,473,141	3,246,284	1,647,115	1,625,328	1,701,591

SOURCE: Calculated from Dominion Bureau of Statistics, Civil Aviation, Annual Reports, 1966-1970.

TABLE 2

FUEL COST COMPARISONS

Location	Price - Cents/Gallon
Montreal	14
Toronto	15
Sault Ste. Marie	19
Winnipeg	16
Regina	19
Saskatoon	20
The Pas	25
Flin Flon	29
Lynn Lake	34
Thompson	31
Gillam	34
Churchill	27
Norway House	48

Fuel costs comprise 21 percent of direct operating costs of jet aircraft.

TABLE 3

COMPARISON OF SERVICES - SCHEDULED CLASS 1 - NORTHERN
CLASS 2 - MANITOBA

Winnipeg	1968	1969	1970	1971
The Pas	Viscount* DC-3, DC-4	YS-11 DC-3, DC-4	YS-11** B737	B737
Flin Flon	Viscount DC-3, DC-4	YS-11 DC-3, DC-4	B737 YS-11	B737
Lynn Lake	Viscount DC-3, DC-4	YS-11, DC-4	B737 YS-11	B737
Thompson	Viscount DC-4	YS-11 DC-6, DC-4	B737 YS-11	B737
Churchill	DC-4	YS-11, HS748 DC-4	HS748 DC-4	B737, HS748
Gillam	DC-3	HS748, DC-3	HS748, DC-4	B737, HS748

* Viscount introduced September 15, 1968.

** B737 introduced April 26, 1970.

SOURCE: TransAir System Time Tables, 1968 - 1971.

APPENDIX A

Group I Carriers:	Mainline or first level air carriers. They are also referred to as transcontinental carriers and include Air Canada and C P Air. They are Canadian air carriers licenced to perform domestic and international scheduled services.
Group II Carriers:	Regional or second level carriers. They belong in financial group II and are Canadian air carriers other than Group I carriers licenced to perform domestic scheduled services. (Nordair Ltd. is considered to be in Group III for statistical purposes.)
Group III Carriers:	Local service or third level carriers. They are Canadian air carriers not included in Groups I and II with either annual unit toll and bulk transportation revenues of over $500,000 or unit toll revenues of over $150,000.

SOURCE: Dominion Bureau of Statistics, Civil Aviation, Ottawa, June 1970, Glossary.

APPENDIX B

A scheduled carrier refers to an airline having a Class 1 or Class 8 licence to perform scheduled unit toll operations. A scheduled carrier may also provide services under authority of Class 2, 9-2, 3 or 9-3 licences which are considered to be non-scheduled. Hence, when speaking of the number of scheduled miles of an airline, one is referring to the number of miles scheduled as per time tables but not necessarily actually flown on unit toll services.

Unit toll service refers to transportation services performed under the following classes of licence as issued by the Air Transport Committee of the Canadian Transport Commission:*

Class 1 or Class 8 licences which are scheduled service licences, authorizing public transportation of persons and/or goods between designated points in accordance with a service schedule and at a price per passenger per mile or per pound per mile;

* SOURCE: Dominion Bureau of Statistics, Civil Aviation, Ottawa, 1970, Glossary

Class 2 or Class 9-2 licences which are regular specific point licences, authorizing public transportation of persons and/or goods between designated points on a route pattern and with some degree of regularity at a price per person per mile or per pound per mile;

Class 3 or Class 9-3 licences, which are irregular specific point licences authorizing public transportation of persons and/or goods from a designated base serving a defined area or specific point or points at a price per person per mile or per pound per mile.

A non-scheduled carrier refers to a regular, irregular and specific point air carrier which includes any carrier having a Class 2, 9-2, 3 or 9-3 licence to perform regular or irregular unit toll service to specific points. Class 1 or Class 8 licencees are considered to be scheduled carriers.

In addition to unit toll transportation, an air carrier may also provide bulk transportation, which refers to transportation performed under the following classes of licence as issued by the Air Transport Committee of the Canadian Transport Commission:*

*SOURCE: Dominion Bureau of Statistics, Civil Aviation, Ottawa, 1970, Glossary

Class 4 or Class 9-4 licences, which are charter licences authorizing public transportation of passengers or goods from a designated base at a toll per mile or per hour for the charter of all or part of the capacity of an aircraft;

Class 5 or Class 9-5 licences, which are contract licences authorizing transportation which is not available to the public performed in accordance with one or more specific contracts.

Three main groups are used by airlines in their charter operations.*

Classification

Pro Rata - refers to a charter in which the passengers transported share in part or in full the cost of transportation.

Entity - refers to a charter in which the cost of transportation of passengers or cargo is paid by one person, company or organization and is for his (its) own account. That is, in the case of a passenger charter, none of the cost of transportation is shared wholly or partially.

*SOURCE: Dominion Bureau of Statistics, International Air Charter Statistics, Ottawa, 1970, Glossary.

directly or indirectly with other persons availing themselves of such transportation.

Inclusive Tour - refers to a round or circle trip performed in whole or in part by air for an inclusive tour price which includes as a minimum the cost of transportation and accommodation for the period the participants are away from the starting point of the journey and may include other services and facilities.

APPENDIX C

ECONOMIES OF SCALE

TABLE C1

Airline	Flying Operations Expense ($000's)	A.S.M. (000's)	Unit Cost (Cents)
Air Canada	77,222	9,007,816	.85
C P A	26,397	3,434,853	.76
P W A	11,923	273,235	4.36
TransAir	3,742	112,305	3.33
Quebecair	2,719	88,692	3.06
E P A	2,872	7,526	38.16

SOURCE: Calculated from Dominion Bureau of Statistics, Civil Aviation, Quarterly Report, September 1970, Year-to-Date.

TABLE C2

Airline	Maintenance Expense ($000's)	A.S.M. (000's)	Unit Cost (Cents)
Air Canada	62,951	9,007,816	.69
C P A	14,393	3,434,853	.41
P W A	4,830	273,235	1.76
TransAir	1,528	112,305	1.36
Quebecair	1,335	88,692	1.50
E P A	2,412	7,526	32.04

SOURCE: Calculated from Dominion Bureau of Statistics, Civil Aviation, Quarterly Report, September 1970, Year-to-Date.

TABLE C3

Airline	Aircraft and Traffic Services Expenses ($000's)	A.S.M. (000's)	Unit Cost (Cents)
Air Canada	56,681	9,007,816	.62
C P A	13,715	3,434,853	.39
P W A	4,916	273,235	1.79
TransAir	1,156	112,305	1.02
Quebecair	459	88,692	.51
E P A	1,445	7,526	19.20

SOURCE: Calculated from Dominion Bureau of Statistics, Civil Aviation, Quarterly Report, September 1970, Year-to-Date.

TABLE C4

Airline	General and Administration Expense ($000's)	A.S.M. (000's)	Unit Cost (Cents)
Air Canada	14,683	9,007,816	.16
C P A	6,674	3,434,853	.19
P W A	1,795	273,235	.65
TransAir	463	112,305	.41
Quebecair	483	88,692	.54
E P A	523	7,526	6.94

SOURCE: Calculated from Dominion Bureau of Statistics, Civil Aviation, Quarterly Report, September 1970, Year-to-Date.

TABLE C5

Airline	Total Operating Expense ($000's)	A.S.M. (000's)	Unit Cost (Cents)
Air Canada	343,502	9,007,816	3.80
C P A	107,989	3,434,853	3.14
P W A	30,287	273,235	11.08
TransAir	8,387	112,305	7.46
Quebecair	7,235	88,692	8.15
E P A	9,655	7,526	$1.28

SOURCE: Calculated from Dominion Bureau of Statistics, Civil Aviation, Quarterly Report, September 1970, Year-to-Date.

TABLE C6

Airline	Flying Operations Expense ($000's)	A.S.M. (000's)	Unit Cost (Cents)
Air Canada	80,849	8,920,075	.91
C P A	27,477	3,362,525	.82
P W A	12,657	415,277	3.05
TransAir	4,586	189,883	2.42
Quebecair	2,912	114,504	2.54
E P A	3,167	8,960	35.35

SOURCE: Calculated from Dominion Bureau of Statistics, Transcontinental and Regional Air Carrier Operations, Year-to-Date, September, 1971.

TABLE C7

Airline	Maintenance Expense ($000's)	A.S.M. (000's)	Unit Cost (Cents)
Air Canada	61,142	8,920,075	.69
C P A	14,001	3,362,525	.42
P W A	5,661	415,277	1.36
TransAir	1,588	189,883	.84
Quebecair	1,429	114,504	1.25
E P A	2,458	8,960	27.43

SOURCE: Calculated from Dominion Bureau of Statistics, Transcontinental and Regional Air Carrier Operations, Year-to-Date, September, 1971.

TABLE C8

Airline	Aircraft and Traffic Services Expense ($000's)	A.S.M. (000's)	Unit Cost (Cents)
Air Canada	59,183	8,920,075	.66
C P A	15,458	3,362,525	.46
P W A	4,460	415,277	1.07
TransAir	1,267	189,883	.67
Quebecair	602	114,504	.53
E P A	1,495	8,960	16.69

SOURCE: Calculated from Dominion Bureau of Statistics, Transcontinental and Regional Air Carrier Operations, Year-to-Date, September, 1971.

TABLE C9

Airline	General and Administration Expense ($000's)	A.S.M. (000's)	Unit Cost (Cents)
Air Canada	16,690	8,920,075	.19
C P A	7,298	3,362,525	.22
P W A	1,848	415,277	.45
TransAir	684	189,883	.36
Quebecair	644	114,504	.56
E P A	579	8,960	6.46

SOURCE: Calculated from Dominion Bureau of Statistics, Transcontinental and Regional Air Carrier Operations, Year-to-Date, September, 1971.

TABLE C10

Airline	Total Operating Expense ($000's)	A.S.M. (000's)	Unit Cost (Cents)
Air Canada	359,056	8,920,075	4.03
C P A	113,045	3,362,525	3.36
P W A	30,325	415,277	7.30
TransAir	10,021	189,883	5.28
Quebecair	8,160	114,504	7.13
E P A	10,650	8,960	$1.19

SOURCE: Calculated from Dominion Bureau of Statistics, Transcontinental and Regional Air Carrier Operations, Year-to-Date, September, 1971.

APPENDIX D

D-1

TRANSAIR OPERATIONS

LICENCES & POINTS SERVED

TransAir Limited is licenced to perform the following air services:

	Licence Number	Class of Service		Licenced Base or Major Point
	502/50 (S)	1	X	Winnipeg
	583/57 (S)	1	X	Winnipeg
Susp.	260/60 (CF)	8	X	Winnipeg
	818/57 (NS)	2	X	Winnipeg
n.p.	815/57 (NS)	2	X	The Pas
Susp. in part n.p.	852/57 (NS)	2	X	Flin Flon/Lynn Lake
n.p.	1277/61 (NS)	2	X	Churchill
	540/50 (NS)	3	X	Churchill
	541/50 (NS)	3	X	Churchill
	162/47 (C)	4A		Pickle Lake
	162/47 (C)	7RF		Pickle Lake
	161/47 (C)	4A		Lac du Bonnet
	161/47 (C)	7RF		Lac du Bonnet
	701/53 (C)	4A	XX	Lynn Lake
	701/53 (C)	7RF		Lynn Lake
	163/47 (C)	4A		Sioux Lookout
	163/47 (C)	7RF		Sioux Lookout
	766/55 (C)	4A		Winnipeg
	222/55 (CF)	9-4		Winnipeg
	766/55 (C)	7RF		Winnipeg

X other points are served from this base
XX no protection at this base.

Licence Number	Class of Service	Licenced Base or Major Point
255/47 (C)	4AB	Churchill
197/51 (CF)	9-4	Churchill
255/47 (C)	7RF	Churchill
255/47 (C)	7AIRA	Churchill

The foregoing classes of licences refer to the following types of service:

1 - Class 1 Scheduled

2 - Class 2 Regular Specific Point

3 - Class 3 Irregular Specific Point

4A - Class 4 Group A Charter

4B - Class 4 Group B Charter

7RF - Class 7 Specialty Recreational Flying

7AIRA - Class 7 Specialty Aerial Inspection, Reconnaissance and Advertising

8 - International Scheduled

9-4 - International Non-Scheduled Charter

D-3

TRANSAIR LIMITED

Flight	Points Served
131	Thompson - Gillam - Churchill
132	Churchill - Gillam - Thompson
133	Winnipeg - Gillam - Thompson - Churchill
134	Churchill - Thompson - Gillam - Winnipeg
135	Winnipeg - Thompson - Lynn Lake
136	Lynn Lake - Flin Flon - The Pas - Winnipeg
137	Winnipeg - The Pas - Flin Flon - Lynn Lake
302	Winnipeg - Red Lake - Dryden
303	Dryden - Red Lake - Winnipeg
343	Toronto - Sault Ste. Marie - Thunder Bay - Dryden - Kenora - Winnipeg
344	Winnipeg - Kenora - Dryden - Thunder Bay - Sault Ste. Marie - Toronto
431	Churchill - Coral Harbour
432	Coral Harbour - Rankin Inlet - Churchill
435	Churchill - Baker Lake
436	Baker Lake - Rankin Inlet - Churchill
437	Churchill - Eskimo Point - Rankin Inlet - Baker Lake

D-4

Flight	Points Served
438	Baker Lake - Rankin Inlet - Eskimo Point - Churchill
439	Churchill - Eskimo Point
440	Eskimo Point - Churchill
447	Churchill - Rankin Inlet - Coral Harbour - Repulse Bay
448	Repulse Bay - Coral Harbour - Churchill
715	Winnipeg - Thompson - Lynn Lake
716	Lynn Lake - Flin Flon - The Pas - Winnipeg
718	Thompson - Winnipeg
721	Winnipeg - Thompson - Churchill
722	Churchill - Winnipeg
723	Winnipeg - The Pas - Flin Flon - Lynn Lake
737	Toronto - Thunder Bay - Winnipeg - Thompson
738	Lynn Lake - Thompson - Winnipeg - Thunder Bay - Toronto

D-5

MIDWEST AIRLINE

Flight	Points Served
111	Winnipeg - Norway House
112	Norway House - Winnipeg
105	Norway House - The Pas
106	The Pas - Norway House
201	Winnipeg - Brandon
202	Brandon - Winnipeg
203	Winnipeg - Dauphin - Yorkton
204	Yorkton - Dauphin - Winnipeg
205	Winnipeg - Brandon
206	Brandon - Winnipeg
302	Winnipeg - Red Lake
303	Red Lake - Winnipeg

SOURCE: TransAir System Time Table, Effective October 31, 1971.

APPENDIX E

TABLE E1

DIRECTIONALITY OF TRAFFIC
PASSENGERS (NUMBER)

	June 1970	Sept. 1970	Jan. 1971	Feb. 1971	Mar. 1971
Monday	820 - 433	692 - 434	978 - 478	809 - 400	971 - 558
Tuesday	668 - 478	942 - 643	809 - 451	466 - 406	833 - 717
Wednesday	513 - 574	529 - 629	556 - 549	694 - 637	529 - 607
Thursday	603 - 635	318 - 672	514 - 631	490 - 700	511 - 729
Friday	556 - 798	344 - 832	409 - 703	463 - 849	465 - 774
Saturday	669 - 711	436 - 604	474 - 513	262 - 366	323 - 352
Sunday	276 - 222	267 - 132	370 - 268	254 - 153	235 - 133

June Flights - 123/124, 125/126, 127/128, 135/136.

Sept. Flights- 123/124, 125/126, 127/128, 135/136.

Jan. Flights - 723/738, 715/716, 737/718

Feb. Flights - 723/738, 715/716, 737/718

Mar. Flights - 723/738, 715/716, 737/718

TABLE E2

DIRECTIONALITY
CARGO (000 POUNDS)

	1967	1968	1969	1970	
Northbound	653	1,222	1,647	2,347	
Southbound	328	447	564	893	
TOTAL	981	1,669	2,211	3,240	
		PERCENTAGES			Average
Northbound	66	73	74	72	71%
Southbound	34	27	26	28	29%

APPENDIX F

F-1

SEASONAL VARIATIONS IN TRAFFIC FLOWS - 1970

REVENUE PASSENGER MILES (000)

(ALL SERVICES)

Airline	Jan	Feb	Mar	Apr.	May	June	July	Aug.	Sept.	Oct	Nov	Dec
Air Canada	489,115	434,582	562,633	503,448	600,035	729,445	845,019	901,645	694,679	500,136	401,826	490,880
C.P.Air	172,646	156,283	197,348	184,901	233,649	259,536	313,688	333,093	262,891	179,141	132,508	175,514
P.W.A.	34,150	21,753	30,464	28,565	47,877	66,024	80,414	83,209	58,686	26,526	18,991	27,860
TransAir	5,381	4,823	5,376	6,783	10,101	11,088	12,738	14,402	11,724	10,885	9,795	10,146
QuebecAir	5,179	5,543	8,094	6,861	7,051	7,431	8,522	9,110	8,001	7,360	7,425	8,836
E.P.A.	5,478	5,200	6,502	7,105	8,511	9,878	13,354	14,999	10,594	9,892	9,884	10,508
Nordair	10,028	9,408	10,075	9,054	8,352	8,642	10,009	11,754	10,148	8,809	10,134	10,917

SOURCE: Calculated from Dominion Bureau of Statistics, Transcontinental and Regional Air-Carrier Operations, Monthly Reports for 1970.

F-2

NUMBER OF PASSENGERS

ALL SERVICES - UNIT TOLL

CLASS I LICENCE

Airline	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Air Canada	565,037	529,302	648,391	664,008	623,670	693,212	731,633	782,351	668,709	559,922	496,759	558,538
C.P.Air	99,332	89,244	112,460	104,382	128,821	142,864	156,816	170,012	142,573	111,768	85,752	109,211
P.W.A.	61,169	53,438	67,012	61,623	68,663	73,724	86,133	92,058	79,804	76,957	65,450	80,423
TransAir	14,130	12,698	14,302	15,257	23,713	26,561	27,097	29,472	26,838	23,673	22,302	25,163
QuebecAir	14,394	13,935	17,888	16,886	17,750	22,910	22,005	22,102	21,031	19,083	15,994	18,032
E.P.A.	13,247	13,058	14,925	16,722	19,516	22,780	30,120	34,255	25,193	23,174	20,699	23,008
Nordair	9,749	10,453	12,938	10,370	11,466	10,117	13,920	16,461	12,486	11,400	10,888	11,848

SOURCE: Calculated from Dominion Bureau of Statistics, Transcontinental and Regional Air-Carrier Operations, Monthly Reports, 1970.

F-3

AVAILABLE SEAT MILES (000)

UNIT TOLL SERVICE

CLASS I LICENCE

Airline	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Air Canada	906,994	812,467	942,128	875,130	955,388	1,066,045	1,479,631	1,188,492	1,081,541	938,942	803,334	902,216
C.P.Air	356,600	320,864	356,181	334,832	401,653	396,136	427,685	429,973	410,929	386,063	337,514	362,406
P.W.A.	33,439	32,076	26,734	25,605	27,000	28,644	28,578	29,075	42,084	31,623	26,992	32,998
TransAir	6,783	6,121	6,704	8,111	16,886	16,969	16,359	17,396	16,976	15,511	15,183	16,592
QuebecAir	9,685	8,496	9,918	9,392	9,290	10,333	11,984	11,911	7,682	8,403	9,397	10,563
E.P.A.	845	761	903	819	841	781	883	898	795	787	777	851
Nordair	-	-	-	-	-	-	-	-	-	-	-	-

SOURCE: Calculated from Dominion Bureau of Statistics, Transcontinental and Regional Air-Carrier Operations, Monthly Reports, 1970.

F-4

PASSENGER LOAD FACTOR (PERCENT)

UNIT TOLL SERVICE

CLASS I LICENCE

Airline	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Air Canada	53.6	52.8	58.7	50.0	57.4	60.1	63.1	67.5	58.5	50.9	48.8	53.9
C.P.Air	47.3	46.2	51.7	52.7	52.5	55.8	60.9	65.7	57.7	45.4	39.1	47.8
P.W.A.	42.4	40.2	61.4	59.1	58.7	60.3	69.2	74.1	44.9	55.8	55.1	56.3
TransAir	52.3	53.4	54.0	46.8	33.6	38.8	42.4	43.2	40.9	37.5	36.5	38.8
QuebecAir	48.2	51.5	53.7	52.8	59.0	61.9	61.8	58.8	87.4	69.0	53.1	49.8
E.P.A.	19.6	25.4	22.8	24.8	22.5	32.9	52.3	49.2	35.8	28.3	26.9	30.2
Nordair	-	-	-	-	-	-	-	-	-	-	-	-

SOURCE: Calculated from Dominion Bureau of Statistics, Transcontinental and Regional Air-Carrier Operations, Monthly Reports, 1970.

F-5

OPERATING INCOME (LOSS) ($000)

Airline	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Air Canada	(1,609)	(1,953)	1,229	(1,706)	2,054	6,126	7,161	11,595	4,645	(751)	(2,273)	-
C.P.Air	(655)	(881)	292	536	1,272	1,720	2,446	3,153	1,653	(390)	(1,932)	-
P.W.A.	(51)	(203)	411	(78)	257	273	455	412	(62)	(47)	(475)	-
TransAir	(87)	(62)	22	66	(94)	(82)	117	(14)	11	(18)	(190)	-
QuebecAir	(164)	(112)	(44)	(81)	(5)	14	(58)	(59)	41	(67)	(130)	-
E.P.A.	66	(257)	(157)	(30)	(51)	3	161	336	41	(18)	(179)	-
Nordair	(49)	(52)	66	103	91	242	342	413	120	119	403	-

SOURCE: Calculated from Dominion Bureau of Statistics, Transcontinental and Regional Air-Carrier Operations, Monthly Reports.

BIBLIOGRAPHY

GOVERNMENT DOCUMENTS

Air Transport Board, Circular No. 61/66, Ottawa, October 31, 1966.

Air Transport Board, Circular No. 62/66, Regional Aviation Policy, Ottawa, October 31, 1966.

Air Transport Board, Decision Serial No. 1386, Ottawa, February 26, 1960.

Air Transport Board, Decision Serial No. 1823, Ottawa, November 16, 1962.

Air Transport Board, Decision Serial No. 2054, Ottawa, September 25, 1964.

Air Transport Board, Decision Serial No. 2310, Ottawa, August 23, 1966.

Air Transport Board, Decision Serial No. 2550, Ottawa, February 22, 1968.

Air Transport Board, Decision Serial No. 2558, Ottawa, April 5, 1968.

Air Transport Board, Decision Serial No. 2610, Ottawa, September 13, 1968.

Air Transport Board, Decision Serial No. 2624, Ottawa, October 10, 1968.

Air Transport Board, Decision Serial No. 2913, Ottawa, January 29, 1970.

Air Transport Board, Decision Serial No. 2954, Ottawa, March 9, 1970.

Air Transport Board, Decision Serial No. 3083, Ottawa, December 23, 1970.

Air Transport Board, Decision Serial No. 3185, Ottawa, July 16, 1971.

Air Transport Board, Decision Serial No. 3193, Ottawa, July 16, 1971.

Air Transport Board, Decision Serial No. 3196, Ottawa, July 16, 1971

Department of Industry and Commerce, Manitoba, "Submission of the Manitoba Government on the Requirement for and Adequacy of Fixed Wing Commercial Air Services in Northern Manitoba, Province of Manitoba, April 1971.

Dominion Bureau of Statistics, Civil Aviation, Annuals for 1960 - 1970, Ottawa.

Dominion Bureau of Statistics, International Air Charter Statistics, 1970.

Dominion Bureau of Statistics, Transcontinental and Regional Air Carrier Operations, Monthly Reports, 1970.

House of Commons Debates, Queen's Printer, Ottawa, 1960 - 1970.

National Transportation Act, Queen's Printer, Ottawa, February 9, 1967.

Province of Manitoba, Royal Commission Inquiry into Northern Transportation, Queen's Printer for the Province of Manitoba, Manitoba, 1969.

Regional Air Carrier Policy, Ottawa, August 15, 1969.

Royal Commission on Transportation, Vol. II, Queen's Printer, Ottawa, December, 1961.

Statement of Principles for Regional Air Carriers, tabled in the House of Commons by the Minister of Transport, Ottawa, October 20, 1966.

Treasury Board, How Your Tax Dollar is Spent, Information Canada, Ottawa, 1971.

ARTICLES AND STUDIES

Adams, J. P., "Future Local Airline Service Depends on State Support," Journal of Air Law and Commerce, Autumn, 1953, pp. 403 - 415.

Adams, J. P., "Future of the Local Service Carriers versus Federal Subsidy," Journal of Air Law and Commerce, Spring, 1956, pp. 127 - 148.

Anderson, D. A., "Airline Self-Sufficiency and the Local Air Service Problem," Journal of Air Law and Commerce, Vol. XXI, Winter, 1954, pp. 1 - 14.

Barnes, Leslie O., "Airline Subsidies - Purpose, Cause and Control," Journal of Air Law and Commerce, Vol. XXVI, Winter, 1959, pp. 311 - 322.

Barnes, Leslie O., "Airline Subsidies - Purpose, Cause and Control," Part II, Journal of Air Law and Commerce, Vol.XXVII, Winter, 1960, pp. 29 - 44.

Berge, S., "Subsidies and Competition as Factors in Air Transport Policy," American Economic Review, Papers and Proceedings, May, 1951, pp. 519 - 529.

Boynton, C. M. "Airline Public Relations, "Journal of Air Law and Commerce, 1956, pp. 169 - 174.

Cherington, Paul W., "Objectives and Strategies for Airline Pricing," Journal of Air Law and Commerce, Summer, 1951, pp. 253 - 265.

Cline, Paul S., "Airline Scheduling, Route Patterns and Sales," Journal of Air Law and Commerce, 1956, pp. 164 - 169.

Crane, John B., "The Economics of Air Transportation," Harvard Business Review, Vol. XXII, Summer, 1944, pp. 495 - 508.

Dockser, R. D., "Airline Service Abandonment and Consolidation - A Chapter in the Battle Against Subsidization," Journal of Air Law and Commerce, Vol. XXXII, 1966, pp. 496 - 525.

Donahue, F. W. and Perry, B. E., "Airline Financing and Operational Problems," Journal of Air Law and Commerce, Vol. XXIII, 1956, pp. 151 - 155.

Elliott, T. S., "Development of Third Level Air Transportation," Journal of Air Law and Commerce, Vol. XXIX, 1963, pp. 182 - 204.

Financial Post, November 6, 1965.

Gadzik, J. G., "The New Contract Between Air Carriers and Passengers", Journal of Air Law and Commerce, Vol. XXIV, 1957, pp. 151 - 168.

Goodrick, M. G., "The Air Route Problem in the United States," Journal of Air Law and Commerce, 1951, pp. 281 - 298.

Gray, H. M. "The Airline Industry," The Structure of American Industry, (Walter Adams, ed.). Macmillan, New York, 1954.

"Greater Winnipeg Industrial Topics," Vol. 30. No. 2, The Industrial Development Board of Greater Winnipeg, Winnipeg, April, 1970.

Hall, Barre, "The Civil Aeronautics Board Policy Favoring Subsidy Reduction to Social Service Carriers: Its Role and Implementation in the Decisional Process," Part I, Journal of Air Law and Commerce, Vol. XXXIV, 1968, pp. 566 - 609.

Harris, Ralph, F., "The Economic Efficiency of Regional Air Carriers in the National Transportation System," Centre For Transportation Studies, University of Manitoba, Winnipeg, Manitoba, January, 1969.

Harvey, D., "Airline Passenger Traffic Patterns Within the United States," Journal of Air Law and Commerce, Vol. XVIII, Spring, 1951, pp. 157 - 165.

Koontz, Harold D., "Domestic Air Line Self-Sufficiency: A Problem of Route Structure," American Economic Review Vol. 42, 1952, pp. 103 - 125.

Koontz, Harold D., "Economic and Managerial Factors Underlying Subsidy Needs of Domestic Trunk Line Air Carriers," Journal of Air Law and Commerce, 1951, pp. 127 - 156.

Kramer, Walter, "The Selection of Travel Agents for the Selling of Air Travel," Journal of Air Law and Commerce Vol. XXVII, Winter, 1960, pp. 332 - 340.

Kuhn, Tills E., "New Approaches to Transport Research and Planning," York University, Toronto, November 19, 1968.

Manitoba Business Journal, April, 1970.

Mathews, Craig, "Certified Air Service at Smaller Communities: The Need for Service as a Determinant of Regulatory Policy," Journal of Air Law and Commerce, Vol. XXXIV, 1968, pp. 27 - 61.

Nerbas, G. H. "Canadian Transportation Policy, Regulation and Major Problems," Journal of Air Law and Commerce, Vol. XXXIII, 1967, pp. 242 - 268.

Richmond, Samual, B., "Creating Competition Among Airlines," Journal of Air Law and Commerce, Vol. XXIV, 1957, pp. 435 - 464.

Sawyer, D. L. A., "The Jet Aircraft," Journal of Air Law and Commerce, 1956, pp. 174 - 179.

Studnicki-Gizbert, K. W., "The Structure and Growth of the Canadian Air Transport Industry," Papers, Canadian Political Science Association Conference on Statistics, 1960.

Taylor, R.A., "Passenger Airplane Economics and Systems Application Considerations for Airline Operations," Society of Automotive Engineers, New York, 1969.

Tipton, S. G. and Gewirtz, S., "The Effect of Regulated Competition on the Air Transport Industry," Journal of Air Law and Commerce, Vol. XXII, 1955, pp.157 - 191.

Toronto Globe and Mail, Toronto, June 8, 1971.

TransAir Limited, Annual Reports, Winnipeg, December 31, 1955 - 1970.

Winnipeg Free Press, Winnipeg, May 30, 1967.

Winnipeg Free Press, Winnipeg, November 20, 1968.

Winnipeg Free Press, Winnipeg, August 11, 1970.

Winnipeg Free Press, Winnipeg, March 16, 1971.

Winnipeg Free Press, Winnipeg, April 13, 1971.

Winnipeg Free Press, Winnipeg, January 4, 1972.

Winnipeg Free Press, Winnipeg, May 13, 1972.

Winnipeg Tribune, Winnipeg, January 4, 1966.

Winnipeg Tribune, Winnipeg, March 20, 1969.

Winnipeg Tribune, Winnipeg, June 28, 1969.

Winnipeg Tribune, Winnipeg, August 23, 1969.

Winnipeg Tribune, Winnipeg, November 9, 1970.

Winnipeg Tribune, Winnipeg, March 16, 1971.

Winnipeg Tribune, Winnipeg, May 11, 1971.

Winnipeg Tribune, Winnipeg, June 11, 1971.

Winnipeg Tribune, Winnipeg, June 25, 1971.

Zook, P. D. "Recasting the Air Route Pattern by Airline Consolidations," Journal of Air Law and Commerce, Vol. XXI, 1954, pp. 293 - 311.

BOOKS

Bain, Joe. S., Industrial Organization, John Wiley and Sons, Inc., New York, 1968.

Caves, Richard, E., Air Transport and Its Regulators, Harvard University Press, Cambridge, Massachusettes, 1962.

Cherington, Paul W., Airline Price Policy, Harvard University, Boston, 1958.

Currie, A. W., Canadian Transportation Economics, University of Toronto Press, Toronto, 1967.

Davies, R. E. G., A History of the World's Airlines, Oxford University Press, London, 1964.

Fair, M. L., Guandolo, J., Tedrow's Regulation of Transportation, Wm. C. Brown Company, Iowa, 1964.

Frederick, John H., Commercial Air Transportation, Richard D. Irwin, Inc., Chicago, 1951.

Gronau, Reuben, The Value of Time in Passenger Transportation: The Demand for Air Travel, National Bureau of Economic Research, New York, 1970.

Jones, W. K., Regulated Industries: Cases and Materials, The Foundation Press, Inc., Brooklyn, 1967

Keyes, L. S., Federal Control of Entry into Air Transportation, Harvard University Press, Cambridge, 1951.

Main, J. R. K., Voyageurs of the Air, Queen's Printer, Ottawa, 1967.

Miller, R. E., Domestic Airline Efficiency, M. I. T. Press Cambridge, Massachusettes, 1963.

Ogburn, William, F., The Social Effects of Aviation, Houghton Mifflin, Boston, 1945.

Report of the Transportation Workshop, Air Transportation 1975 and Beyond: A Systems Approach, M.I.T. Press, 1967.

Speas, R. D., Technical Aspects of Air Transport Management, McGraw-Hill Book Company, Inc., New York, 1955.

Studnicki-Gizbert, K. W., The Regional Air Carriers' Problem, York University, Toronto, September, 1966.

Wheatcroft, Stephen, The Economics of European Air Transport, Harvard University Press, Cambridge, Massachusettes, 1956.

Wheatcroft, Stephen, Air Transport Policy, Michael Joseph Ltd., London, 1964.

Wolfe, Thomas, Air Transportation Traffic and Management, McGraw-Hill Book Company, Inc., New York, 1950.