

THE UNIVERSITY OF MANITOBA
THE ECONOMICS AND REGULATION OF COMMERCIAL AIR TRANSPORT
WITH PARTICULAR REFERENCE TO MANITOBA
AND 'THIRD LEVEL' CARRIERS

by

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ABSTRACT

The study examines the economics and regulation of commercial air transport, with particular reference to those Manitoba-based air carriers generally regarded as 'third level', and with the basic objective of considering appropriate public policy in the regulation of such carriers.

At present, no universally recognized definition of 'third level' commercial air transport exists. Concomitantly, there has been no statement of public policy regarding the regulation of this sector. Hence, the setting of some terms of reference, in defining the norms of public policy, in considering the economic implications of alternative approaches, and in defining the industry, is the task of this analysis. In brief, it is only in examining the interaction of institutional, environmental, and operational variables that the devising of regulatory policy may be pursued.

The immediate need for a proper weighting of the objectives of public policy is evident. The study places emphasis on

developing concepts of:

1. productive efficiency in a static sense
2. dynamic efficiency
3. optimum allocative efficiency
4. the proper role of competition
5. service integration
6. stability of firm operation.

In conclusion, the public policy recommendations offered imply a consideration of all these norms; yet, in the final development of policy, the role of normative judgment cannot be ignored.

The thesis draws from this broad consideration of the theoretical implications of different regulatory approaches as well as from a consideration of actual Manitoba air transport experience, and a contrast of 'third level' and 'regional' air carrier situations. An interpretation of existing regulatory influence and of the 'third level' air carrier's distinctive problem is derived. In short, it is the problem of institutional inflexibility in a dynamically fluctuating environment. In the end, a change in the direction of regulation, away from the present case-by-case consideration of individual market requirements, or 'structuralist' approach, and towards a more flexible arrangement of licensing with some degree of investment guidance, is suggested.

As a generalization, 'third level' air carriers represent a 'fringe' of Canadian domestic air transport operating in thin markets suitable to small capacity aircraft, low frequency operation, and monopolistic seller concentration. Because of their monopolistic positions, these carriers gain an importance in public policy which significantly outweighs their size. At the same time, however, the prevalence of small owner-manager enterprises in this sector has led to ad hoc, short-run, and often opportunistic behaviour by these firms consistent with their lack of specialization and stability. A general tendency to heterogeneous fleets and excess capacity is thus attributed to the industry. The need for some form of regulatory control on expansions of capacity is undeniable.

Concurrently, the volatility of seasonal demand fluctuations and of temporary demands suggests a strong need for variability in the cost structures of these firms and flexibility in their abilities to reallocate resources as demands change. To some extent, these needs are met by the operational requirements of the licence authorities under which these firms are legally allowed to provide air services.

As a result, 'third level' commercial air carriers have not experienced the critical losses associated with 'regional' air carriers in the mid-1960's and reflected in present 'regional' policy. The requirement for a different regulatory approach relative to 'regional' policy is thus established.

The emphasis here is on 'dynamic efficiency', the ability to adapt to 'exogenous' change over time in a manner which avoids serious maladjustments in individual markets. The objective set, furthermore, is the maintenance of total capacity in a 'general' equilibrium with total demand rather than on any 'partial' or individual market basis.

Present regulation operates only ambiguously and inflexibly. In interpreting the 'public interest', regulators have seen fit to concentrate most particularly on seller concentrations and the licensing of entry to individual markets. As a result, inflexibilities in reallocating resources over a system of fluctuating markets has been observed. In combination with the over-expansionary and inconsistent investment policies of these smaller firms, a tendency toward merger and consolidation activity and a lack of ability to otherwise

integrate services is noted.

As a change in public policy, therefore, it is suggested that the present policy of licensing entry to specific points on an individual trial basis be altered in favor of a more flexible arrangement. A policy which allows greater freedom in reallocating capacity among specific points and, at the same time, regulates capacity in a general equilibrium sense, i.e. in relation to some total system of markets or demands, is advocated. Such a policy should remove the problems of excess capacity attributed to the 'third level' industry. Concomitantly, increased market-orientation by the regulatory authority and the individual firms, greater inter-line co-operation, and a greater integration and rationalization of route systems can be established.

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INTRODUCTION

An economic examination of third level air carrier operations in Manitoba is, at the outset, hampered by the fact that no universally accepted or comprehensive definition of this sector of the Canadian commercial aviation industry has yet been recognized. 'Third level' is merely a notion or concept of those commercial air carriers involved both in unit toll and charter operations, whose size was not sufficient for them to be recognized as regional carriers. Recognition as 'third level' carriers has derived simply from generally held opinions by those intimately connected with the commercial air carriers.

The approach to the analysis suffers from this limitation, and, as an expedient, a close examination of the areas of only those operations in Manitoba widely recognized as third level has been undertaken. The carriers are:

1. Lambair Ltd.
2. Ilford-Riverton Airways Ltd.
- and, 3. Midwest Airlines Ltd.

The operations of these carriers are examined mainly in regard to the theoretical considerations brought forward in economic theory, in regard to existing public policy in Canadian commercial aviation, in regard to the approaches implied, and finally, in regard to those aggregative average features which are suggestive of economic conditions faced nationally by all third level carriers.

At the outset, a broad examination of economic theory is presented to identify the areas of economic analysis which apply to the operations of commercial air services. In particular, identification of those standards suggested as relevant in conceiving what the ideal third level system, from a public interest standpoint, would involve, and the forms of regulation necessary to derive such conditions, merit greatest attention.

In contrast to these theoretical standards, and in contrast to the various regulatory approaches suggested, actual Canadian commercial aviation regulatory principles are examined. The rationales for public intervention are established and corresponding legislation is examined for its consistency with such rationales. In brief, the relevant institutional framework of regulation is presented. Examination of regional

policy developments set precedents and terms of reference against which to examine third level policy requirements. As will be suggested, there are parallels in the nature of regional and third level operating circumstance and, therefore, an examination of the role of regional carriers will necessarily precede identification of the scope of third level activities. Finally, the nature of present institutional determinants of third level behaviour are examined and certain conclusions drawn as to those implicit and explicit variables which, in the presence of regulation, influence third level performance.

Following the inferences drawn from a specific examination of the named carriers' activities in meeting the requirements of the Manitoba transportation system, an extension into a more general discussion of third level economics is attempted. It is from the combinations of institutional, environmental, and operating variables, based on certain functional relationships, that the problems and choices of the regulatory authority in devising public policy to achieve optimum performance from the third level sector may be drawn.

In essence, the examination attempts to bring into the areas of discussion the relevant theoretical considerations.

In doing so, the similarities in the regional operators requirements and third level carrier operation remains an important theme. Yet, in the final result, it is the dissimilarities which suggest a different public policy approach to third level operations.

Chapter I

THEORETICAL DISCUSSIONS

A) Approaches:

'Optimum resource allocation', elusive as that concept may be, is that state towards which public policy ideally presses. In practice, however, devising the regulations or criteria which will guide the specific industry to such a standard presents a task difficult for any economist. The task set is to find ". . . the best means of allocating resources, of enhancing efficiency in the production of goods and services and of transmitting the benefits of efficiency to the public."¹ The state of 'optimum resource allocation' is defined adequately in the models or abstractions of economic theory; adapting the analysis into empirical terms, of use to public policy administrators, is the particular problem at hand. As such, however, all the relevant considerations must be brought forward. Theories are abundant; correct applications will, therefore, always require measures of discretion and judgment as to their appropriateness to the situation.

Hence, two problems in public policy may be recognized:

¹The preamble, Bill C-256, presented in the House of Commons of Canada, June 29, 1971.

1. The adaptation of the theoretical abstractions of economic analysis into 'workable' norms or standards by which to guide decision-makers in public policy; and
2. The recognition of all pertinent or relevant areas of theory in connection with the particular problem.

Although emphasis is placed on the identification of relevant theories, this present section is directed towards these two aspects of public policy in the regulation of commercial air services.

i) General Equilibrium Aspects

The significant contribution of a general equilibrium approach to questions of public policy in air transport is that it relates the 'partial' activities of sectors, industries, or markets to some designated total of overall economic performance. In transportation, such an approach implies examining the contributions of each transport mode in the satisfaction of the network of various demands, or markets, which constitute the designated transportation 'system'. Indeed, in this respect, commercial aviation may represent only a particular sector of

the transportation industry, and is to be employed, therefore, only where its basic characteristics (in cost and service dimensions) give it advantage or make it a useful alternative to other modes.

In fact, such an approach is implicitly recognized in the Federal regulation of transportation in Canada, which describes this aspect of the public interest as ". . . an economic system making the best use of all available modes of transportation . . ." ¹

Indeed, regulatory agencies have often been suspect of an overly 'endogenous' concern with the financial welfare of their constituent industry members to the neglect of outside or exogenous interests. As Caves notes, "There are . . . aspects of the Board's (CAB) decisions that suggest a friendly attitude toward the regulated carriers and an unfriendly one toward their enemies." ² A more 'general' approach in policy might serve to reveal to regulators the entirety of the economic process, which overemphasis on partial analysis may

¹Section (3), The National Transportation Act, 1967, Statutes of Canada 1967, chapter 69.

²Caves, R. E., Air Transport and Its Regulators: An Industry Study, (Harvard University Press, Cambridge, Mass., 1962) p. 275.

obscure to policy-makers.

In short, general equilibrium approaches to public policy are useful in that they indicate the wholeness of the economic process. Specifically, the following aspects are realized:

1. The public interest in allocating resources to each mode to the extent that its advantages, in cost and service dimensions, effectively suit it to service particular markets.
2. The interrelationships between markets, and between developments in substitute and complementary services.
3. The interdependencies between related sectors.

These aspects are possibly overlooked in policy formations which adhere too closely to the dictates of strictly 'partial' analysis.

ii) Paretian Welfare Aspects

Paretian welfare economics, as commonly presented, involves the stating of certain marginal conditions to derive a social welfare optimum in utility space, and, as a corollary, shows how the market structure of free competition derives such an ideal.

The concept of the optimum is the starting point in Paretian Welfare Analysis. The optimum in general equilibrium welfare economics has come to refer to three basic aspects of the performance of the economy:

1. productive efficiency.
 2. distributive efficiency.
- and, 3. allocative efficiency.

It is this third aspect which has proved so elusive, for it implies an economic condition which is the optimum from a social welfare or utility standpoint. As a result, 'Paretian optimum'¹ has generally been modified to a standard which refers to the successful achievement of the first two aspects of performance as above. However, it is important to note that there is a range of theoretical positions in utility

¹It is assumed the reader is familiar with the basic model. The marginal requirements, therefore, are only summarized:

- (a) the marginal rates of substitution between commodities must be the same for every pair of individuals (no "gains from trade" are possible).
- (b) the technical rates of substitution must be the same for all factors and commodities.
- (c) the marginal rates of transformation and the equivalent marginal rates of substitution between any two goods must be equal.

space (as represented in theory by the utilities possibilities frontier) which may satisfy these modified Paretian conditions; the social welfare optimum represents only one point on that frontier.

Public policy which moves simply to derive greater productive and distributive efficiency may succeed in meeting the requirements of the 'lesser' Pareto optimum, but it will also reflect the status quo in income distributions. It may, therefore, be far removed from the social welfare optimum as defined in utility space.¹

The particular problem in designating the welfare function, and in directing allocations towards its maximization, is the impossibility of making objective interpersonal comparisons of utility. What is therefore required is a normative

¹Such a statement deserves comment. It assumes:

- (1) that the social objectives of society can possibly be distilled through the political process from the multitude of conflicting interests - i.e. that there is some means to group consensus on ordered preferences.
- (2) that the social welfare function is an independent function; distinct from a severe social belief in the justice of initial ownership and the rights of private property to remain as accumulated.

judgment as to income distributions; and this decision, in a political environment, is often avoided. Indeed, there often seems a strong desire among North-American policy-makers to avoid such explicit value judgments, and place emphasis rather on the aspects of productive and distributive efficiency. Still, the public interest in maximizing social welfare will be difficult to attain without first placing greater effort and emphasis in attempting to detail social consensus on industrial objectives.

The application of Paretian welfare analysis to problems of regulating specific industry behaviour invariably leads to the marginal cost - pricing rule. It has also lent the competitive market more credence as the ideal market structure, or policy norm, than is perhaps warranted, ". . . there is at work a powerful disposition to favor market situations which are perfect . . . the prejudice in its favor has not altered greatly."¹

¹Hunter, A., ed., Monopoly and Competition, (Penguin Books Ltd., Middlesex, England, 1969), pp. 32-33.

The theory of Second Best,² however, has sufficiently shaken any theoretical connection between marginal cost-pricing and increased social welfare in the less-than-competitive economy. Arguments for such pricing behaviour have thus retreated into the partial analysis of Marshall and Pigou based on the loss of consumer surplus.

In short, examinations of the Paretian system reveal these two important considerations:

- (a) without proper designation of social objectives or, in theoretical terms, "the social welfare function", policy-makers will be unable to distinguish positively movements toward more socially optimal states, and
- (b) there is no necessity for employing competitive standards as ideal policy norms.

²" . . . the attainment of a Paretian optimum requires the simultaneous fulfillment of all the optimum conditions. If there is introduced into a general equilibrium system a constraint which prevents the attainment of one of the Paretian conditions, the other Paretian conditions, although still attainable, are, in general, no longer desirable." - from Lipsey, R. G., and Lancaster, K. "The General Theory of Second Best" Review of Economic Studies, vol. 24, p. 11.

These observations should by no means invalidate the usefulness of competitive market pressures for securing incentives to production efficiency and the passing of those gains on to consumers. It is merely to place the standard of perfect competition in a position of neutrality where it appears to have had strong exercise as the ideal.

Furthermore, stated objectives must be defined, policies suggested, and, then analysis employed. Hicks notes, "When the ends of the society are certain, . . . co-ordinating plans as firmly and directly as possible, has a strong case on grounds of efficiency, . . . in the ordinary pursuit of . . . economic welfare, immediate ends are likely to be much less certain . . ." ¹ Proper regulation of air transport will therefore require proper goal-definition.

The process, however, seems to have been used in reverse; an analytically ideal state is described, policy implications devised, and standards imposed. However, as Winch notes,

"What is the best policy in any instance depends upon the objective, the welfare function . . . and that function consists entirely of value judgments. The

¹Hicks, J. R., Value and Capital, (Oxford University Press, Oxford, England, 1946), p. 137.

value of applied welfare economics rests on its ability to deduce appropriate policies for any particular set of social objectives, not on its inability to obviate the need for the making of value judgements for society through the political process."¹

Arguments for the optimality of competition and the minimization of the political process may therefore have to be reconsidered.

Bator observes, "It is the central theorem of modern welfare economics that under certain strong assumptions . . . the equilibrium conditions which characterize a system of competitive markets will exactly correspond to the requirements of Paretian efficiency."² Free markets, however, may not be able to obtain Paretian optimality because of:

(1) market imperfections.

and, (2) market failures.

¹Winch, D. M., Analytical Welfare Economics, (Penguin Books Ltd., Middlesex, England, 1971), pp. 29-30.

²Bator, F. M., "The Anatomy of Market Failure" Quarterly Journal of Economics, (August, 1958), p. 351.

In the commercial air transport industry, it is evident that many of these elements¹ exist, notably:

- (1) immobile and indivisible factors of production.
- (2) direct and indirect subsidies to air carriers.
- (3) externalities.
- (4) public good characteristics.

The existence of market failure is the primary concern of welfare analysis.

Given the existence of such failures, the case for extra-market activity may be presented. A quantitative measure of the net increase in social benefit resulting from the operations of the regulatory authority² over what the free market would provide³, could give a clearer picture of the welfare gains from regulation. However, such data are

¹Plus, the possibility of areas of 'excessive' competition developing under conditions of free entry and fluctuating demands.

²i. e. The Canadian Transport Commission.

³Coase, J. "The Problem of Social Cost", Journal of Law and Economics, vol. III, 1966.

virtually impossible to obtain¹ and such judgment must remain in question.

The principal failure of the market obviously surrounds its inability to cope with externalities, or conditions where one individual's satisfaction is affected by another's activities. While these effects take the form of economies or diseconomies, of main interest here are the Pareto relevant externalities, or conditions where gains from trade are possible, ". . . when the extent of the activity may be modified in such a way the externally affected party . . . can be made better off without the acting party being made worse off."² It is easily made apparent that extensions of the route systems

¹Problems are twofold:

- a) where income redistributions are involved, interpersonal utility comparisons will be necessary.
- b) adjusting levels of output in individual markets to where incremental increases in social benefit equal incremental increases in social costs (satisfying second-order conditions, also) will be virtually impossible because of the existence of:
 - (i) joint products.
 - (ii) problems in quantitative measurement of extra-market influences.

²Buchanan, L. M., and Stubblebine, W. C., "Externality" Economica, (November, 1962), p. 374.

served by any carrier, through internal cross-subsidization of services, do not satisfy such an absolute welfare standard. The extension of air service networks through State subsidy will also require a comparison of the tax structure with the structure of benefit receptions, in order to identify the proper welfare implications.

However, certain externalities are important in the provision of air services to the North, and, specifically, the following may be noted:

- (1) provincial/national unity enhancement.
- (2) a loss of sense of isolation.
- (3) aids to industrial development and tourism.
- (4) rapid communications (necessitated by emergency or industrial situations).

Since some economic units can enjoy these benefits from regular air service without having to pay the fully allocated costs of their production, there is a divergence between consequent marginal social benefit and private marginal costs. Extra-market regulation may then see fit to extend such services in the public interest.

It might also be observed that air transport exhibits certain public good characteristics, as " . . . a good, once produced, (that) can be made partially available, though possibly in varying degrees to more than one individual."¹

As an example, the provision of air services to non-consumptive units (e. g. as an occasion, relieving a sense of isolation) is, in a very real sense, a public good and will therefore support, to a degree, government action to appropriate fuller values of the good in support of its production. Furthermore, Weisbrod's 'option values'² are suggested. As stated, consumers value the option of being able to consume a particular service,

" . . . they will be willing to pay something for the option to consume the commodity in the future . . . it will probably not exert any influence if the private market is allocating resources . . . expansion or re-commencement of production . . . must be difficult or impossible."³

¹Head, J. G., "Public Goods and Public Policy", (Public Finance, Vol. 17, 1962), p. 203.

²See Weisbrod, B. A. "Collective Consumption Services of Individual Consumption Goods" Quarterly Journal of Economics, August, 1964, pp. 472-474.

³Weisbrod, B. A., Ibid., p. 473.

In air services, these values are witnessed when a community is threatened with the abandonment of regular air services. While recommencement of production in free markets could be instantaneous (given the inter-market mobility of aircraft), institutional features (licensing procedures) make the recommencement of regular unit toll air services somewhat less than spontaneous.

As a final consideration in welfare, it will be noted that the levels of demand for services are a function of the existing distributions of income and tastes. Demands, therefore, will be subject to these parameters. Familiarity with air travel may increase its demand, and, consequently, its market value. Where services operate into low-income communities, the existence of low demand for air services does not attest to low utilities from such service; it merely testifies to the inability of low-income consumers to register their subjective values through spending in the market-place. In this area, however, the provision of affordable services through subsidized travel is not recommended; direct payment of income increments by the State will be seen to allow higher utility to the consumers and thus greater increases in social welfare.

In conclusion, welfare analysis will be seen to suggest this final consideration; the public interest in securing 'optimal resource allocation' will require acknowledging both problems of income distribution and extra-market influences. The primary technical problems are, therefore, the inability to produce objective interpersonal utility comparisons and the inability to quantitatively identify extra-market values. It is unlikely that these problems will ever move out of the realm of normative economics.

Finally, however, each dimension of air service, whether reliability, dependability, low cost, or wide availability, may be seen to evolve different structures of income distribution and extra-market influence. As these objectives to a greater or lesser degree, are seen to be mutually exclusive, ordered priorities must be established and the various welfare implications considered.

iii) Dynamic Aspects

Dynamic theory attempts to deal with the patterns of adjustment or adaptation of a system to changes over time. Certain aspects of industrial behaviour must be considered from such a standpoint if public regulation of air transport

is to be considered effective.

Schumpeterian analysis is important, in this respect, for the distinction which it makes in indicating the potential benefits of industrial policies which allow extra-normal rewards positively into their systems,

"A system . . . that at every given point of time fully utilizes its possibilities may yet in the long-run be inferior to a system that does so at no given time, because the latter's failure to do so may be a condition for the level or speed of long-term performance."¹

Adaptability of the system to economic change may be a condition of the public interest; therefore, periods of short-term extra-normal profit may be seen as necessary. Profits will determine the terms of borrowed capital, the levels of retained earnings as sources of capital, and, though debatable, may present

¹Schumpeter, Joseph, A., Capitalism, Socialism, and Democracy (Harper & Row Publishers, New York, N. Y., 1950), p. 83.

a possible spur to innovation.¹ Schumpeter is clear in his belief that profits are the guiding spirit of an entrepreneurial or adaptive system, "These cases then provide the baits that lure capital on to untried trials."² Hence, static standards of efficiency with short-run normal profits may have to be modified or rejected. However, what should also be apparent is that restrictive policies which allow such secured positions, may also lead to entrenchments of positions³ and consequent social losses.

An important trade-off is here encountered. As noted, profits in the aviation firms will determine their ability to re-equip. Profit protection may then be considered desirable, and can be secured through State licensing which protects the market positions of these firms. However, inequities in the structure of licences issued may lead to equipment advantages

¹Caves concluded that the larger profitable firms are most able and likely to innovate through new equipment; the low profit firms are most likely to devise market innovations.

²Schumpeter, J. A., Capitalism . . . , op. cit., p. 90.

³A firm with existing equipment advantages and no restrictions as to capacities offered may continue to profit in competition with less advantaged firms; thus, it may always be better equipped. The less profitable operations may find it expedient to continue to capitalize their fleet capacity with more obsolete, cheaper equipment.

over the less secure firms.

It is possible that such imbalances in the competitive structure of the aviation system will lead aggressor firms to move against opponents, encouraging merger or failure, and thus increasing industrial concentrations in the long-run. Furthermore, the pattern of licensing may cause less advantaged (but equally ambitious) firms actively to seek combinations with firms holding licensing privileges as their only avenue to expansion. Again, in the long-run, increased concentrations in industrial structure can occur and there is an increased threat of social loss.

The essential trade-off is therefore between licensing markets in protection of profitability, as the condition for an adaptive system (and less certainly as an innovative incentive), and licensing for increased competition as an incentive to cost efficiency and social benefit. The public interest therefore, is divided between the development of air services, and the extensions of greater consumer surplus to the travelling public.

A Hicksian¹ approach to dynamics has further implications.

¹See Hicks, J. R., Value and Capital, op. cit.

Hicks sees the firm as a planning agent acting in a dynamic environment, in which present investment decisions are held accountable to the firm as fixed capacity in future markets. At any one point in time, therefore, the firm will have established some sort of 'organic unity' which cannot be re-duplicated instantly (the familiar short-run fixed resources of Marshall) and which is the result of past investment decisions based on past expectations.

Lags in production to meet unexpected increases in demand, and periods of excess capacity from unexpected declines in demand will thus become a feature of any transportation system. Stochastic shocks or random fluctuations in the system of demands composing the transportation network, plus the impossibility¹ of inventorying transport services, create an environment in which a fine sensitivity or instant adaptability to demand oscillations cannot be expected. A certain amount of market disequilibrium will always be encountered. The public interest in tuning the transportation system to meet the demands placed upon it, where fluctuations are significant or market information poor, may thus also entail low

¹See Williamson, O. E. "Peak-Load Pricing and Optimal Capacity Under Indivisibility Constraints", American Economic Review, 1966, vol. 56, pp. 810-827.

average load factors, excess capacities, and consequent low utilizations (waste) of those resources employed in the system.

As mentioned, maladjustments in individual markets may derive from past investment undertaken under conditions of uncertainty, and expectations of future markets. Lags in output expansions and inertia in present output levels may therefore be expected in a dynamic situation, presenting instances of economic waste as a corollary. The fact derives, in essence, from the immobility of resources through both economic and institutional factors.

The problem is evident in the production of scheduled air services. A certain short-run capacity for output will be maintained by any carrier for use over its licensed network of markets. The exact division of this capacity over its route network will be determined by those frequencies established in the carrier's service schedule. Lags in output expansions will then be presented by problems in leasing or acquiring new capacity,¹ adding new scheduled frequencies,

¹Demand increases which are considered temporary may elicit no response in output capacity or short-term leasing of capacity; permanent demand increases may elicit strip or ground facilities construction, and the acquisition of new fleet equipment and crews.

and re-scheduling factor inputs throughout the firm's system of routes. Inertia in providing capacities after demands have fallen will be provided through expectations that the declines are only temporary, the particular institutional problems¹ of service abandonments, and the immobility of fixed resources.

The lags and inertias in service provisions to changes in demands may lead to periods of extended financial loss which may have serious implications for the economic viability of a scheduled route system.

It will be noted that such problems are obviously less threatening to the non-scheduled operators, who need operate services only in markets where demands are sufficient to cover at least all variable costs of operation. In this respect, excess capacity with demand declines need only result in those losses contingent with fixed resources, incurred only so long as these resources cannot be reallocated out of the industry.

Again, an important trade-off is encountered. For example, the public interest may require reliability of service,

¹Applications for termination of scheduled air services will require considerations by the regulatory authority and involve protests by the communities involved.

and such a request will, in turn, require protection from the types of loss noted above. It may be seen that periods of excess profitability during conditions of high demands are to be protected from competition, in order to cover the losses of sinking demands and preserve reliable and economically viable carriers.¹ On the other hand, due to the different nature of his obligations, the non-scheduled carrier is not subject to such extensive losses and, due to the increased variability of his costs, it may be seen that there is less need for protection of the profitability of such services. Indeed, it may be considered in the public interest to maximize competition in the areas of non-scheduled operations.² So long as capacities can be kept in some reasonable equilibrium with demand, it should be possible for all such carriers to maintain viable operations, and, at the same time, encounter all the benefits possible from freely competitive markets.

¹Such a system of temporal cross-subsidization will involve an income redistribution from the peak-demand travellers to the off-peak travellers.

²At the same time, however, the role of the non-scheduled operators may have to be confined in order to avoid diversions of scheduled traffic, and a threat to the viability of such services.

It will be noted that such a non-scheduled system of air transport would be analagous to the 'taxi' system of urban transport. With all markets free to entry, each individual carrier will disperse its fleet as demands arise. The sensitivity of the system to the network of demands would derive from the individual carriers' knowledge of market needs (here, there may be some advantage seen in 'localized' or restricted geographical area carriers), the way in which market information is conveyed to the carriers, and the skill with which fleet are utilized to meet 'ad hoc' demands. In any case, the economic viability of such service would only seem threatened by the development of chronic excess capacity in the industry leading to conditions of cutthroat competition between carriers. In turn, such competitions might evolve into merger and consolidation activities which threaten those social losses alleged to accrue from increased industrial concentrations.

As a final area in dynamics, the nature of investment planning may be observed. In this respect, the firm is seen as a planning agent; conditioned by its information as to present conditions (the data of static systems) and its expectations as to future situations. In this environment, Hicks notes

that four causes¹ of disequilibrium are possible:

1. divergent expectations.
 2. inconsistent plans.
 3. stochastic elements in the system,
- and, 4. risk-avoidance tendencies.

As noted, problems of stochastic change and risk-avoidance are impossible to avoid. However, it should be possible to remove problems of inconsistent plans (i.e. excess investments in capacity) and divergent expectations to some extent through increasing the information available to firms and through an improvement in market-orientations.²

As a further development, some system of centralized investment planning by the regulatory authority may be seen as useful in co-ordinating the different transportation investments as undertaken by federal, provincial, and private interests. Chenery notes³ that there are external economies in such investment

¹Hicks, J. R., op. cit., p. 133.

²It is to be noted that this change may require increasing present data accumulations and will therefore involve an increase in costs. Furthermore, firms operating under "free-enterprise" philosophies may be reluctant to provide reliable data on their investment plans.

³See Chenery, H. B., "The Interdependence of Investment Decisions", The Policy Sciences, (Stanford University Press, Stanford, California, 1951), pp. 83-98.

co-ordinations, i. e. that one investment's profitability may be contingent on another investment. As an example, private investments in aircraft may depend for utilization and profitability on strip developments which are a function of the State. The efficiency gains may be seen in the timing or co-ordinating of industrial and governmental activities. A general equilibrium systems approach (for example, of the Leontief-type) may identify potential bottlenecks in supply while a dynamic consideration of the lead times for investment would co-ordinate the completions of capacity.

In conclusion, therefore, it is to be noted that a system of centralized planning,¹ if efficient, will be able to remove much of the uncertainties present in the market place, thereby facilitating a better co-ordination of activities. While reliance on the structural and behavioural hypotheses of static analysis may be more administratively expedient to the regulators of air transport, in theory, at least, there are distinct benefits to be gained from centralized planning - benefits which a mere strengthening of the market-orientations by firms

¹One should realize that this function, in its data accumulating and informational elements, involves certain costs or levels of resource use itself in addition to its possible benefits.

may not be able to provide.

iv) Linear Programming Approach to Efficiency

A static general equilibrium norm for the efficiency of domestic air transport is presented by Miller (1963),

"In particular, it is felt that new light is shed on at least one long-standing objective of governmental regulatory policy in the domestic air transport system: namely, on the concept of the efficiency of that system."¹

The study attempts to arrive at the efficient (least-cost) scheduling of available types of aircraft (i.e. in the short-run) over the specified route system, given particular levels of demand to be satisfied.

The objective function in Miller's linear program is to minimize total direct operating cost; it is the efficiency of the entire air transport system, and not the ability of individual firms to make the best of their given route networks (i.e. internal firm efficiency), which is to be considered.

¹Miller, Ronald E., Domestic Airline Efficiency: An Application of Linear Programming, (the M. I. T. Press, Cambridge, Mass., 1963), p. 2.

It is therefore this norm which is established as a measuring stick for the performance of the system. Given as the parameters of the system are:

1. its total capacity - as indicated by the stock of aircraft in the industry.
 2. levels of demands.
 3. costs (by aircraft types).
- and, 4. route systems (flows between nodes or origin-destination points - irregardless of airline distinctions).¹

As Miller notes,

"Given the available stock of aircraft owned by the domestic . . . lines serving the nodes selected, given direct costs and other operating characteristics of each aircraft type between each possible pair of nodes, and given passenger demand, it is possible . . . to distribute this demand among available aircraft in such a manner as to minimize total direct operating costs while meeting a series of availability constraints,²

¹ Institutional boundaries created by State licensing, which don't allow carriers access to particular markets.

² e. g. Safety requirements, availability of daylight, technological constraints on service availability.

balance equations,¹ and demand requirements."²

The model, therefore, presents a static and short-run picture of cost efficiency, a goal which admittedly only represents one objective of regulatory policy.

In essence, the model views the air transport network as if it were operated by a monopolist, faced with linear cost functions, whose objective is to meet the series of fixed demands in the transportation system at least cost.³ The efficiency gains in the solution of the program are seen to derive from the flexibility of equipment assignments in an optimal pattern of use. Without the restrictions of limited markets through licensing, and the inability of firms to cooperate in equipment exchanges and interline services, it may be observed that there are significant cost savings. The model

¹e.g. The total hours of use must equal or be less than the total hours availability; at each node, departures of certain plane types cannot exceed arrivals; the total numbers of passengers accommodated will equal total scheduled capacities/route.

²Miller, Ronald E., Domestic Airline Efficiency: An Application of Linear Programming, (The M. I. T. Press, Cambridge, Massachusetts, 1963), p. 57.

³Obviously, this abstracts from the position of a profit-maximizing firm facing costs variable with distance and density of operations, and downward sloping demand functions.

attempts to make clear that the loss in the system is possible cost efficiency, through institutional restraints which restrict entry to markets. From this viewpoint, it might be considered that the public interest in a lowest cost transportation system might be best served by free entry to all markets.

In any case, the public interest in maintaining " . . . the best use of all available modes of transportation at the lowest total cost . . . "¹ may be seen to require an interpretation of economic efficiency as presented in the model. In this respect, institutional inflexibilities in utilizing fleet capacity may be seen as a source of inefficiency to the system.

v) Industrial Organization Aspects

The central theorem of industrial organization is that market structure² will functionally determine the conduct³

¹Section (3), The National Transportation Act, 1967, Statutes of Canada, 1967, Chapter 69.

²In the following dimensions:

1. seller concentration.
2. buyer concentration.
3. the degree of product differentiation.
4. condition of entry to the market.

³" . . . the patterns of behaviour that enterprises follow in adapting or adjusting to the markets in which they sell (or buy)." Bain, J. S. , Industrial Organization, (John Wiley & Sons, Inc., New York, N.Y., 1968), p. 8.

and performance¹ of firms within the designated industry. The basis for such predictions rests primarily on the partial equilibrium analysis of price theory.

Given such a cause-and-effect relationship, it is felt that regulatory controls would be better confined into solely conditioning market structure, ". . . we find that direct regulation of performance (such as direct determination of price and output by a government commission) is not a generally workable means of regulating a free-enterprise economy. On the other hand, regulation of market structure and conduct is much more feasible and, in general, a workable mode of regulation. Then the feasible regulatory procedure aimed at securing satisfactory performance is to devise regulation which will secure market structures and patterns of market conduct which will lead to satisfactory performance."² Such an approach is obviously dependent on the determinant features of partial

¹The end results in price-output configurations, production and selling costs, and product qualities. It will be seen that these results correspond to the social objectives of technical efficiency, technologically advanced systems, and attainment of technological adaptability.

²Bain, J. S., Ibid., pp. 12-13.

analysis, "A determinate solution is achieved by making the impersonal market forces the very powerful factor, and restricting the independent action of the firm to an adjustment to these forces . . .",¹ and on the ability of analysis to recognize those market structures which will determine ideal dimensions in performance. A particular problem, however, is encountered in oligopolistic market situations, " . . . writers, once they have shown the inadequacy of the determinate solutions . . . may deny the possibility of a general theory covering industry under oligopolistic conditions and substitute for it voluminous case studies . . . or oligopolistic industry is just viewed as a chaotic mess where practically anything may happen, and about which economic analysis has very little to say."² Indeterminateness of solution is recognized in oligopolistic markets. The regulators of oligopolistic air transport markets are in a difficult position, therefore, in regulating market structure towards the achievement of desired objectives.

¹Rothschild, K. W., "Price Theory and Oligopoly", (as reprinted from The Economic Journal, Vol. LVII, 1947), pp. 299-320, in Readings in Price Theory, (Richard D. Irwin, Inc., Chicago, Illinois, 1952), p. 443.

²Rothschild, K. W., Ibid., p. 446.

Discussions of competition in the market place follow. It may be felt that regulation of market structure in order to achieve a better 'operating' competition will secure the desired performance; in particular, regulation of conditions of entry may be stressed, "It thus determines the relative force or potential of competition as an influence or regulator on the conduct and performance of sellers already established in a market."¹ With 'effective' competition, there will be no need for government to regulate performance directly, or 'plan' industrial activities. Such a competitive presumption is found both administratively expedient and philosophically acceptable in North America, ". . . it is the sound instinct of conservatives that planning involves, inevitably, the control of individual behaviour."²

In Canadian air transport regulation, this competitive presumption is seen in the emphasis placed on intermodal competition, ". . . regulation of all modes of transport will not be of such a nature as to restrict the ability of any mode

¹Bain, J. S., Ibid., p. 8.

²Galbraith, J. K., The New Industrial State, (Signet Books, Boston, Mass., 1967), p. 34.

of transport to compete freely with other modes of transport."¹
In other words, no transportation mode is to be weighed with obligations to serve particular markets or secure objectives of national policy, if such obligations create distortions in the competitive relations among carriers.

Competition, therefore, is to be relied upon as a major means of ensuring the desired performance in cost efficiency and high standards of service. At the same time, however, the need for density in route operations to ensure the efficient utilization of capacity, and to maintain self-sufficient operators, will constrain the levels of competition admissible in air transport markets. The trade-off is clear. Concentration of markets will allow higher (i. e. more efficient) utilizations of existing capacities, the employment of larger, more efficient aircraft, and should assure the financial self-sufficiency (i. e. stability) of the carriers involved. On the other hand, de-concentration of markets will increase their competitiveness, and hence induce greater cost control and the transmitting of

¹Section (3), The National Transportation Act, 1967, Statutes of Canada 1967, Chapter 69.

the benefits of efficiency to the public. Concentrations of markets will always involve the potential threat of market abuse.

The rationale of structure, especially with respect to concentration, forms the cornerstone of industrial organization. Its central concern is with the technical efficiency of the organization of firms within the industry. The degree of technical efficiency is measured by the relationship of attained unit costs to the minimum attainable. Fulfillment of the objective of technical efficiency in production, given the size of the relevant market and the extent of the economics of scale present, will imply a certain level of industrial concentration as a result of these two interacting determinants. 'Rationalization' of industrial output into firms of optimal scale and optimum levels of efficiency may therefore be required in the public interest.

The nature of cost efficiency in commercial aviation deserves some attention at this point. Early articles by Crane¹

¹Crane, J. B., "The Economics of Air Transportation", (Harvard Business Review, vol. XXII, Summer 1944).

and Koontz¹ revealed that the economies encountered by the airlines are not distinctly related to the size of operation of specific air carriers, whatever index of size is taken (assets, gross revenue, available ton-miles). It may be summarized that economies are found in:

1. aircraft type.
2. stage lengths (by average, variance, and connectivity of flight patterns).
3. traffic flows (in total, temporal and directional patterns) - i. e. density of routes.
4. utilization rates of equipment.
5. economies of firm scale.

In four of the factors above, it is not firm scale but the nature of the route system facing the carrier which produces cost savings. The carrier's route system comprises all the individual city-pairs in which the firm is legally licensed to operate.² This vital cost determinant is presented to the firm through regulatory policy and institutional methods rather than

¹Koontz, H. D., "Economic and Managerial Factors Underlying Subsidy Needs of Domestic Trunk Line Air Carriers", (Journal of Air Law and Commerce, vol. XVII, Spring 1951).

²As well as the types of service which may be operated.

through the natural evolution of the free entry patterns of the individual carriers. As a result, cost performance has arisen as much out of the evolutions of licensing as the efficiencies with which various firms produce output.

Route decisions, in turn, may tend to be haphazard. For example, in the U. S., Caves notes, ". . . it (the C. A. B.) has not taken the initiative in planning the airline route pattern. Rather it has simply decided cases as they have been presented as a result of the initiative of some carriers who file applications for new routes or extensions."¹ Decisions in favor of licensing have derived from the carriers persuading the Canadian Transport Commission of the need for additional service, while denials have been based on the insufficiency of traffic or excessive diversions from existing operators. It does not seem that the Commission has developed the carriers' route systems with the goal of economic efficiency specifically in mind. The inflexibility in the evolution of specific firm route systems (due to the problems of transferring carrier property, business, or licences to other carriers) has perhaps

¹Frederick, John H., Commercial Air Transportation, (Richard D. Irwin, Inc., Homewood, Illinois, 1955), p. 198.

encouraged more merger activity, as a means to 'rationalize' the industry, than is specifically warranted by considerations of efficiency.

The prime concern of the regulatory authority may be in maintaining the density of route operations. Indeed, bad cost performance due to excess entry is a valid concern, ". . . the decrease in unit costs as a carrier's passenger volume in any city-pair increases is such that service by more carriers rather than fewer is likely to raise operating costs."¹ As a result,² commercial aviation markets evolve necessarily high seller concentrations; and the problem for the regulatory authorities is clear, ". . . static theoretical analysis is almost entirely irrelevant . . . because the analysis itself recognizes that where there are conditions of duopoly and oligopoly . . . the equilibrium position is largely indeterminate."³

¹Straszheim, Mahlon, The International Airline Industry, (The Brookings Institution, Washington, D. C., 1969), p. 186.

²It is also felt that the main benefits of competition are derived when only two carriers exist.

³Wheatcroft, Stephen, The Economics of European Air Transport, (Manchester University Press, Manchester, England, 1956), p. 210.

The most thorough study of this industrial organization of the air transport industry is that undertaken by Caves.¹

In relation to the different levels of air carriers, Caves notes they are ". . . unquestionably different types of firms."² The existence of a 'third level' group of airlines, functioning mainly in charter and irregular or nonscheduled service is recognized only in brief and acknowledged a continuing policy problem for the regulatory authority. Yet, several general qualities of the market structure of commercial services are noted and may be repeated as of relevance to the 'third level' type of operation.

In relation to the demand for air services, Caves notes that the availability of alternative transport and the distances to be covered³ are the prime determinants of demand elasticity. Hence, it is in markets where air transport has a monopoly, and over long-hauls that inelastic demands for air transport services (and, concurrently, the ability to charge higher relative prices)

¹Caves, R. E., Air Transport and Its Regulators An Industry Study, (Harvard University Press, Cambridge, Mass., 1962).

²Caves, R. E., Ibid., p. 87.

³Air service, given alternative transport, will be seen to be less competitive over short-hauls.

may be expected.¹ Caves also notes a higher consumer preference for newer technologies and for the airline with the most service frequencies. Hence, firms with the ability to re-equip will maintain a distinct marketing advantage over less advantaged carriers who will likely have to charge lower prices to remain competitive. Furthermore, rivalries for markets will likely go to the carrier maintaining the most frequencies, and "active" competitions may be seen to erupt into "excessive" scheduling if price and quality remain invariable. The stability of such a situation cannot be reassured through successful product differentiation, since carriers operate with standardized equipment types. Only safety appears to remain an important factor, ". . . if it seeks business on the basis of low price and relatively spartan service, it might well face a disadvantage due to consumer suspicion of its safety . . ." ²

The degree of seller concentration, as mentioned, is strictly at the discretion of the regulatory authority. However, it should be noted that, without such controls on entry, the mobility of aircraft transfers between markets makes entry

¹ Ultimately, such areas of service command the greatest concern for consumer interests by the regulatory authority.

² Caves, R. E., Ibid., p. 88.

exceedingly easy. Furthermore, with smaller aircraft or low-cost obsolete aircraft, initial capital investments are relatively small and absolute cost barriers may therefore be considered low. In effect, without the condition of licensed entry to the markets served, the barriers to entry by low-cost used aircraft or by small aircraft must be considered low.

As regards cost levels, Staszheim sums up the cost disadvantage of smaller firms as not particularly attributable to scale economies, ". . . the nature of small firms' operations - short stage lengths, small aircraft, poor station and labor utilization - are the important explanations of their higher costs rather than firm scale per se."¹ Caves concurs with such an analysis and notes that, by operating over only a small network, using homogeneous types of aircraft, and contracting out operations that involve scale economies (e. g. overhauls), the small operator² may be able to substantially reduce his cost disadvantages. By serving a limited number of points, a local carrier may lower administrative and indirect costs while maintaining an easier knowledge of the markets he serves. Hence,

¹Staszheim, Mahlon, The International Airline Industry, (The Brookings Institution, Washington, D. C., 1969), p. 87.

²Such an argument may be termed the "specialist doctrine".

it may be suggested that the scope of operations of the smaller carriers be limited both in types of markets served (i. e. preserving homogenous fleets) and in the geographical extent of networks served.

Caves makes a special reference to the importance of investment planning to firms in commercial aviation, "By far the most important aspects of market conduct in the airlines are those surrounding the carriers' decisions on investment in aircraft and on the use of these aircraft in product competition. These decisions set the quality of the industry's market performance . . ."¹ Investment planning and aircraft purchase become part of the long-term strategy to compete in markets.

Expectations of consumer preference and future markets determine decisions ". . . heavily keyed to considerations of market rivalry",² and are made under conditions of uncertainty. The ideal is to select that aircraft which best suits the requirements of markets while ensuring minimum cost performance. However, it appears that opportunistic and over-enthusiastic behaviour by owner-managers, absence of well-developed plans

¹Caves, R. E., Ibid., p. 303.

²Caves, R. E., Ibid., p. 312.

for market developments, problems in forecasting future demands, and equipment orders placed on the basis of hoped-for route awards, have often led to severe misjudgments of capital requirements. Capital (loanable funds) availability, furthermore, tends to create a growing advantage for the profitable carrier and possibly leads to long-run increased industrial concentrations. In any event, control of this aspect of firm conduct will likely be strongly defended from regulatory control as it represents a major competitive variable in the firm's arsenal, "Market share aspirations are highly rivalrous, and this would be even more apparent if the availability of finance did not restrain the smaller carriers so significantly."¹

In conclusion, industrial organization analysis emphasizes the effects of structure on performance. In examination of air transport regulation, the indeterminacy of oligopoly situations, the trade-offs between higher seller concentrations and increased competitiveness, and the effects of regulation on the achievement of objectives arise as problems which warrant consideration.

Questions regarding the necessity of regulatory intervention

¹Caves, R. E., Ibid., p. 323.

in the operations of firms within the air transport industry follow. Whether or not regulators influence market structure sufficiently to produce a better industrial performance in line with social objectives remains the principal issue.

Economic performance, as suggested in the theory of industrial organization, may derive, on the basis of certain stated relationships, from industry structure, defined to include both technology and the regulatory environment. The essential trade-off, therefore, surrounds placing more reliance on regulation to achieve the desired ends of society or, conversely, placing most emphasis on competition and the market place to achieve the desired goals.

Wheatcroft notes, ". . . a comprehensive definition of competition must take into account the ability of new firms to enter the field, the absence of restrictions on the introduction and development of innovations, the freedom of operators to determine their own output, quantitatively and qualitatively, as well as their freedom to alter their price."¹ Free competition, therefore, implies complete freedom of entry, outputs,

¹Wheatcroft, Stephen, The Economics of European Air Transport, op. cit., p. 211.

pricing, quality, and investment, as decisions solely the responsibility of firms in the industry. At present, however, only investment decisions (although influenced by the expected reactions and incentives created by the regulatory authority) remain the sole directly undisturbed decision of the private firm in the commercial air industry.

In general, rationales for the public regulation of commercial air transport may be placed into three categories:

1. that unregulated competitive practices will lead to "excessive" or destructive competitive practices.
2. that control of entry by the regulatory authority inevitably involves, as a corollary, the regulation of fares, qualities, and quantities of service to ensure public protection against the potential abuses of State-created monopolies.
3. that scheduled air services are public utilities, part of the necessary infrastructure for economic development,¹ or simply, services vested with

¹The National Transportation Act, Section (3), refers to ". . . an economic system making the best use of all available modes of transportation . . . is essential . . . to maintain the economic well-being and growth of Canada."

the public interest: and that, therefore commercial operators must be regulated to ensure performances required by the public, and protected to ensure that they are able to meet their public obligations.¹

The starting point is obviously that contention that the market structure of commercial air transport will determine "excessive" entry and competition. Without such a condition, the regulation of state-created protected positions would seem unnecessary. The final category above appears less open to economic interpretation. The central issue centers on political and philosophical discussions regarding whether transport services should be operated by private enterprise under strict business principles, or whether such services should perform also as instruments in securing particular social objectives. As Currie notes, the problem is ". . . whether, because of the general and widespread benefits which transportation confers on the community and the nation, it is desirable to include transportation services in the general

¹". . . carriers who are required. . . to maintain service at regular intervals according to a published schedule regardless of whether or not the traffic offered is sufficient to provide a profitable flight, ought, in order to achieve maximum loads, to receive protection from undue competition by carriers who are not so required." (i. e. non-scheduled carriers) from, Air Transport Board, General Order No. 5/51.

category of government services . . . or whether it would be more desirable for transportation to be financed by the user, as is the case of other goods and services . . ." ¹ While economic analysis may be useful in indicating public interest aspects and trade-offs, problems in defining the public interest and establishing ordered social preferences, and in designating externalities and public good reasons for intervention, the question undoubtedly remains policital. ²

The central economic concern in the regulation of commercial air services is that free competition would result in deficient market performance, that, given its structure, the free market misallocates resources, and that competition is an unsatisfactory regulator of market conduct. Given the physical ease with which factors (aircraft) can enter markets, the low absolute barriers to entry in relatively low capital requirements,

¹Currie, A. W., Canadian Transportation Economics, (University of Toronto Press, Toronto, 1967), p. 27.

²For example, Oliver Wendell Holmes notes, "The notion that a business is clothed with the public interest and has been devoted to the public use is little more than a fiction . . . the legislature may forbid or restrict any business when it has a sufficient force of public opinion behind it," as quoted in Kahn, A. E., The Economics of Regulation, (John Wiley and Sons, Inc., New York, N. Y., 1970), p. 7.

the consumer preference for firms with most frequencies of service and newest technologies, the lack of significant economies of scale, and the inability to successfully product differentiate with standardized equipment types, competitive market struggles will ostensibly lead to cutthroat price and quality competitions, excessive scheduling in lucrative markets, and too rapid re-equipping in investment programs. In the short-run, concessions to safety to maintain financial viability may occur. In the long-run, increasing market concentration may result from the successful price-cutting and equipping policies of the larger firms, followed by necessary merger and consolidation activity. As general features, the unregulated industry allegedly may display chronically subnormal earnings, chronic excess capacity relative to demand,¹ and high rates of small business mortality. Industrial stability would only seem to derive after the industry had dynamically evolved into one of high seller concentration. In referring to such market situations, Bain notes, ". . . the excesses of competition have had a sufficiently unfavourable impact . . . that the interested parties have usually . . . and frequently obtained special governmental regulations of their industries to lessen or limit

¹The term may appear ambiguous. In the short run, existing plant capacity is underutilized. In the long-run, the term applies to the tendency for excess entry to occur creating excess capacity in light of the economic opportunities involved.

free competition."¹

At stake in the regulation of commercial air services, are those service variables - reliability, continuity, safety and availability,² which consumers may stress over those benefits alleged to accrue from competitive markets, lower fares, wider choice, higher service standards, and greater managerial control of costs. Indeed in regulating competition to lower levels, and thus maintaining denser markets, the regulatory authority may allow the operators to achieve lower unit costs and hence gain efficiency with existing capacity.

This need for regulation to limit competition, however,

¹Bain, J. S., Industrial Organization, op. cit. pp. 470-71.

²The use of a system of internal cross-subsidization as a method to extend route networks is suggested. The practice may be imposed on a transportation system by the regulatory authority to satisfy both social and political objectives. By using the profits from protected lucrative markets, a carrier may be able to meet regulated obligations in unprofitable markets while still maintaining a viable total operation. The practice is thus politically expedient as it makes air services more widely available without loss in Treasury funds and without explicitly increasing the tax burden. There is, however, income transfers from users in the viable markets to users in the marginal markets. Cross-subsidy can therefore only be justified where such transfers are socially acceptable. Further, temporal cross-subsidization of services may be considered a necessity in order to maintain price stability where conditions of fluctuating demand are prevalent.

is far from being a clear necessity. Wheatcroft¹ presents the most conclusive case for regulation; ". . . it is unlikely that an unregulated air transport industry would achieve the stable equilibrium that has been obtained in other oligopolistic industries . . . there will always be newcomers who, in order to establish themselves in a new market, will offer lower rates than those of the existing operations. This action is almost certain to precipitate a rate war because, without the protection of a clearly differentiated product, the established operators are certain to retaliate. Such price wars can be ruinous to all competitors."² On the other hand, Caves opts for de-regulation, "Apart from the fact that some aircraft are more efficient for any given market than others, they are freely transferable from one market to another. In the short-run, this stock of aircraft will produce only so many seat-miles of service, and there is no just reason to suspect that market forces would allocate them in such a way as to produce a great volume of unprofitable service in a few large markets and a small volume of very profitable services in others. In the long-run, it is impossible to see

¹ See Wheatcroft, Stephen, Air Transport Policy, (Michael Joseph, Ltd., London, 1964), pp. 46-65.

² Wheatcroft, Stephen, Ibid., p. 56-7.

why funds would be used to buy new aircraft that would raise the output of the industry to a level that could not earn . . . a normal rate of return."¹ Straszheim concurs, ". . . it does not follow that easy entry necessarily leads to excessive entry since there are no economic grounds for firms to enter if profits are below normal."² The question is, therefore, whether unregulated markets will lead to optimal distributions of available stock capacity as described in the Miller model, and an equilibrium of total capacity to total demand over the long-run, or whether, as Wheatcroft describes, markets will remain as short-run unstable oligopolies, with perhaps increasing concentrations over the long-run. Quite obviously, no definite conclusions can be offered. The choice of regulation or competition will depend particularly on the interpretations of likely firm behaviour in these markets.

In discussing such problems, Wheatcroft³ claims the following possible benefits attributable to increased competition:

¹Caves, R. E., op. cit., p. 383.

²Straszheim, M., The International Airline Industry, op. cit., p. 186.

³Wheatcroft, S. F., Airline Competition in Canada, (Department of Transport, Ottawa, 1958).

1. more adequate and efficient services
 2. more rapid technological progress
 3. more rapid traffic development
 4. the satisfaction of choice
- and, 5. the provision of a yardstick of efficiency

Against such benefits it was noted that paralellisms in service may be developed, that there may be overall increases in costs with decreased route densities, and that possible diversions of traffic and revenues could well retard or even reverse the carriers' progress toward self-sufficiency. The policy choice was ". . . to weigh the possible advantages of having a competitive service against the risks of increasing the cost level."¹ As a guide to devising the best levels of intra-modal competition² in the provision of commercial air services, however, such a standard is far from definitive.³

¹Wheatcroft, S. F., Ibid., p. 3.

²It should be noted that the guiding statute to the public regulation of commercial air transport in Canada, the National Transportation Act, makes specific reference only to the desired nature of inter-modal competition.

³The possible trade-offs are immense. Use of larger, more efficient aircraft will require lower frequency operations to maintain break-even load factor requirements. Thus, for example, increased efficiencies and technological progress may require fewer frequencies, greater market concentrations, and subsequent loss of competition. Judgment will be required as to which alternative better suits the "public interest."

Hence, the role of regulatory policy can be seen in its proper perspective. A careful balance must be struck. Restrict entry enough to realize the economies of scale and savings from higher route densities, yet allow enough competition to ensure that such efficiencies are not lost through monopoly profits. The quandary for policy makers evolves from the indeterminacy of the oligopolistic situations.

B) General Implications

Identification of relevant theoretical approaches in devising public policy for the regulation of 'third level' air carriers has focused on concepts of:

1. general equilibrium
2. Paretian welfare
3. dynamic adaptation to change
4. static efficiency (in linear programming)
5. 'structural' behaviour and performance

and, 6. the proper role of competition.

While regulatory policy cannot hope to cope successfully with each aspect suggested in the various theoretical discussions, certain general implications may be drawn from the preceding analysis.

Discussions in general equilibrium aspects of theory suggest the public interest in recognizing:

1. interdependencies between sectors or industrial activities,
 2. interrelationships between markets,
- and, 3. the proper role of individual transport modes or 'levels' in a fully integrated transportation system.

The examination of Paretian welfare aspects in theory implies the need for:

1. normative judgment in establishing industrial objectives,
 2. recognition of extra-market influences in the provision of air services,
- and, 3. recognition of the income distribution consequences of extending 'socially obligated' services.

Meeting the 'public interest' in a social welfare sense, as defined in Paretian theory, will require consideration of all the above implications.

The dynamic aspects in theory recognize the public interest in:

1. the ability of a transportation system to adapt to exogenous change over time,

2. assuring the individual firm's ability to adapt to such change, (in particular, the role of profits is noted),

and, 3. avoiding those economic wastes brought about through market disequilibriums or unco-ordinated investment activities.

The dynamic approach sees the transport system in a time dimension subject to stochastic change and divergent or inconsistent expectations of individual investors.

A static approach to efficiency, such as Miller's linear programming model, may recognize efficiency gains in the flexibility of equipment assignments. Without the restrictions of limited markets (i. e. the institutional constraints of licences which restrict entry to individual markets), individual firms may be able to develop more 'rational' route systems and greater co-operations through equipment exchanges and interline services. Significant cost savings may accrue.

In a dynamic context, where demands are seen to change frequently and licence authorities remain relatively inflexible to such change, there is an even greater likelihood that such cost savings, as above, may be incurred.

Finally, the industrial organization aspects of commercial air transport are examined. The basic theorem of industrial organization theory is that market structure will condition industrial performance. This 'structuralist' approach, which implies an emphasis on individual market regulation, is found less operable in markets which require oligopolistic seller concentration on grounds of efficiency. Recognition of optimum firm scales in deriving maximum productive efficiency is important. Yet, in commercial air transport, it is the rationalization of individual firm route systems which appear to warrant the greatest consideration. The influence of regulatory licensing in producing available route systems may therefore be of major importance in establishing the cost performance of air carriers in the industry. Regulatory policy in licensing which induces the development of 'irrational' route systems will therefore have to be re-examined.

An important trade-off is recognized. The need for regulation of individual market entry through licensing may be considered necessary to avoid excess capacity, cutthroat competition, and instability in air services. At the same time, protection of individual markets by the licensing authority may be seen to lose those benefits alleged to accrue from competition.

In the final analysis, any regulatory policy will have to allow the striking of a careful balance in such trade-offs. Each implication in theory should, however, exert its influence in the final evolution of policy.

Chapter II

EXISTING REGULATION

In almost direct contrast to the preceding theoretical approaches, an examination of existing regulation of Canadian commercial aviation is undertaken. A sounding of what may be considered regulatory norms, in a Canadian context, is implicit in the analysis. Close attention is paid to the evolution of regional carrier policy as the activities of these carriers most closely resemble any distinguishable third level system and hence offer a frame of reference. In the latter parts of the discussion, a more particular description of actual regulatory positions and institutional obligations is made. In conclusion, distinctions as to the types of obligations imposed on the carriers by the regulatory authority are drawn.

A) Present Regional Policy

Present regional air carrier policy¹ provides a useful frame of reference against which to examine proposals for a distinctive 'third level' public policy. A consideration of those features most relevant to later proposals for 'third level' regulation is therefore undertaken.

¹See, the Hon. J. W. Pickersgill, "Statement of Principles for Regional Air Carriers", Tabled in the House of Commons, October 20, 1966.

A common problem is the extent to which public policy will seek to impose social obligations on the carriers, regulating them as 'chosen instruments' and extending both the obligations and protection afforded by the regulatory authority.

The issue of internally cross-subsidized services is immediately recognized. In considering the problem, Kahn notes, ". . . social or political objectives are especially obvious . . . where some services or markets pay less than their marginal costs, thus clearly imposing a burden on other users. The practice is often rationalized on distributional grounds, the desire being to make the service more widely available . . ." ¹

The following factors should be evident:

1. there is a definite income redistribution; the income transfers must be judged on the basis on interpersonal comparisons which are purely objective.
2. the means of income redistribution, if considered socially acceptable, is inefficient. ²

¹Kahn, Alfred E., The Economics of Regulation: Principles and Institutions Vol. 1, (John Wiley & Sons, Inc., New York, New York, 1970) p. 190.

²Kahn cites Turvey, Ralph, Optimal Pricing in Electrical Supply, An Essay in Applied Welfare Economics, (George Allen and Unwin, Ltd., London 1968), p. 97-8.

3. without designated social priorities, it is difficult to determine whether the subsidization decreases or increases total welfare.¹

and, 4. unprofitable services are expanded beyond what the private market would produce, while viable markets remain underdeveloped; a 'misallocation' of resources may be alleged.

Society, however, may be willing to accept such a means of developing the desired expansion in a 'regional' network of air services. Indeed, for the regulatory authority, the administrative convenience of the system over a system of direct subsidy, with its problems in cost accounting, negotiating with carriers, and facing the taxpayers, is obvious.

In developing a 'regional' network of scheduled air services, however, certain deficiencies are noted, ". . . should the estimated profits fail to materialize, or should they decline due to an unexpected external factor, then the ability of the organization to cross-subsidize would be seriously affected . . . where the fluctuations of operating income are

¹ Obviously, however, a first step would be to examine the exact extent of the income transfers, determining loss and benefit distributions under the system, and without it.

considerable and the scale of operations . . . small, an external disturbance temporarily decreasing their revenues, on any one service, can rarely be overbalanced by opposite tendencies in other parts of the system".¹ Hence, as firms grow progressively smaller and operate over smaller numbers of city-pair markets, their abilities to dynamically withstand demand fluctuations decline. This feature is a combination of their inability to spread their risks in concentrated markets, and the weak economic base of their services.²

The situation was evident, as TransAir stated in 1965, "TransAir has been able to continue to develop its existing regional network by cross-subsidizing regional routes operated at a loss with profits earned on its long distance charter operations . . . the continued operation and further development of an economically and socially necessary local air service in the entire mid-continental portion of Canada is dependent for its very existence on the ability of the company to continue

¹ Studnicki-Gizbert, K. W., The Regional Air Carriers' Problem, (The Queen's Printer, Ottawa, 1966), p. 66.

² i. e. Short stage lengths, low traffic densities, severe fluctuations in demand, cyclical fluctuations in resource development.

long distance charter contracts."¹ As predicted, with the Dew Line completion in 1966, charter contracts became scarce. Subsequent company losses² were recorded³:

1966	(\$256,000)
1967	(\$184,000)
1968	(\$762,000)

With smaller operations, therefore, imposed social obligations and institutional inflexibilities requiring the servicing of particular marginal markets becomes a less operable format. Some better means of regulating competition to achieve the desired performance of regular scheduled regional services is required.

The regional carrier's problem derived from its economic environment which produced higher unit costs relative to mainline operations, necessitated operating smaller, less efficient aircraft because of thin markets, and created severe marketing problems in markets where highly developed short-haul surface

¹TransAir Ltd., "Regional Air Transport in Canada", presented to the Hon. J. W. Pickersgill, Minister of Transport, 1965, p. 2.

²It should be noted, however, that loss of Dew Line contracts was not the sole aggravation. Management inexperience with competitive scheduled service, an obsolete and uneconomically large fleet, plus high operating costs all contributed.

³Ibid., p. 27.

transport existed.

The answer to these kinds of economic problems lay in the re-equipping or modernizing of fleets, with aircraft of higher productivity and marketability in the specific types of markets which these carriers were to be allowed to operate.

Two final problems were to be answered. Shouldering the financial burdens of re-equipment required that sufficient opportunities would be presented to the firms to achieve the utilizations and adequate load factors necessary to profitable operation, and necessary to meet the obligations of financing such acquisitions. In effect, this need implied access to the traffic of larger markets plus the protection of their route systems from the competition of both mainline and lower level carriers. To ensure the proper decisions in fleet investment, clear definition of the types of markets in which the carriers would be allowed or licensed to operate had to be made. Equipment had to be selected to properly fit the network of services over which it was to be employed. Finally, the areas of operations required designation; to ensure the viability of each operator (mainline, regional, or other), services were not to be allowed access to traffic sufficiently to weaken the viability of another level of operation.

In short, viability of the regional network of scheduled services required increased traffic, implying both access to larger markets and protection from competition. The areas of operation of the different levels of carrier, in turn, required definition to guide proper investments and to ensure that no level encroached on the economic stability of a neighbouring level.

Another important factor to note is the recognition of the regional carrier in its function as a 'feeder service' in transporting consumers to centres served by mainline carriers. Regional traffic development may be seen to impose benefits on the operations of the mainline carriers, as the traffic generated serves to strengthen those operations. Conversely, mainline carriers bring consumers to mainline points where travel to the more remote regional points is required. It is in this reciprocal arrangement that various levels of carriers can be seen as complementary and supplemental.

Interline travel arrangements, joint fare schemes, agreements on revenue sharing, co-operations in the joint use of facilities,¹ and a better co-ordinating of services are therefore

¹Where higher utilization of fixed capital or indivisible factors resulting in lower unit costs occur, efficiency gains may also be served.

justly recognized as useful in developing efficiency and a better integration of the entire air service system, "A substantially greater degree of co-operation can be developed . . . in a variety of fields relating to technical and servicing arrangements, inter-connections, joint use of reservations, advertising, sales activities, etc. Benefits to regional carriers will result from their ability to make use of mainline carrier experience and facilities. A continuing committee will be established . . . to develop areas of co-operation in these fields."¹ Both economies and higher service standards can hopefully be derived from co-operations. Fears that such arrangements will provide an incentive or avenue for collusive efforts aimed at monopoly exploitations are believed unnecessary.² The policy defines roles to be complimentary, both by function and geography. Co-operation, rather than a competitive atmosphere, would seem the better way of achieving a co-ordinated or integrated system, and maximum gains in efficiency.

In conclusion, therefore, the role of the regionals is established mostly in respect of its position vis-a-vis the

¹The Hon. J. W. Pickersgill, 'Statement of' op. cit.

²In allowing for such a case, a government observer is required at all committee meetings.

mainline carriers. In policy, the emphasis is placed upon developing a viable system of regional scheduled services at standards compatible with consumer preferences for modern equipment. Such a requirement called for the expansion of the revenue base through access to denser markets, public subsidy on social obligation services, and development of charter markets. The need for co-operation to achieve a mutually beneficial integration of the different 'levels' of carrier services is also recognized. To take over previously mainline routes and operate these more efficiently than the mainline operators required the 'specialist doctrine' to be imposed, with a carrier operating a more rationalized fleet in a designated 'regional' market.¹ It further resulted in carriers emerging with a certain standardization of fleets² operating in markets which could support such aircraft both economically and functionally.³

B) The Nature of Existing Regulation

Two main pieces of legislation provide the regulatory authority for the Canadian Transport Commission in the economic regulation of commercial air transport in Canada. Part II of

¹This standard applies, as admitted, only loosely.

²i. e. Within a certain range of capacities.

³i. e. With those support facilities existing.

the Aeronautics Act (1938) gives the legislative authority considered necessary effectively to regulate the economic operations of the carriers; the National Transportation Act gives these powers to the Commission, which it establishes, and outlines, in brief, the broad public interest in which transportation is to be regulated.

It would be cumbersome to list all the separate powers of control presented by the Aeronautics Act.¹ What is important to note is that the economic regulation revolves around the Commission's powers to regulate entry through licensing, to regulate fares, to prescribe routes and areas to be served, to impose conditions of service in scheduling, types of carriage, and points to be served, and, very importantly, to establish classifications of licences and groupings of service as the terms of licences. The Commission must function both in the legislation of the exact terms of each regulation developed, and, in the judicial function of designating which of many interests is to be emphasized in such regulations.

The major problems in regulation are immediately apparent. Proper fulfillment of its advisory, legislative, and regulatory

¹See Appendix B.

tasks requires that the Commission be supplied with adequate informational flows. While the legislation provides the powers to accumulate all imaginable information necessary, the cumulations and processing of the relevant data involve costs both for the carrier and the Commission.¹ While such requirements¹ may be readily fulfilled by the accounting staffs of the larger firms, the task may become an objectionable burden and impossibility to the smaller owner-operator establishments. Secondly, regulatory procedure in decisions pending the interpretation of material may involve costly delays and loss of business to the carriers. Again, while such delays may be sustainable by the larger firms operating, and necessary to the viable operation of a scheduled air network, they may prove exceedingly disadvantageous to the smaller carriers whose limited markets fluctuate to any great extent. Finally, the economic regulation of the air transport industry involves a certain cost in resources. The need for administrative efficiency is obvious. Furthermore, the net gain in social benefit from regulating the unregulated air transport market must exceed or equal the costs of such regulation. Where

¹Standardized cost accounting, auditing of financial statements, and careful recording and maintenance of financial activities.

regulatory costs are excessive in relation to its possible benefits, regulation implies an inefficient duplication of internal management and a loss in welfare. In the case of the small firms, whether maintaining extensive regulation is reasonable must satisfy these above requirements.

The problems in defining the public interest, given the aspects involved in such a definition, have been discussed earlier. Furthermore, in examining existing mainline and regional policies, the aspects emphasized in actual Canadian policy have been revealed. Noted are a concern with self-sufficiency (foremost), adaptability of the system to technological change and innovation, the efficiency of the system from a general equilibrium framework, concern with the extra-market welfare considerations of a total air transportation system, and a concern with protecting the markets of scheduled services from 'outside' competitors.

In essence, the CTC gears itself to the regulation of market structure and conduct in line with such interests as above. Lesser emphasis is placed on designating performance standards such as "reasonable rate of return" calculations, in detailed cost-benefit type appraisals of the extensions of service, or some deep sounding consensus of social priorities.

The main reference to the public interest in the regulation of commercial air services is found in the National Transportation Act, (1966-7).

Again, it would be cumbersome to list all the provisions of the Act.¹ Section (3), however, is important in defining the public interest as ". . . an economic system making the best use of all available modes of transportation at the lowest total cost . . ." ² The concept is mindful of Miller's model of a static lowest cost air transport system requiring flexibility of fleet dispersions over a general system of markets. Further, considerations of dynamic efficiency suggests a Schumpeterian need for profitability, and, in the face of a general system of shifting demands, flexibility or mobility in resource allocations.

The Act suggests as a major means of achieving the economic system outlined in Section (3), the need for complete freedom in intermodal competitions, ". . . 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 other

¹ See Appendix C.

² The National Transportation Act (1966-7), Section (3),
op. cit.

modes of transport."¹ Literally interpreted, policies of internal subsidy to meet social obligations are rejected. Furthermore, a more competitive arrangement of the national transportation system, relying more on the allocating mechanism of the private market is implied. Hence, any extension of socially desirable services, not provided privately, will depend on the development of a government subsidy program, extended equitably to all modes of transport.

Two other means emphasized, ". . . to protect the interests of the users of transportation and to maintain the economic well-being and growth of Canada, . . .",² aside from a greater emphasis on competitiveness between the different modes, are the provisions for regulating fares found discriminatory, Section (23), and the provisions for regulating merger, Section (27).

The CTC is geared essentially to regulate market structure and conduct, in line with theoretical assumptions as to the kinds of performance which will derive. As such, it places particular emphasis on regulating seller concentration

¹The National Transportation Act, Section (3), op. cit.

²Ibid.

and determining the conditions of entry, ". . . the moderate ease of entry has been responsible in part for the existence at all times of potential entrants".¹ The market structure, therefore, has left the air transportation an openly competitive system where institutional considerations are ignored. While emphasis in stated policy is placed on allowing freer intermodal competitions, the Commission has placed its major emphasis on regulating or restricting competitions of an intramodal nature among the different types of air carriers.

The principal concern of the CTC is setting the levels of market concentration in the public interest - a difficult task.

The nature of cost efficiency is such that scale economies are available, notably in overhaul and maintenance, and in the specializations possible in certain functions. Full advantage of such economies will only be possible under certain scales of firm size, and is seen to require a homogeneity of

¹Caves, R. E., Air Transport and Its Regulators, op. cit., p. 428. Caves also notes, "The traits of the demand for air transport rule out product differentiation." p. 429.

fleets.¹ Possibilities for subcontracting functions to larger operations may be seen to enhance efficiency without increasing scale, ". . . technical co-operation . . . has helped produce a greater homogeneity among firms in production techniques. It has also produced a considerable cost saving, which has done much to reduce the cost disadvantage of small-scale operations In light of the possibilities for subcontracting, the old assumption that six or seven planes of one type were necessary for efficient operations is no longer considered valid."² Nevertheless, 'optimal' production by firms of efficient scale will imply definite levels of concentration.

Given the technological environment in which air carriers operate, with efficiencies most evident in operating large capacity turbine equipment over dense stages, it appears that efficiency will always require oligopolistic market structures.

¹The mixed fleet problem creates inefficiencies as it requires multi-functional staffs, trained in handling all the various operating needs of the different aircraft; furthermore, it does not allow carriers to reduce spares' or contingencies' requirements where only a small number of each aircraft are maintained.

²Straszheim, Mahlon, The International Airline Industry op. cit., p. 63.

Consider the following:

II. 1. COST PERFORMANCE
DIFFERENT AIRCRAFT AVAILABLE

Engine Type	Aircraft	Capacity (Passengers)	Total Cost/ Mile (\$)	Table Cost/Avail- able Seat- Mile (\$)
jet	Boeing 737	115	3.52	.031
turbo	Hawker			
	Siddeley 748	40	1.75	.044
turbo	DeHavilland DHC6	18	1.50	.083
piston	Douglas DC-3	28	1.40	.050
piston	Piper Navajo	9	.60	.067
piston	Beechcraft D18	9	.80	.089
piston	Piper Aztec	5	.50	.100
piston	Cessna 206	5	.60	.120
piston	Cessna 180	4	.55	.137

Source: TARIFFS - published by TransAir, Midwest, Lambair, Ilford-Riverton Airways -- costs designated refer to Charter Rates considered representative of fully allocated costs.

Lower cost services are provided by the larger aircraft.

As markets expand, therefore, efficiency will dictate the transfer of such routes to carriers operating such equipment.

Furthermore, as a hypothetical case, if it is assumed that socially desirable services require four frequencies/day in any given city-pair pair market,¹ the following may be

¹For the hypothetical example, stage lengths of 200 miles with load factors averaging 50% daily are assumed in the calculations.

presented:

II. 2. - BREAK-EVEN TOLL REQUIREMENTS
(Assuming Stage Lengths of 200 Miles and 50% Load Factors)

Aircraft Type	Total Cost per Flight (\$)	Break-Even Unit Tolls or One-Way Tolls (\$)	Total Traffic Generation (Originating & Departing) Required in the Market
Boeing 737	704	12.13	232
Hawker Siddeley 748	350	17.50	80
Douglas DC-3	280	20.00	56
Piper Navajo	120	24.00	20
Piper Aztec	100	33.34	12

Source: TARIFFS - published by TransAir, Midwest, Lambair, Ilford-Riverton Airways.

Self-sufficient operation of higher efficiency aircraft will require increasingly dense markets for viable support. Operation of craft in ill-suited markets will either result in losses (if fares remain constant), higher fares, or dissatisfied traffic as calculated below:

II. 2. - BREAK-EVEN TOLL REQUIREMENTS
 (Required by 4-Frequencies Operating in 56-Passenger Market)^a

Aircraft Type	Break-Even Fare Requirements (\$)	Daily Loss, \$20 Fares Constant (\$)	Average Load Factors
B737	50.28	\$2,137.72	12.2%
HS-748	25.00	420.00	35%
DC-3	20.00	-	50%
Navajo	8.57	20 passengers excess	100%
Aztec	7.14	36 passengers excess	100%

(a) Assumes balanced traffic flows.

Source: TARIFFS - published by TransAir, Midwest, Lambair, Ilford-Riverton Airways.

Thus, in the hypothetical situation, the following trade-offs may be seen:

1. the lower unit costs appropriable from the use of larger capacity aircraft will require increasingly dense markets, and therefore, self-sufficient operations will always concur with a high degree of seller concentration if such efficiencies are to be made available to consumers.
2. using aircraft not suited to a market will result in either higher fares, losses, or dissatisfied consumers, and can, therefore, not be condoned - either on the grounds of efficiency or service.

3. higher load factors may allow lower break-even fares; while at the same time increasing the possibility of dissatisfied consumers during peak demands.

Given such a production function, the CTC has spent much of its regulation in creating a system of domestic scheduled services which operate as protected monopolies. Policy is clear in this respect:

". . . commercial air carriers who are required by Board regulations to maintain service at regular intervals according to a published schedule regardless of whether or not the traffic is offered is sufficient to provide a profitable flight, ought, in order to ensure maximum loads, to receive protection from carriers who are not so required."¹

As a result, ". . . no commercial air carrier may

¹ Air Transport Board, General Order No. 51/51, October 23, 1951.

carry traffic between points¹ named on the same licence of any . . . scheduled commercial air carriers . . ." ² It is well established that the efficient operation of a scheduled air service is hindered by diversions or thinning traffic which raises the unit costs of providing such service; and such franchise provisions may therefore be considered "in the public interest". In short, regulation has developed a system of domestic scheduled services operating either as monopolies or duopolies, in the interests of maintaining self-sufficiency, maximum efficiency of operations, and regularity of scheduled services. These are the priorities established in the network of domestic scheduled air services. Yet, in deciding between competitions or concentrations, Wheatcroft notes, "The relationship between route traffic density, frequency, and size is

¹'Point' in respect of a unit toll commercial air service means the city, town, or place specified in a licence that a carrier is authorized to serve by such licence and that is identified. . .

- (a) in respect of a point in a class 1 licence, comprises an area 25 miles in radius measured from the main post office . . . or from the latitude and longitude of such point and;
- (b) in respect of a point in a class 2 licence, comprises an area 10 miles in radius measured . . ." (similarly)

Canadian Transport Commission, General Order No. 1972-1 Air, May 5, 1972.

²Air Transport Board, General Order No. 51/51, October 23, 1951.

complex",¹ and, again, it is to the judgment of the regulators that exact policy must be established.

Several conclusions as to the nature of regulation in scheduled air services are observed:

1. the regulatory authority is concerned mainly with the effects of 'excess' entry on the efficiency and viability of scheduled or regular air services; such a concern has developed a regulatory environment which strictly protects the markets of regular carriers.²
2. entry regulation has seen fit to develop highly concentrated markets in scheduled services.
3. lesser concern is placed on ensuring 'rational' pricing, i.e. regulating fare structure to ensure 'just' fares which conform closely with the costs as properly allocated to individual services, and with the establishment of "reasonable

¹Wheatcroft, S. F., Airline Competition in Canada, op. cit., p. 26.

²Historically, the pattern has perhaps developed from a concern with maximizing the network of scheduled air services in the interests of national unity. Extensions were possible, without subsidy, under a system of internal cross-subsidization; but this, however, required close control of entry.

rate of return" calculations.¹ Yet, such considerations would seem essential, having accepted governmental protection of markets as necessary policy.

In the case of commercial air transport, therefore, it is not the abuse of monopoly which motivates regulation so much as it is excessive competition which destroys competent firms as well as the regularity of consumer services. The loss of consumer surplus to the public is endangered, however, by licensing which establishes market franchises; government control of price, quality, and quantities is only necessitated as a corollary.

In actual experience, the CTC acts mainly on the periphery of the private market, acting only after conditions have shown that private initiatives combined with regulatory incentives have obviously resulted in undesirable performances. Indeed, the Commission can do little more; otherwise it would be necessary to duplicate all private managements with governmental ones. In effect, the CTC can only arbitrate, post facto,

¹Section (23) of the National Transportation Act calls for such a consideration; however, the problems of cost allocation, 'measuring sticks' of efficiency, and essentiality of costs has perhaps opposed such measures. The CTC remains dependent on public reaction and notification in assessments.

between consumer interests, as an exogenous concern, and firm interests, as an endogenous concern. Kahn reviews such a situation ". . . the initiative, operating control, and responsibility for economic performance continue, even under regulation, to rest primarily with private management. The role of the government remains essentially negative - setting maximum prices, . . . specifying minimum standards, in short-contravening the decisions of private persons only after the fact, only where their performance has been or would be obviously bad."¹ As a result, there is a tendency to finality and rigidity once initial licensing is invoked unless a carrier proves significantly incompetent in operation. Private changes mainly are initiated. The Commission gives its permission rather than its guidance. Finally, it may be observed that governmental regulation has a tendency to be endogenous, considering particularly the buoyancy of firms, rather than any in-depth considerations of consumer needs.

In fares regulation, the main concern is with price levels or price discriminations which might prove publicly objectionable. In stressing fares regulation, however, it must

¹Kahn, A. E., The Economics of Regulation . . . op. cit., p. 18.

be noted that reliability, continuity, availability, and safety of services may be the overshadowing concerns of the public. Once such variables are satisfied, little concern may be voiced over fare structures or levels. Further, while the regulatory body regulates to avoid price competitions which might lead to instability in the industry; it has to be considered that firms might compete just as destructively through capacity and quality provisions.

The CTC seems primarily concerned with the total revenues available to any firm, so that stability will accrue. Charges are allowed adjustment primarily to allow for viable operations. However, only entry, the prime determinant of the degrees of market rivalry, may be considered as an effective regulator to ensure cost efficiency through tighter cost controls. There is, it appears, a lack of emphasis in supervising and controlling the levels of operating costs and capital outlays, the determination of an allowable rate base, or the selection of a suitable rate of return.

Admittedly, regulating costs should prove the most difficult task facing the Commission. The major problem is the inability to develop adequate measures for comparison. The behaviour of unit costs varies enormously in relation to

various dimensions over which the output may be produced. In commercial air services, the important dimensions are:

1. increased utilizations
2. increased load factors
3. increased stage lengths

and, 4. increased structural consistency of route patterns.

Incremental changes in any of these dimensions will have a distinct bearing on the nature of costs. In particular, these dimensions¹ will be affected through the evolution of licensed route systems, and by private initiative (i. e. management) in cost control and investments.

In conclusion, the economic rationale justifying public intervention may be placed on the existence of the externalities or public good characteristics in the provision of commercial air services, or on the supposition that the unregulated market and competition simply do not perform well. In this respect, the Commission may be criticized for an inability to account for externality and distributional effects in the former case,

¹Other variables influencing costs may be suggested:

1. types of carriage - by density, size or volumes, handling difficulties.
2. directional balances of flows.
3. whether changes in demand are sporadic or expected.

and, in the latter, its excessive concern with proper procedure, or tendency to inflexibility in licensing, may be alleged to generate inefficiencies where dynamic factors are involved.

C) Third Level Regulation

As yet, there is no statement of public policy specifically regarding 'third level' operations. The regulatory environment for such operators is only that which lies evolved under the pattern of regulations established by the regulatory authority. Such regulations divide into two categories, the devising of regulations for specific operations¹ and the decisions regarding route awards.

First however, a further discussion on the nature of internal subsidy is relevant.

It is clear that companies do not normally calculate long-run marginal cost and demand elasticities in setting their rate structures. Typically, they attempt to allocate their total revenue requirements among the different services, or functions, which constitute their entire operation. At the same time, costs will be distributed among the various categories

¹See Appendix D, E, and F.

of service¹ on the basis of some cost accounting procedures adopted by the company. To the extent that fares chosen for the different types of service conform with the fully distributed costs of each unit of output,² fares may be said to be fully nondiscriminatory. In practice, however, firms pricing in such a way are not pricing on the basis of marginal cost, i. e. the cost of extending output to extra units, but are pricing on the basis of average cost. 'Rational' pricing or non-discriminatory pricing is felt to be satisfied where fares conform with such average costs. Where firms do not conform to these standards, their fare structures will be considered discriminatory.

However, in seeking business, securing markets, or in finding utilizations for excess capacity, firms may be induced to carry any traffic which at least covers the marginal costs³

¹Space does not permit a full discussion of the problem in allocating costs where joint or common products exist.

²i. e. Either ton-miles or seat-miles.

³In the long-run, this requirement ultimately applies to the covering of fully-allocated costs; in short-run competitions, however, only the variable costs of each service, given existing capacities, is likely to be considered.

of each service. If demands in a limited number of the markets which a carrier faces in its network of services are elastic, fares in such markets may be reduced lower than fully allocated costs. Such business is sought for the return to overhead which it contributes. Such is the competitive position of carriers when faced with competitive markets, or elastic demands. Consumers in less competitive circumstance, will perhaps face relatively higher fares as firms adjust their fare structures towards total revenue requirements. The practice cannot be said to be discriminatory or internally subsidizing in the strict sense. It is concluded that, for any particular firm, service extensions should be judged on a determination of the marginal cost of that service to the carrier, rather than any calculation of loss based on a fully allocated cost accounting. In competitive markets, such is the pricing to be expected during struggles for business.¹

Another diversion from 'rational' pricing may be seen in scheduled services with stable fares. As shown, higher load factors reduce the need for fare levels to remain high to meet

¹Cutthroat pricing may be considered pricing below MC.

break-even revenue requirements on a particular flight. At higher load factors, fares may be reduced substantially while still covering the costs of any service. Such a relationship adequately reveals the pricing competitiveness of flights guaranteed full load factors, such as in charters.

Whether or not this competitive advantage will be allowed in competition with scheduled services, which maintain a regularity of services at stable fares regardless of load factors achieved, remains the decision of regulators. In effect, however, it may be considered the protection of an internally subsidizing system.

The problem is essentially that government, in considering its various social and political objectives, desires a network of scheduled services, maintained at set frequencies, and operated regardless of demand levels for particular flights. Temporal fluctuations in demand change load factors and the schedule requirements of particular times - annually, seasonally, and daily. The averaging of group costs to buyers to meet revenue requirements inevitably involves a pricing system which is

irrational and unfair. In effect, it may be contended that peak demand travellers subsidize off-peak travellers only where off-peak consumer revenues fail to meet their variable costs of service, and that, therefore, a network of scheduled services, combining regularity and fares' stability over a network of fluctuating demands, is extended only on the basis of internal subsidization. The extent of such subsidy may be determined, and can only be judged subjectively by society.

Canadian regulation of commercial air services has considered it a major objective to maintain a designated system of scheduled services, mainline plus regional, and has imposed obligations on the holders of class 1 and class 2 licences¹ to provide such services² in correspondence with certain requirements. Correspondingly, it has felt compelled to provide the regulatory protection of such markets from carriers who operate under licences, without the obligations of regular service. Carriers operating under primarily class 3 and 4 requirements³ are not required to extend services without at least matching

¹ See Appendix D.

² See Appendix F.

³ See Appendix D.

variable costs. In effect, such firms are not required to internally subsidize and therefore require less protection.

The revenue advantage afforded class 3 and 4 licenced operators is that there is no legal requirement to fly where the variable costs of each service cannot be met. Firms with a high ratio of variable to fixed costs operating under such licence requirements are therefore at an advantage to carriers with a larger portion of fixed costs¹ and obligations to scheduled service. Self-sufficiency is much more easily attained; the burden of fixed costs and 'loss' route obligations during conditions of fallen demand is not so heavily carried. Obviously, the more variable a firm can make its cost structure,² the more easily it can achieve self-sufficiency under a system of fluctuating demands. Hence the more unstable and less reliable the system of markets over which a carrier operates, the greater is the need for flexibility and variability in the operations maintained, if self-sufficiency is in any way to be assured.

¹The maintenance of jet equipment involves a much higher investment in capital than do piston operations.

²Air carrier costs may develop relatively higher variable/fixed cost ratios than other modes. Airways are maintained at public expense, charged only with use to the carriers, leasing on equipment on short-term basis may be arranged, and other functions subcontracted.

D) Specific Regulations

As a general observation, third level operators are particularly involved in class 3 and class 4 operations. Hence, a clear distinction between the obligations extending to such licences is required. Class 1 and 2 services may be grouped together as scheduled until toll services operating under published schedules.¹ The differentiation between the two appears more in quality than in regularity. Class 1 services operate in established markets with well-developed support facilities, ". . . serving points in accordance with a service schedule . . .",² while class 2 services operate in newer, developing markets with less extensive ground support, ". . . to the extent that facilities are available in accordance with a service pattern."³ In operation, however, the two impose virtually the same economic burden on carriers, and, as such both receive protection from the regulatory authority, ". . . no commercial air carrier may carry traffic between points named on the same licence of any Class 1 or . . . on the same licence

¹See Appendix D and F.

²CTC, General Order No. 1972-1 Air, Part I, Section (3).

³CTC, General Order No. 1972-1 Air, Part I, Section (3).

of any Class 2 . . . commercial air carriers . . ." ¹ On the other hand, Class 3 licensed operations need operate only . . . serving points consistent with traffic requirements . . ." ² under unit toll. In effect, these are charter-like services, moving in response to demands as they occur, under no particular routings, into points which the carrier is licensed to serve. Such licencing offers ideal flexibility to the carrier where demands are generally temporary, developmental, or severely fluctuating. However, it is often found that unit toll services are only successfully marketed as publicized, scheduled services, ³ a feature denied class 3 operations. Inevitably, therefore, market development involves a transfer of the market to a class 2 licensed authority. Finally, charters or Class 4 services operate only where the full costs of each service are covered, offering ". . . transportation on reasonable demand, . . . from the base specified in the licence issued for

¹ATB, General Order No. 5/51, except in emergencies, under permission of the class I carrier or specific approval of the regulatory authority.

²CTC, General Order No. 1972-1 Air, Part I, Section (3).

³ATB, General Order No. 5/51 states, for example:

". . . in no case may Class 3 . . . or Class 4 . . . carriers develop regular air services or hold out to the public by advertising or any other means that regular services will be provided."

that commercial air service or the base declared by the Committee to be the protected base for that commercial air service . . . at a toll per mile or per hour for the charter of an entire aircraft . . ." ¹ Hence, revenue requirements are met for each flight. Carriers operate out of named bases into any markets, not protected by the regulatory authority and satisfied by the types of equipment, by weight groupings, which the carriers have been licensed to operate.

The essential difference where class 1 and class 2 are compared with class 3 and class 4 licences is that class 1 and 2 carriers operate according to an institutionally fixed structure of services while class 3 and 4 operate with greater flexibility, in answer to demands arising and with better terms in revenue.

The Base protection afforded class 4 services warrants further discussion. It is observed that aircraft in different weight groupings ² are not strictly competitive with each other;

¹ CTC, General Order No. 1972-1 Air, Part I, Section (3).

² See Appendix D.

each grouping roughly represents a certain capacity aircraft, which can be best fitted to a particular demand or market. The Committee states, "It should be noted that if protection is afforded a base it will apply only to group against group. No base protection will be afforded in any case in respect of the new Group A aircraft."¹ Hence, in the smallest aircraft grouping, the 'taxi' function is recognized to its fullest, and craft are allowed universal entry into all points. In the other groupings, however, for larger aircraft, recognition is taken of the fact that larger capacities imply the maintenance of larger ground facilities and the incidence of greater depreciation. In other words, fixed costs become a higher percentage of total cost and, therefore, higher utilizations are required to result in efficient operations. The rationale for base protection then surrounds protection of investments which will result in better public service, ". . . the Committee requires . . . to be satisfied that . . . the granting of base protection is required . . . to result in an improvement in air service for the public . . . and the applicant's position

¹ATC Notification to all class 4 operators, September 24, 1971.

is expected to improve . . . the applicant . . . will obtain permanent base facilities, equipment, personnel and financing adequate to provide service safely and continuously."¹ The regulatory authority, then, presumes the right to remove protection at any time where the protected carrier is not meeting the area's demands.

Charter licences allow any carrier to operate into any points not given regulatory protection. Protection, as a policy, has derived from the need to ensure utilizations of fixed investments and to maintain viability of carriers. However, it is evident that the marketing flexibility as well as the competitive stimulus of freely entering carriers is lost through such a policy. Control of investments rather than protection of markets would seem a wiser policy in the long-run. Where investment in base facilities can result in efficiency gains to a carrier, it would seem that competitive advantages would be secured² in its markets up to full capacity in competitions with other non-based carriers. The extra costs in dead flight

¹Ibid.

²Only if operations are efficient; the policy, it is assumed, does not aim to protect inefficiencies.

time for positioning and depositioning aircraft imposed on carriers outside the area serviced by the based carrier, would appear to establish the based carrier securely in its markets.¹ Problems would only result where too many carriers were licensed to operate out of any particular base or area, or where inconsistent private investments result in duplications. Both conditions lead to situations of excess capacity, with either under-utilizations or inefficiencies in use of capacity, or competitive struggles resulting in instability and long-term consolidation. In either case, however, regulation of investments rather than monopoly-creating base-protections would seem wiser policy.

¹Particularly, where charters are required to charge:

- "(a) . . . the lesser of the miles or flight time, if any:
 - i) from carrier's base to which the . . . aircraft is shown as available . . . to the place at which the work is to be performed; or
 - ii) from the place at which the . . . aircraft is actually located at the time of the charter to the place from which the work is to be performed; and:
- (b) the miles or hours flown in performing the work of the charter; and,
- (c) . . . the miles or flight time, if any:
 - (i) to return the air carrier . . . to carrier's base named . . ." - from Lambair Limited, Charter Tariff.

The other main restrictions under which the third levels operate regards their market conduct - in price discriminations and merger. Toll requirements¹ require 'rational' pricing, ". . . under substantially similar circumstances and conditions, with respect to all traffic of the same description, (tolls must) be charged equally to all persons at the same rate."² In commercial air operations into isolated areas and 'captive' markets, there is a particular sensitivity to prices even where actual demands are not particularly strong; hence, while demands remain thin but inelastic, the regulatory authority is under major pressure from public opinion to maintain fares which the population feels are ". . . just and reasonable . . ."³ While charges of price discrimination might thus be suggested the task of competition policy, in the particular circumstance outlined above, close control by the regulatory authority would seem most beneficial. Merger activity is also controlled both by competition policy and the regulatory authority.⁴ In either

¹ See Appendix E.

² CTC, General Order No. 1972-1 Air, Part V, Section (45).

³ CTC, General Order No. 1972-1 Air, Part V, Section (45).

⁴ See Appendix E.

case, prevention of merger has been minimal. Given the finality and rigidity of licence awards, plus carrier ambitions for aggrandizement, mergers have often been promoted as an avenue of expansion through combined licences. In other cases, it has been a 'means' to rationalizing route systems or achieving better scheduling of equipment. Whether merger is necessary, or whether a greater flexibility in licencing authorities is sufficient, remains a question.

In conclusion, therefore, the following points may be recognized:

1. Class 1 and 2 services are recognized to carry obligations recognized in the public interest which warrant protection of their markets from carriers not so obliged.
2. Class 3 and 4 services offer both the degrees of flexibility and terms of revenue which enable viability of operations where demands constituting the carrier's system fluctuate widely and unexpectedly.
3. Given investments in capacity, each carrier requires a certain level of traffic over its total system of licensed markets, to achieve the utilizations necessary to efficiency, and in order to

meet the revenue requirements of his total operation.

Thus, while class 1 and 2 services may require protection of markets to ensure orderly developments in the public interest, the flexibilities afforded class 3 and 4 operations may be considered sufficient to allow markets to become openly competitive. So long as investments are controlled to ensure no generations of excess capacity, competitive stability seems assured while the benefits of a competitive system of markets are maximized. Again, the only threat to the general equilibrium system is if independent investments lead to excess capacities and cutthroat competition ensues.

Chapter III
THIRD LEVEL OPERATIONS
IN MANITOBA

The two areas of discussion, the relevant theoretical approaches and actual regulation, are examined together in a study of actual developments in the specified Manitoba 'industry'. An interpretation of regulatory influence on the firms observed is developed. Specific considerations, of interest to public policy, in line with those theoretical norms outlined earlier, are noted.

A) Actual Route Awards
(and Industrial Developments in Manitoba)

Peiffer notes, ". . . licensing action did not display any positive transportation planning by the government but rather a passive response to demonstrated need."¹ Regulation has been imposed relatively independently by the regulatory authority, operating under ambiguous legislative direction, in the case of 'third level' operations. There has been little mention (perhaps, implying little attention) in route decisions of economic efficiency as developed by a carrier's route system in relation to its equipment. There has been little goal definition which, while admittedly difficult, would guide the

¹Peiffer, K. P., "Air Transportation to and within the Arctic" paper delivered at the symposium on Arctic and Middle North Transportation, May 5-7, 1969, Montreal.

regulatory authority in weighing alternatives and allow the carriers to form their own long-run developmental policies on the basis of some stated principles. In effect, much of the guesswork and gamesmanship which has evolved in the route decisions may be avoided.

Given the existing pattern of route system developments based on cumulative individual route grants, an examination of overall efficiency may suggest¹ the need to rationalize route systems by transfers of licences or by a basic change in policy. In Manitoba, this major task has been accomplished, to a large extent, through merger activity. Haphazard developments have thus become more orderly. However, it has been by private initiative rather than by regulatory pressure on public policy grounds that the changes have occurred.²

Markets follow an evolutionary pattern in development, beginning with low frequency charters and ending in the maintenance of a viable scheduled service with turbine equipment.

¹As in Miller's model.

²see Adams, Russel, B., "The Air Route Pattern Problem" Journal of Air Law and Commerce, vol. XXII (Spring 1955) pp. 138-9.

In seeking licensed authority, therefore, the main task is to establish that appropriate levels of demand exist to support the applied for service. In evolving unit toll services (i. e. class 3 authority), evidence of increased charter activities (developed by the carrier in question) is likely to ensure that carrier of its licence grant. Yet, all manner of factors can contribute, besides prior service. Management, investments in facilities, and financial ability may be considered more important in determining which carrier is chosen to provide the new service or compete with existing services, once sufficient demand, for the operation of the service in question, has been demonstrated to the regulators. However, as Peiffer notes, "It should not be up to the carriers to have to merge, agree informally on route licensing interventions and applications,¹ to run investment risks in order to "be the first in" and get squatters rights, to operate so as to not ruffle the feathers of those areas in which they hope for future profits."²

¹For example, ATC Decision Serial No. 2558 shows major changes in the particular applications in the midst of proceedings to decide route awards. Whether such changes suggest an interdependent compromising of objectives or evidence of "gamesmanship" among applicants, the Committee believes it to ". . . signify a practical realization by the applicants concerned of existing air services in the area and the traffic available for such services."

²Peiffer, K. P., Ibid.

The noticeable inflexibility in licences, once awarded, as the property of the carriers to whom they are issued, has created a major incentive to be speculative in seeking route grants, to hold rigidly to existing licences, and to seek merger as a means to flexibility in operations.

The need for flexibility in the licensing of authority to commercial air services is particularly evident in 'third level' markets, where firms are small and do not maintain the resources to sustain major losses in revenue. The underlying environment of economic activity, to which activity in the industry will be so closely tied, can be extremely variable and excessive merger activity may then be encouraged.

Further, third level operations may find their ability to secure traffic and provide services subject to 'outside' decision. There is a certain variability in demands, "... the applicant estimated that the Hydro project at Gillam would be building up for at least five years and if no additional power sites were developed then the air traffic would fall

off as the project is completed."¹ Developments² may even be more precarious, as when the Government of Manitoba stopped the Missi Falls project, "The project may be completely abandoned so as to eliminate the requirements of certain air services or it may be materially changed so as to require air services differing materially from those applied for."³ In its ability to utilize investments, the carriers may be further dependent on such exogenous change, ". . . there are no landing strips or facilities at the Northern communities in Manitoba to serve aircraft of the size and weight of the Bristol freighter."⁴ Given the provincial responsibility for Hydro developments and minor airstrip building, the dependency of operators in serving to the commercial exploration and investment decisions of private businesses, and the volatility of resource - based investments, there is an increasingly evident need for flexibility in designating licensed authorities by

¹ATC Decision Serial No. 2558, April, 1968.

²ATC Decision Serial No. 2849, November, 1969, stated, ". . . there would be a considerable demand for the transportation of men and supplies . . . when the (Hydro) project at Missi Falls is reactivated . . ."

³Special Report - G. R. Boucher on the proceedings, to ATC Decision Serial No. 2849, November, 1969.

⁴ATC Decision Serial No. 2615, October, 1968.

Federal regulators. Without such a provision, the financial success of carriers may tend to signify more successful speculation than efficient operation and innovation.

The need, also, for co-operation between the different levels of government, if such changes are to be readily adjusted to, is evident.

The relationship between exogenous decisions, inflexible licensing, and independent investments based on independent aspirations, is particularly evident as a combination inducing merger activity.

Route transfer and route system reorganizations have not seemed to take place under regulatory guidance. There is a finality to its decisions. Merger activity, as a result, has been extensive.

However, there are certain advantages gained in merger which must be observed. These are:

1. integrated route patterns (less interline connections are required).
2. eliminations of duplications in facilities and economies of scale realized.

3. the combining of licensed authorities allows the more rational development of route systems and greater flexibility in assigning equipment to serve particular markets.
4. increased revenues from a more integrated system may financially strengthen the carrier and, in sustaining greater earning power, allow it to re-equip much more effectively.
5. there may be the probability of improved management by placing a weaker carrier under the direction of a stronger management unit.

Hence, mergers may be approved, in the public interest, in giving improved services, economies in operation, and in strengthening the finances of carriers. However, the costs of such extensive activity is that they may create a domination of the system by one carrier, and a large loss in competition through the creation of a large imbalance in competitive abilities among a particular 'level' of carrier.

In 1968 - Manitoba was served by the following operators:

1. TransAir Ltd.
2. MidWest Aviation Ltd.
3. Northland Airlines Ltd.

4. Ilford Airways Ltd.
5. Riverton Airways Ltd.
6. Lambair Ltd.

By the end of 1969, only three operating units could be designated from the above:

1. TransAir - MidWest (TransAir plus MidWest Airlines).
2. Ilford - Riverton.
3. Lambair.

While the Ilford and Riverton Airways had been operating in a parent-subsidiary relationship for some years and were only "officially" merged in 1969, a startling increase in seller concentration is evident.

The important developments are in the Northland - MidWest - TransAir combination. The Northland - MidWest merger was first, completed in June, 1969. In 1965, MidWest had become a profitable, if small operator,¹ operating as the franchised Piper dealership in Winnipeg. Hydro charter contracts first at Grand Rapids and then at Gillam, plus the profitability of its helicopter services, allowed MidWest to re-equip into large modern equipment which was suited more to 'regional'

¹With fleet of 8 aircraft, 4 helicopters.

than third level operations.¹ In attempting to find markets for its larger wheeled equipment, MidWest sought entry into Thompson and Churchill² but found itself thwarted by the regional licensing policy which acted as an 'umbrella' on its abilities to expand into larger markets. Still the investments had been made and management looked for markets into which it would be allowed access.

Its fleet of fixed wing wheeled aircraft became suitable for inland Northern operations in Manitoba only with the strip developments of the provincial government. On the other hand, Northland held the major inland licences³ but was equipped mainly with float and amphibian aircraft, obviously necessary before strip development, but made obsolescent by such change. The merger was initiated by MidWest whose aspirations to growth could be satisfied no faster than the general growth in air transportation, under government controlled routes and licences, without such a step.

¹ in 1968, the company equipped with 1 DHC-6 and 2 HS-748 aircrafts.

² see ATC Decision No. 2558, April, 1968.

³ see Appendix G .

This merger, therefore, derived through the need to find an avenue for expansion and the need to utilize equipment acquired from the profits of successful charter contract awards. A regulatory policy which would have allowed Northland to re-equip in anticipation of strip developments, or which had either controlled Midwest's investments, or allowed route transfers which would give it sufficient utilizations, might have avoided the need for complete merger to rationalize systems. The merger, however, left Midwest strongly entrenched as the dominant 'third level' operator in Manitoba.

The TransAir - MidWest merger, in December 1969, completed the merger activities. The 'public interest' in the merger was particularly indicative of the benefits listed above. Given the over-extension of TransAir operations to meet obligations with obsolescing fleet, its viability was in jeopardy.

Compare the positions of the two companies in 1969:

III. 1. - TRANSAIR LIMITED
STATEMENT OF LOSS AND DEFICIT
(Annual Statements for 1968 and 1969)

Items	Years	
	1968	1969
Operating Revenue	\$6,363,437	\$8,501,254
Operating Expense	6,166,805	9,254,909
Depreciation	960,460	1,260,010
Annual Loss	(\$ 762,097)	(\$2,358,918)
Accumulated Deficit	(\$ 427,689)	(\$2,313,669)

Source: TransAir Limited, Financial Statements, 1968 and 1969.

III. 2. - MIDWEST AIRLINES LIMITED
STATEMENT OF INCOME AND RETAINED EARNINGS
(8-Month-Period, Ending December 31, 1969)

Items	Year
	1969
Operating Revenue	\$2,527,290
Operating Expense	1,533,582
Depreciation	291,172
Net Income	299,954
Retained Earnings	\$1,374,221

Source: Midwest Airlines Limited, Financial Statement, 1969.

MidWest was a small owner-manager carrier while TransAir was a much larger public company. MidWest's earning capability improved the financial base and re-opened access to capital markets. At the same time, TransAir's position as a regional carrier gave MidWest an outlet to its 'denser' market aspirations. The merger was activated to provide financial stability for TransAir. Great Northern Capital,¹ a holding company, which had just previously secured the majority of TransAir stock, and MidWest, provided the infusions of new management which tightened the 'internal' efficiency of the combined operation. Much of the obsolete equipment was discarded, staffs reshuffled, and a stricter operating economy was adopted by the company.

However, the major gain was in the flexibility afforded the combined unit in reallocating its licences and equipment between the two carriers, who were to remain distinctive, ". . . under . . . a plan to separate the route licences and aircraft

¹ Great Northern Capital was able to send temporary management to aid the company in reorganization, as well as obtain better terms in financing re-equipment than those available to TransAir. Thus, for example, it was Great Northern which arranged financing for the acquisition of TransAir's Boeing 737's, and which leases these to TransAir on a contractual basis.

between TransAir Ltd. (the designated carrier by stated government policy) and MidWest Airlines Ltd."¹ Thus, a combined operation was able to institute the sorts of changes, necessitated by regional policy and government regulation, necessary to a rationalization of fleets² and route systems in Manitoba. Again, it was the task of private initiatives rather than regulatory guidance which provided such development.

¹ATC Decision Serial No. 3193, April, 1971.

²As of October 15, 1971, fleets were listed:

TRANSAIR LTD. FLEET

<u>Aircraft (Number and Type)</u>	<u>Capacity (Passengers)</u>
1 Argosy	freight
2 HS-748	40
2 YS-11	46
2 Boeing 737	115
3 DC-3	28

MIDWEST LTD. FLEET

<u>Aircraft (Number and Type)</u>	<u>Capacity (Passengers)</u>
2 Argosy	freight
1 Canso	18-26
2 DC-3	28
3 DH-6	18
2 Grumman Goose	10
1 Beech D-18	8-9
plus numerous smaller aircraft and helicopter fleet	

Source: Statistics Canada, Fleet Report Inventory of Commercial Aircraft in Canada (Ottawa, Aviation Statistics Centre, 1971).

The economies in the merger derived from previous commonalities in service and equipment, higher utilizations of fixed base equipment, marketing advantages, and, most importantly, the increased flexibility in matching equipment to the load factors generated on particular sectors. Instead of losing business or maintaining services with ill-suited equipment, the company was able to internally arrange transfers of operating authority to the more specialized carrier. While no doctrinaire policy has yet been established by TransAir - MidWest for allocating routes and equipment between the two types of carrier, internal management has seen fit to divide the carriers roughly by function and by equipment.¹ The main advantage of the combined operation is

¹The divisions are roughly as follows:

by FUNCTION

TRANSAIR (REGIONAL)

1. scheduled services with larger turbo and turbine equipment (class 1 and 2)
2. international and large aircraft charters (e.g. Dew-line resupply, affinity groups, inclusive tours, fishing camps, etc.)

MIDWEST (THIRD LEVEL)

1. Inland shuttle services, scheduled services with smaller aircraft; (class 2 and 3)
2. Extensive charter activity with larger freight aircraft and smaller wheel and float equipment.
3. Specially helicopter services.

by EQUIPMENT

Boeing 737 - 115 passenger
DC-3 - 28 passenger

DC-3 - 28 passenger
Piper PA-23 - 4 passenger

that it can fit the aircraft to the traffic demands, and switch such authorities as quickly as changes in the traffic are observed through internal transfers. The large TransAir aircraft are therefore integrated into a single system schedule with the smaller MidWest craft, and the efficiency of the total system is thereby enhanced.

In its operations, a definition of 'third level' carrier by types of equipment is suggested by TransAir - MidWest developments. Roughly, the 'third level' operator becomes a carrier with both scheduled (up to class 2) and charter authorities, operating in given areas, best serviced with up to DC-3 and DHC-6 capabilities.

Post-merger actions taken by TransAir - MidWest, indicate how the two carriers were able to institute changes made necessary due to:

1. exogenous change (i. e. commercial development in the area, strip building, etc.).
2. licensing evolutions (i. e. irrational licensed systems).
3. independent investment activity (i. e. equipment planning which evolved 'unsuitable' fleets).

After the merger, MidWest transferred its larger capacity HS-748 aircraft to TransAir's operation. Hence, the equipment became available for use over 'regional' routes, with denser traffic flows to increase both its utilization and revenue-generating abilities. Previously, MidWest's class 2 service to Gillam had been overflowed by TransAir's service to Churchill. The service was, therefore, rationalized by a transfer of the Gillam point to TransAir's licence to serve Churchill. The transfer resulted in better load-factor performance on TransAir's services plus an increase in efficiency, through the reduction in duplicating services. Presently, MidWest's direct flight to Norway House with DC-3 aircraft has met a large imbalance in traffic flows and a growth in traffic which has taxed the service capabilities of its DC-3. Transfer of the route to TransAir was thus suggested and approved by the regulatory authority pending improvement of support facilities at Norway House. MidWest would continue, in a supplemental role, operating an inland shuttle along the route,¹

¹ Winnipeg - Little Grand Rapids - Berens River - Poplar River - Norway House - Cross Lake.

catering to 'feeder' and local traffic needs with smaller aircraft. In short, therefore, MidWest and TransAir, since the merger, have adopted 'company policy' which designates markets either as 'third level' or 'regional' operations. The merger has provided an avenue of co-operation, through which private initiatives may better develop rational systems. In doing so, it is apparent that they have accounted for the following:

1. given fleets (i. e. short-run capacities and abilities) representative of the production function characteristics of the particular 'level' of carrier.
2. the ability to adapt easily to changes in the exogenous environment (i. e. dynamic change which may call for transfers in operating authority).
3. the designation of carrier functions, to allow proper long-term planning of investments and re-equipping policies (i. e. institutional restraints on markets available to carriers should be designated, and carriers must plan to re-equip in light of the market opportunities afforded them by the regulatory authority).

Regulatory policy, aiming at a sounder development of 'third level' operations must obviously consider these same factors.

Furthermore, advantages in higher utilizations of fixed base facilities and in combined marketing were envisioned for the carriers. A large investment in base facilities for maintenance and overhaul requires a heavy through put to take full advantage of the lower costs available in full utilizations and scale economies. TransAir felt substantial savings in its maintenance function¹ could be had by concentrating such activities at its Winnipeg base.² Furthermore, by combining marketing and accounting operations, it was hoped sufficient scale would be developed to allow specializations and higher utilizations of existing personnel and facilities. Finally, the company saw a marketing advantage in having its retail outlets able

¹A problem, noted here, however, is the heterogeneity of 'third level' fleets (i. e. the problems of operating mixed fleets). Labor specialization is retarded because of the need to maintain multi-trained staff or incur low utilizations.

²The exact relationship between the scale of operations and the extent of the economies available deserves rigorous analysis. Whether such disadvantages can be overcome by the smaller firm through subcontracting the function to a 'specialist' firm remains an important question.

to allocate traffic to the most suitable supplier¹ within its total system of operations. Here, then, economies of scale and marketing advantages for the integrated operator may be experienced. On these grounds, also, merger may be in the 'public interest'. The only means to such benefits, without merging systems, is seen in the subcontracting of functions, and the development of co-operations between carriers in sustaining traffic promotions and interline services.

Undoubtedly, merger activity presents major advantages for the combining firms under certain circumstances. However, regulatory policy which induces merger, as the only reliable means to efficiency (static and dynamic) and to the development of integrated systems of commercial air services, may be unwise in its evolutionary consequences. Both the level and structure of competition within the industry are affected. Advantages, cited earlier for competition, may be lost, and an added burden placed on the regulatory authority to develop standards² of performance and to regulate operators closely -

¹Co-operative developments at marketing outlets can improve the market penetrations of smaller carriers, who, in turn, may benefit the larger carrier by developing 'feeder' traffic.

²Base rates, reasonable rates of return, 'allowable' costs, impositions to serve, etc.

to ensure the benefits of increased efficiency - are, in fact, transmitted to consumer.

The Air Transport Committee has recognized the role of competition in third level operations, "to grant protection to . . . the only unit toll carrier in the area would not only deprive other licences in the area of substantial and established services but would virtually eliminate competition and leave the public without choice of a carrier."¹ As TransAir - MidWest declared, ". . . the two air carriers merged their financial, executive, aircraft, and operating resources . . . to provide for a better rationalization of route network and other services for the public through the most beneficial use of the combined resources of the two companies, the development of viable service benefitting the public in the areas served."² The question is essentially how to manage the two objectives above. In Manitoba, the evolution of licensing and merger activity has led to a situation in which the basic framework of regular

¹ ATC Decision No. 2849, November, 1969.

² ATC Decision No. 2913, January, 1970.

air services (class 1 and 2) has been developed by TransAir - MidWest. Competition has been provided by less advantaged carriers, dependent mostly on charter activities, who have been licensed to operate class 3 unit toll services in competition with, and supplemental to, TransAir - MidWest's major developments. Merger activity, therefore, no longer seems appropriate and, in fact, the Committee has already established precedent in suggesting better means to efficient and integrated services, "the Board will . . . expect proper co-operation between TransAir and Norcanair (a recognized 'third level' carrier in Saskatchewan) in the matter of scheduling so that reasonable connections between the two services may be maintained."¹

In conclusion, therefore, it is evident that there remains a need for definitive policy regarding 'third level' carriers. Specifically, the carriers must be designated by function (i. e. those markets into which 'third level' operators will be allowed entry), by equipment types, and possibly by geographical area. Given the economic environment of the

¹Suggested are interchanges of equipment over particular licenced authorities and interline arrangements for through flights on wet lease. ATC Decision No. 2603, August, 1968.

operators, it is furthermore necessary that a greater flexibility in licensing policy be developed, either by institutional leadership in developing rationalizations through route transfers and investment control, or by allowing greater freedom toward co-operative efforts under regulatory direction. In any case, the Committee should no longer consider specific cases through partial analysis, but develop a concept of general system efficiency and designate each level of carrier's role in such a system.

B) The Third Level System in Manitoba

i) General Features

In describing the nature of Canadian commercial aviation in the 1920's, J. R. K. Main states, "a few were well-financed and organized. The majority had slender financial resources and were accordingly tempted to cut corners . . . New ones (operators) were coming in, mergers taking place, and a general tendency toward consolidation in the interests of stability and rationalization was in evidence."¹ To a limited extent, the description applies to the operations of 'third level' carriers

¹Main, J. R. K., Voyageurs of the Air (Ottawa, Queen's Printer, 1967), p. 64.

in Manitoba.

The description is appropriate, for 'third level' carriers are, in many cases, the first step in the development of class 1 services between newly established resource developments or growth centres. In this sense, therefore, they represent an 'early' phase or developmental stage in air services. As noted, routes may reveal an evolutionary pattern of development, in tune with industrial and commercial developments, through four stages:

- (1) irregular to heavy charter operations (class 4 operations are suitable)
- (2) increased charter activity (suggest the need for provisional class 3 authority)
- (3) low-frequency unit tolls (class 3 operations) and
- (4) increased development to high and stable frequency operations (class 1 and 2 scheduled services become viable)

It will be observed that third level operators operate mainly in the first three stages of route development. Functionally, therefore, third levels offer developmental services, feeder services to both mainline and trunk operations, and essential links between isolated communities. It appears that only where

traffic is sufficiently stable to require regular services, yet too thin to be operated successfully by the equipment maintained by the Regionals, are such services operated by 'third level' carriers.

Operationally, firms at this level are often owner-manager private corporations with a lack of development in accounting techniques, departmentalization, and reporting requirements. There is a corresponding lack of investigation into markets or into any long-range planning of operations. Similarly, there is a tendency to be short-run and atomistic in the planning of firm strategies and investments. Thus, problems of inconsistency and overcapacities in investment become most possible and, indeed, likely.

Another important consideration, in this respect, is the varying abilities of firms in terms of their access to capital markets. Inability to generate adequate capitalization can remove a well-managed firm from competitiveness with other firms in the industry, through no other reasons than exogenous developments creating weak route systems or obsolete equipment. Such firms will also show an increasing incapacity to meet the re-equipping strategies of competitor firms as its disadvantages become more pronounced over time. In an environment of

restricted markets and regulation against price competitions, such disadvantages may become increasingly debilitating and increasing market concentrations are likely to result.

The industry also reveals a combination of easy entry and slow exit which, along with independent investments, suggests that the likelihood of chronic maladjustment or disequilibrium between capacity and demand is strong. Notwithstanding the conditions of licensing, entry must be considered easy. Not only do aircraft maintain complete mobility in allocations between city-pairs, but the low capital requirements in beginning small piston aircraft operations, and the lack of any perceptible disadvantages vis-a-vis existing carriers (particularly at the 'taxi' function level), suggest very easy initial entry. Given the high maintenance standards on aircraft, used capital may be expected to have a long productive life, even if technological changes suggest rapid obsolescence. Equipment can therefore remain serviceable for extended periods in non-competitive markets or markets where demands do not require the newer technologies. Thus, in the industry, given a supply of new owner-enterprisers who would take over and run existing facilities, there may develop a tendency for the very slow exit of capital. This situation, in many cases, is witnessed in the

operation of 'third level' carriers. Old equipment often remains in use in markets where newer technologies are often neither demanded nor suitable. In parallel with these conditions of easy entry and slow exit, independence in the decisions of owner-managers to invest in greater capacity and larger fleets may be evident. Firms may show a tendency to overinvest in equipment as it becomes available to them. As a result, fleets will have a tendency to become larger and more heterogeneous, with obvious implications for performance. This tendency to 'overcapacity' is thus a very real danger in third level operations.

In the provision of 'third level' services to Manitoba excess capacity has often resulted from historical events which have initially induced the creation of capacity, and dynamic change, which has thereafter reduced the levels of demand.¹

1. POPULATION TRENDS IN NORTHERN MANITOBA

	<u>1951</u>	<u>1956</u>	<u>1961</u>	<u>1966</u>	<u>resource activity</u>
Thompson	----	----	3,418	8,846	mineral
Grand Rapids	207	274	986	454	hydro (61)
Snow Lake	552	659	881	1,349	mineral
Sherridon	778	88	43	117	mineral

Source: data compiled by Manitoba Government of Industry and Commerce from DBS Census Statistics.

The trends show the great fluctuations in population (as representative of demand) in the resource-based centres in Manitoba.

Increases in demand from the Dew Line and Hydro projects saw temporarily high levels of demand inducing MidWest and TransAir to equip in larger capacity, only to find it excessive when demands returned to normal. Furthermore, 'exogenous' decisions by the provincial government in the development of surface transport, in beginning and cancelling projects such as Missi Falls, and in deciding to develop a larger system of Government Air Services may all result in historical developments towards excess capacity. These historical events are the triggering mechanisms which generate excess capacities. There is need, therefore, for continual readjustments which, given both institutional and market characteristics, are only arrived at sluggishly. In this process, therefore, there is obviously some need for longer term planning and a better co-ordination between the 'exogenous' plans of government and the endogenous strategies of the individual firms.

The consequences of any persistent tendency to excess capacity is the continuing partial utilization of equipment or capacity by the firms in the industry. Where this situation occurs, weaker firms may find themselves operating perpetually in markets in which they are unable to earn sufficient revenue to allow themselves a 'reasonable' rate of return. They become,

in effect, desperate for revenues. In their struggle to maintain financial solvency, these firms may become highly opportunistic or short-term in their thinking. It may lead to the employment of inferior techniques or equipment because of inability to finance better ones. Antagonistic behaviours may be evidenced. With a limited number of flying hours available, firms may attempt to get the jump on competitors by rapid action. Such attempts may involve the 'stealing' of business or excessive investments in new equipment by competing interests. In any event, the results of excess capacity will be poor market performance and must therefore be avoided.

Public intervention, to assure stability in supply, is warranted; the problem is that the need for competition in individual markets has also been recognized. The means of licensing entry, mentioned previously, do not seem as suitable to the achievement of desirable market performance, therefore, as the co-ordination and planning of investments might be¹. The

¹It must be noted that successful regulation of the kind recommended above will demand greater reporting from the carriers. It is possible that the smaller carriers are not suited to such requirements, and, perhaps, regulatory interventions in the investment strategies of firms will meet with criticisms that they are limiting a basic corporate freedom and private competitive variable.

tendency to chronic excess capacity and unstable performance should be satisfactorily removed by the regulation of investments. At the same time, the de-regulation of entry to specific points should allow operators the greater flexibility desired in operating over a system of fluctuating demands. Lower institutional barriers to entry of this kind implies a liberation of market forces, with patterns of output ranging more closely to related consumer demands. There is also an increased sensitivity in production to changing consumer preferences and patterns of demands. Thus, except where it is a stated social objective to secure regular services regardless of specific demand levels at any one time (i. e. class 1 and 2 services), greater flexibilities in allowing exit and entry to individual markets should be encouraged. The regulation of investments to avoid situations of excess capacity should remove any tendencies toward instability and increasing concentration.

It has been noted that economic efficiency will require that unit toll operations, over thin routes, be served by single firm monopolies. In geographically remote areas, however, this requirement takes on added significance. In these cases, competition is desired but it is usually only allowed to be indirect or of a charter nature. However, such routes, as distinct geographical markets may still remain competitive

if:

1. within a larger geographical area (for example, within provincial boundaries), there are enough firms that oligopolistic interdependence, in this wider sense, is not substantial,
- and, 2. if competition remains 'open' through the threat of possible route transfers under periodic reviews by the regulatory Commission.

Hence, while unit toll operations over thin routes must retain an essentially monopolistic nature, maintenance of more atomistic concentration of the larger system of markets can ensure conditions of 'open, competition. In short, while governmental regulation seeks to develop 'rational' and connective route systems for each individual carrier, it may also be able to ensure the prohibition of monopolistic exploitations by maintaining a number of carriers in the position of 'potential' competitors. Thus, flexibility in route allocations should be maintained for two purposes:

1. to allow the continual development of rational route systems for the firms in the industry,
- and, 2. to maintain the influence of 'open' competition on carriers in the industry.

In conclusion, therefore, it may be suggested that regulation of capacity in a general equilibrium sense, i. e. in relation to some total system of markets defined geographically, may be desirable to regulation which concentrates on the conditions existing in individual city pairs. The regulation of specific markets in the partial equilibrium sense, as presently, tends to generate greater inflexibilities in the allocations of individual fleets and, as Caves notes, ". . . has raised the cost of air transportation through protecting inefficient firms and through maintaining . . . imbalanced route structures that require firms to own many types of aircraft."¹ Where markets have proven to be dynamically unstable over time, the inflexibilities generated by the present licensing system may be considered undesirable.

ii) Route Systems

Functionally, the third level carriers operate essential services in connecting isolated points with regional centres, they act as a limited competitive force to the regional operators (indirect services provide an alternative to the direct flights of the scheduled and regular operators), and they supplement

¹Caves, R. E., Air Transport . . . op. cit., p. 430.

regional operations by providing feeder services to the regional systems. In this latter purpose, there is obviously some gain in initiating co-operation between firms to co-ordinate schedules and to ease arrangements for the marketing of interline services.

Finally, a fourth function of the third level operators may be observed. Where routes requiring regular services cannot be served by regional carrier equipment, due either to a deficiency in ground handling facilities or a thinness in traffic,¹ the smaller equipment of third level carriers may be implemented in establishing a regular air service. Where such services could not otherwise be viably operated with the larger equipment maintained by the regional carriers, the role of the 'third level' operator is clear and such services should obviously be rendered as a fourth function of the third levels. In designating such routes for third level operation, the co-operation of the regional carrier is again essential.

It is where this fourth function has been dominant that attention is to be focused.

¹An example is the services operated by MidWest to Norway House and the Island Lake regions.

a) The Prairie Services

Perhaps the most fully documented case establishing this fourth function of third level air carriers is in the provision of air services to the prairie points, Winnipeg, Brandon, Yorkton, Regina, Saskatoon and Prince Albert.

It was considered that these centres were 'regional' points which, falling within TransAir's designated geographical territory, were the responsibility of that carrier. The function of providing regular or scheduled air services on routes linking together main centres of Winnipeg, Regina, and Saskatoon, by means of intermediate stops at points of lesser population proved to be a non-sustaining burden which threatened the carrier's overall viability. The problems of generating and capturing sufficient traffic for a self-sufficient operation was overwhelmed by a combination of short stage lengths, available alternative transport (thin traffic flows),¹ and inadequate equipment. However, in 1966, the routes seemed well within the definition of regional service and therefore, it seemed,

¹ Air Canada provided mainline scheduled services in turbine equipment between Winnipeg - Regina, and Winnipeg - Saskatoon. In competition, TransAir's indirect flights with turbo-prop (Viscount) equipment were singularly unsuccessful. The major air traffic flows therefore developed North-South, in the Prince Albert - Saskatoon - Regina connections.

remained the obligation of TransAir.

In 1968, its fleet characteristics and obligations to serve East - West connections on the prairies, TransAir applied for subsidized services and was rejected. The Committee required that, ". . . relatively low traffic generating characteristics (be met) by means of smaller aircraft appropriate to the actual traffic requirements of the points being served."¹ It was also stated that services were not to be maintained by the public which could not be developed into a viable operation by the carrier concerned, "The Board is not prepared to accept the position that because a route falls within the . . . area of operation of a regional carrier it has the right to operate the route . . . with assistance from public funds when neither the regional carriers aircraft nor its proposed service bears any relation to the actual traffic requirements of the route."² In turn, the Committee left the decision as to the maintenance of the service, at a continuing loss, to the discretion of TransAir.

¹ATC Decision No. 2550, February 22, 1968.

²Ibid.

Not wishing to lose its licensed foothold in the Prairie markets, TransAir decided in favor of maintaining the service with its smallest aircraft, the DC-3. At the same time, however, Norcanair, a recognized third level air carrier operating to points in northern Saskatchewan, wished to connect its northern services to the lucrative Prince Albert - Saskatoon - Regina markets, establishing a single line North-South connection on a regular service basis. However, given TransAir's prior claim to these markets and its willingness to operate without public financial assistance, the Committee merely decided to maintain TransAir's position, while requiring the co-operation of the two levels of carrier in establishing an integrated North-South air service in Saskatchewan. Third level carrier entry was thus effectively blocked¹ into the prairie markets, although the routes continued to be operated by TransAir whose inadequate equipment continued to provide inefficient services.

¹See ATC Decision No. 2696, March, 1969. MidWest's application to operate Twin Otter aircraft over Winnipeg - Brandon - Yorkton - Regina on a class 2 basis was denied.

It was only after merging with MidWest, that TransAir attempted to 'rationalize' its prairie services. In January 1970, TransAir asked for permission to amend its prairie services so that it might operate non-stop between Winnipeg and Regina and Winnipeg and Saskatoon on a class 1 basis, while MidWest operated 'third level' services, Winnipeg to Brandon¹ and Winnipeg - Dauphin - Yorkton.² These changes were allowed by the Committee with the provision that Air Canada determine the types of operation TransAir would be allowed in competing with its direct services from Winnipeg to Regina and Saskatoon. MidWest Airlines was thus required to operate regular unit toll services out of Winnipeg, ". . . the two licences shall contain a condition requiring the licensee to operate the class 2 services with aircraft suited to serve the traffic demands of the points named . . ." ³ This 'rationalization' was necessary given the environment in which the carriers operated; yet, the slowness in altering the development of services gives good indication of the inflexibilities in the licensing system.

¹On a class 2 basis.

²On a class 3 basis.

³ATC Decision No. 2913, January 1970.

Only in early 1972, furthermore, has TransAir made arrangements to allow Norcanair access to the North-South markets, Prince Albert - Saskatoon - Regina.¹ MidWest itself, however, has continued to meet losses on its operations into Brandon, Yorkton, and Dauphin, since the provision of services in the smaller capacity aircraft supplied by the 'third level' operation has been accompanied by further declines in traffic.² Hence,

¹The agreement comes, not surprisingly, on the basis of a lease by MidWest of two of its DHC-6 Twin Otter aircraft. The service can be operated most rationally as an extension of Norcanair's northern services. Given the lack of traffic development on an East-West basis, the viable operation of the service by MidWest or TransAir would require establishing base facilities in Saskatchewan, increasing overhead, or positioning aircraft in Saskatchewan, at cost, frequently.

²Consider the following data:

ORIGIN AND DESTINATION TRAFFIC - BRANDON
(Total Outbound and Inbound Traffic)

From Brandon:	1965	1966	1967	1968	1969	1970
To Winnipeg	515	865	1320	1675	2735	625
To Yorkton	15	10	----	50	----	----
To Regina	60	270	405	575	960	135
To Saskatoon	25	135	280	345	700	120
Totals	1145	2105	2895	3810	6815	2050

Source: D. B. S., Origin and Destination Statistics 1965-70 (Ottawa, Queen's Printer, 1966-71), Table 1.

The main traffic flows between Winnipeg and Brandon; there is a much lower development of traffic to the western points Regina and Saskatoon. There is virtually no flow between Yorkton and Brandon. Significant also is the drop in traffic concomittant with the cancellation of TransAir's services in 1970.

MidWest has applied for a further reduction in the licensing requirements on the service, to a class 3 basis. In operating the routes only as a taxi service, rather than as a regular service, the company expects to remove the variable-cost losses associated with maintaining regular services over a network of points generating insufficient or unstable demands. Thus, in the opinion of the company, the points have become suitable for the main type of 'third level' unit toll service, the class 3 authority.

In conclusion, therefore, if regulatory policy is to establish services without public subsidy or internal cross-subsidization of routes, it must require that operators service markets with equipment fitted to the needs of the traffic. Where traffic cannot be developed to levels which sustain scheduled or regular services, unit toll services will have to revert to a class 3 authority, operating only in accordance with arising demands if services are to be self-sustaining. At this level of traffic development, it would appear that the capacities maintained by 'third level' operators will be most ideally suited to the traffic. However, the deteriorations in the qualities of the services, both in terms of regularity and equipment offered, must be expected; the levels of air traffic

demand will likely decline and, in this sense, the public interest may be considered lost.

b) Other Traffic

Adequate analysis of the system needs for air services in Manitoba would be better determined from the collection and public availability of detailed origin - destination statistics. However, smaller firms do not maintain such extensive records and such data is therefore not available. Therefore, a more generalized analysis must suffice.

In Manitoba, conditions have conspired to segment air traffic into divisions, according mainly to the availability of alternative transport.

Of interest here is the traffic developed in the north eastern division of the province. The area is characterized by thin populations, underdeveloped industrial activity, and remoteness¹ from the larger centres of population. In effect, it has been observed that the area is 'Siberianized'. The

¹The major locations of population, in the Island Lake region, have interests mainly with Norway House and Winnipeg.

dependence on air service, given the existence of no viable surface connections, is therefore at its maximum. The thinness of traffic, moreover, has made the area suitable only to 'third level' operations.

MidWest Airlines has developed the only regular unit toll service into the area. However, allowing these class 2 services to operate as a monopoly has its obvious problems in markets which are so effectively 'captive'. This problem has been recognized by the regulatory authority and, correspondingly, competition has been introduced into these 'third level' operations. In 1969, Ilford - Riverton was allowed to connect its existing class 3 operations into Island Lake with Winnipeg, thus providing competition against MidWest's class 2 service, ". . . the demand for Unit Toll services to and from Island Lake and God's Lake is principally to Winnipeg . . ." ¹ The rationales for allowing such competition are familiar; the Committee noted that the public ". . . had clearly indicated their desire for a choice of carrier . . .", ² the likelihood of ". . . improved

¹ATC Decision No. 2849, November, 1969.

²Ibid.

services resulting from competition . . .",¹ and finally, that ". . . this demand is of sufficient volume to sustain the additional service proposed . . ."² Furthermore, the area was to remain an 'open point'³ as far as charter operations were concerned. The Island Lake area is thus presently served by a minimum of four charter carriers⁴ on a designated points basis.⁵

At the same time, MidWest services connecting the Island Lake region with Norway House and Thompson, as major Northern centres, have been paralleled by the issuance of class 3 authority to Lambair. Thus, MidWest's entire system of class 2 services has received some measure of competition from class 3 services in the remote north eastern areas of the province.

In short, therefore, where 'third level' operations are necessitated by thin traffic in remote areas requiring regular service, both the need for small capacity aircraft and competition are recognized by the regulatory authorities.

¹Ibid.

²Ibid.

³ATC Decision No. 2940, March, 1970.

⁴See ATC Decision No. 3187, April, 1971.

⁵Carriers without bases at the points are not required to charge consumers positioning and de-positioning charges.

iii) Welfare Aspects

The social welfare implications in 'third level' operations to Manitoba surround the social priorities often established for less advantaged groups. Whether an increase in social welfare requires a redistribution of income in favor of these groups is, as noted, the subjective decision of the State in designating the social welfare function. All that may be indicated here is the large extent to which such groups comprise the traffic served by third level operators in Manitoba.

The problem surrounds the regional shifts in location of economic activity in Northern Manitoba, which have occurred in the long term, but which have left important obligations to declining areas. Two distinct areas may therefore be recognized, The Historic North and the New North.¹ In Manitoba, resource exploitations have evidenced substantial growth in certain pocketed areas, ". . . based on the large scale exploitation of the mineral, forestry, and hydro resources. The associated large scale public and private investment in these resource-based

¹from Submission on the Manitoba Government on the Requirement For and Adequacy of Fixed Wing Commercial Air Services in Northern Manitoba, submitted to the ATC Hearings, Winnipeg, April, 1971.

industries has brought new urban centres into existence."¹ Adequate surface and air transport has, correspondingly, evolved and such centres² have developed socially satisfactory transportation service. At the same time, the Historic North, those communities growing out of settlements established during the fur trade activities and the developments of indigenous population, have not received such adequately developed services. In a sense, these populations have remained stagnant, "Here are found social, economic and political problems of human adaptation to the requirements of modern society. The Historic North is one of smaller settlements where the economy is based on fishing, fur trapping, and hunting."³ The communities comprise large segments of the Indian-Metis populations of Manitoba⁴ and, with their emphasis on primary production, present low income groups whose human resource potentials remain a continuing social and political concern.

Given these conditions of Indian-Metis populations,

¹Ibid., p. 2.

²The Pas, Flin Flon, Lynn Lake, Thompson, Gillam, Churchill.

³Ibid., p. 2.

⁴See Appendix 1.

underdeveloped economic regions, isolated communities, and low-income groups, the social welfare implications in securing adequate air services to the communities in the Historic North are obviously numerous. Thus, extension of services on a larger subsidized basis may be suggested. However, transportation as a means to satisfying the public policy desires for these regions should not be viewed in isolation. The problems of these areas regard cultural change, labor immobilities, and even questions of equity. The problem of socially integrating such areas with the rest of Canada will, therefore, remain a highly complex issue requiring considerations far beyond the scope of this investigation.

In any event, the divisions in Federal-Provincial authorities are such that the above considerations will likely require some co-ordination of activities. The B. N. A. Act gives the provinces control over all local matters. Specifically, the provinces retain responsibility for education, poor relief, hospitals (health and welfare), and natural resources. Decisions

affecting extensions of air services into the isolated areas of the North are thus primarily focused in provincial jurisdictions. Yet, the regulation and control of commercial aviation and the operation of well-developed airstrips are the responsibility of the Dominion Government. There is, therefore, an obvious need for co-operation and collaborations in defining the role of commercial air carriers (specifically, third level) in meeting the socio-economic needs of these isolated communities.

Chapter IV

THIRD LEVEL ECONOMICS

A) Introduction

In general, 'third level' carriers may be considered small businesses, although conditions vary considerably from organized firms with well-developed fleet characteristics and stabilized operations, to multi-purpose owner-manager directed firms with obsolescing fleets and high labor turnovers.¹ In the common owner-manager firms, the managers often act as multi-purpose administrators, with duties ranging from accounting, general administration, sales negotiations, and promotions, to maintenance. Such internal firm arrangements have developed characteristics of short-run, opportunistic, and ad hoc market strategies by these firms. These are firms which have not reached a high level of organizational maturity with its corresponding tendency toward long-term planning for equipment betterment, for developing permanent ground facilities, and long-run personnel training programs. In short, individual firms show a tendency to exploit economic opportunities for short term gains, and this short-run philosophy has resulted in

¹A problem often encountered is that the smaller firms act as training grounds for the larger or more stable operations of government, mainline, or regional air services. To retain experienced staff in isolated and developmental firms, therefore, the carriers are often required to pay a premium. The larger operators obviously benefit from these supplies of trained labor.

a lack of long-term market investigation and investment planning. The firms, therefore, in many cases, have not themselves developed policies for rational route systems or equipment. This short-term gains philosophy, a common consequence of small firm size and conditions lacking permanency, has developed firms ready to exploit situations for yearly advantage rather than longer term objectives. Such behaviour must be expected where opportunities are left to these types of firms. There may be a tendency to exploit, rather than develop, markets when revenues are scarce.

A concomitant element of such types of organization is also a lack of well-developed and standardized operating records. Data regarding developments in levels of out-put, traffic flows, and definitive costs analysis are commonly not kept.

Furthermore, 'third level' carriers, submit statistics in accordance with a Statistics Canada gross revenue classification

system¹ which does not strictly conform with any notions² of 'third level' operation,³ and which has different data reporting requirements for each group. In depth study obviously requires a better standardization in the reports of 'third level' designated carriers as well as more dis-aggregation in the public provisions of such data by Statistics Canada.

¹The financial classifications are as follows:

- Level I - mainline carriers designated.
- Level II - regional carriers designated.
- Level III - "Canadian Air Carriers (excluding those in Levels I and II) with either:
 - (a) Unit-Toll Revenues of \$150,000 (or over) per annum; or
 - (b) Unit-Toll and Charter/Contract (excluding specialty flying) revenues of \$500,000 (or over) per annum . . ."
- Level IV - "Canadian Air Carriers (excluding those in Levels I, II and III) with annual gross flying revenues of \$150,000 (or over) per annum . . ."
- Level V - "Canadian Air Carriers with gross flying revenues of less than \$150,000 . . ."

Source: Statistics Canada Aviation in Canada 1971 (Ottawa, Information Canada, 1971), p. 113.

²There is no official definition of what constitutes a 'third level' operation.

³For example, in 1970, Midwest, Lambair, and Norcanair were included in Statistic Canada's Level III. Ilford-Riverton was included as a Level IV carrier.

Presently, indications suggested by available data can only be interpreted with these limitations in mind:

1. that reporting techniques by the smaller firms will inevitably be less refined than those of larger carriers.
2. that 'third level' carriers may be found in Statistic Canada's highly aggregated reports for Levels III, IV, and V, although concentrated in Levels III and IV.

Designation of carriers constituting the 'third level' Canadian Commercial air transport industry is thus required; standardizations and dis-aggregations of 'third level' statistics thereafter would allow more definitive analysis of the industry.

B) The Position of 'Third Level' Carriers
in the National Industry

'Third Level' air carriers represent only a relatively minor segment of the Canadian commercial aviation industry in

terms of output provided:

IV. 1. - RELATION OF 'THIRD LEVEL' CARRIERS TO TOTAL
DOMESTIC COMMERCIAL AVIATION
(Based on 1970 Data)

Items	Statistics Canada Financial Classifications		
	I	II	III & IV
Revenue Passenger- Miles	9,761,628,439	956,942,644	832,585,840
Percentage of Total ^a	84.5%	8.3%	7.2%
Ton - Miles	1,257,712,777	138,882,209	100,269,448
Percentage of Total ^b	84.0%	9.3%	6.7%
Number of Carriers	2	5	117

(a) Of total domestic output of those classifications considered.

(b) Again, of total domestic output considered.

Source: D. B. S., Air Carrier Operations in Canada
October - December 1970 (Ottawa, Information Canada, 1971) Table 1.

Given that these carriers provide roughly 7% of output, it may be argued that the development of a highly regulated segment, occupying the limited resources of the Canadian Transport Commission to a marked degree, is unnecessary. Indeed, given this relatively unconcentrated segment of Canada commercial aviation, it may be considered that de-regulation is a wiser policy, ". . . taken to reflect a belief that, over the greater

part of the economy, competitive market forces are potentially capable of allocating resources better and more cheaply - with a less cumbersome administrative overhead, than any alternative arrangement such as . . . detailed government regulation of enterprise . . ." ¹ This alternative is a serious one. Regulatory resources might be better spent in supervising mainline and regional operations, leaving the 'third level' a competitive sector. Increased regulatory activity and reporting by these carriers may be considered excessive in lieu of the types of operation under consideration.

C) Definitions of 'Third Level'

A comprehensive and satisfactory definition of 'third level' operations would obviously simplify matters. In this case, however, economic classifications by substitutability or cross-elasticity of demand for outputs does not seem appropriate. Public policy will require more workable definitions.

It has been observed that 'third level' carriers perform commercial air services into networks of markets extending from regional systems, and in some cases, operating out of mainline centers. In general, they operate in thin markets suitable to

¹ Economic Council of Canada, Interim Report on Competition Policy, (Ottawa, Queen's Printer, 1967), p. 8.

small aircraft, low frequency operations, and monopolistic seller concentrations. The firms, themselves, are also relatively small:

IV. 2. - AVERAGE TOTAL ASSETS/COMPANY
(by Statistics Canada Classifications)

Years	Statistics Canada Financial Classifications			
	I	II	III	IV
1968	\$289,750,857	\$13,944,845	\$2,269,543	\$489,582
1969	375,629,788	22,446,842	2,521,667	471,924
1970	422,269,925	24,199,017	1,958,141	513,241

Source: D. B. S., Air Carrier Financial Statements 1970
(Ottawa, Information Canada, 1971), Table 3.

Hence, a first definition of third levels might be that they are a 'fringe' of the Canadian commercial air transport industry, operating small capacities in thin markets.

A better definition, however, may be derived from the functions served by the carriers. Although somewhat arbitrarily designated, five functions may be recognized:

1. local air services from regional or distributional centres to smaller centres.
2. feeder services to regional and mainline centres.
3. developmental air services between growth centres.

4. charter and specialty air services.
5. main transportation services to isolated points.

It is in this last function that third level carriers function in providing what might be considered socially 'essential' services¹ and, therefore, it is here that social welfare considerations and hence regulatory concern should be greatest.

The relative importance of the various functions may be suggested by the following:

IV. 3. - AIR SERVICES RENDERED, 1970
(By Percentage of Miles flown^a)

Types of Service	Statistics Canada Financial Classifications			
	I	II	III	IV
Scheduled (Class 1 and 2 licenses)	94.3%	59.8%	19.4%	-
Irregular (class 3)	-	15.5%	19.0%	17.5%
Charter	5.7%	24.6%	61.6%	82.5%

(a) Of each classification total

Source: D. B. S., Air Carrier Operations in Canada
October - December 1970, op. cit., Table 2.

¹In essence, non-paying routes of this kind may be seen to qualify for subsidy under similar provisions to those extended to regional air carriers under ATB Circular No. 61/66, October 31, 1966.

To a large extent, therefore, 'third level' carriers are to be considered essentially charter carriers. Unit toll passenger services are limited, for the most part, to class 3 licensed authorities. However, the larger third level carriers have extended into regular class 2 operations.

An examination of revenue sources further confirms this interpretation:

IV. 4. - SOURCES OF INCOME, 1970
(By Types of Services Offered^a)

Types of Service	Statistics Canada	
	Financial Classifications	
	III	IV
Unit Toll	11.4%	10.0%
Charter	74.1%	59.1%
Specialty	7.3%	22.4%
Non-Flying	7.2%	8.5%

(a) As percentages of each classification total

Source: D. B. S., Air Carrier Operations in Canada
October - December 1970, op. cit., Table 2.

Dependency on charter revenues has inexorably linked third level air carrier viability to the health of such markets. The creation of excess capacity, in regard to the overall system of charter markets available to any 'third level' carrier, must therefore become a major concern of regulatory policy towards these carriers. Whether this requirement necessitates control of investments

remains an important issue.

A second definition of 'third level' carriers is that of local charter operators, operating unit toll services only as a supplemental source of revenues and only where specialized abilities to serve thin markets have made such services a logical extension of their revenue base.

Implied also in the above is the possibility that a third definition may be derived from the types of equipment operated. As noted, given the diversity in types of operation maintained by the third levels, there is a wide range of aircraft and capacities maintained by these carriers. However, a limited list of aircraft considered representative of the carriers may be forwarded due to their recurrence in the fleets of recognized¹ third level carriers:

¹Admittedly, this designation begs the question.

IV. 5. - AIRCRAFT REPRESENTATIVE OF 'THIRD LEVEL'
FLEET CHARACTERISTICS^a

Aircraft Type	Capacity (Passengers)	Weight Group
Cessna 172 (single engine)	4	A
Piper Apache (bi motor)	4 - 5	A
Cessna 180 (single engine)	4 - 6	A
Cessna 185 (single engine)	4 - 6	A
Piper Aztec (single engine)	6	A
Beech 18 (bi motor)	7 - 9	C
Norseman (single engine)	7 - 9	C
Beaver (DHC2) (single engine)	7	B
Piper Navajo	9	A
Otter (DHC3) (single engine)	9	C
Twin Otter (DHC6) (turbo)	18	C
Douglas DC3 (bi motor)	28	D

(a) Collected from aircraft most commonly appearing in reported fleets of Statistics Canada Financial Classifications III and IV.

Source: Statistics Canada, Fleet Report Inventory of Commercial Aircraft in Canada (Ottawa, Aviation Statistics Centre, 1971).

The above list is by no means definitive or comprehensive, but it does establish some general terms of reference. As noted earlier, fleet structures are generally organized to concentrate aircraft in the A-C weight groupings with a few operating passenger capacities up to DC-3 capacities, and freight capacities up to Argosy capacity. In any event, limiting third level operations to certain defined capacities is a workable means of

designating which carrier, regional or third level, is most adequately equipped to service any given level of traffic, and is therefore useful in regulating licences.

A fourth definition of third level, on the other hand, is to designate such carriers by the types of licences held. Third levels may be seen to act in underdeveloped markets, in which class 4 and class 3 authorities are the most suitable authorities, given thin and unstable demands for air service. Only where markets are developed sufficiently to require class 2 services, but traffic is too thin to allow viable operations by the regionals¹ are third level carriers to operate under regular service licences.

The four definitions extended, however, suggest continuums which parallel each other, as suggested below:

¹Without requiring the regionals to maintain a wider range of mixed fleet.

<u>LICENSES</u>	<u>EQUIPMENT</u>	<u>MARKETS</u>
charter - Class 4	group A (Cessna, Piper, Beech)	limited charters increased charter activity
irregular	group B (Twin Otter)	local unit toll services feeder services
unit toll - class 3	group D (DC-3)	main services to isolated points
third level unit toll - class 2	↓	transition to regional operator
regional unit toll class 2	(HS-748)	

In essence, as traffic develops in any city-pair, increased charter activities will signal a need for developmental unit toll services. Further increases in traffic will require larger aircraft and perhaps greater regularity of services until such time as traffic has increased sufficiently to support viable regional operations. It is only in this broad context that any complete definition of third level operations may be developed. Third level operations may be designated as those falling into the upper half above the dotted line, as above.

In distinguishing the regional air carriers' problem, Studnicki-Gizbert, (1966), solved the methodological problem of defining the industry according to some operational standard, by simply naming the carriers involved. Such a step may be the most workable definition in terms of applying actual third level policy. It designates, for certain, those carriers to whom provisions will apply and the carriers benefit from the removal of uncertainty which definition by any other means might tend to generate. Finally, however, lacking such a definitive standard, it is understood that the term 'third level' refers to a large group of small carriers providing essentially charter and irregular air services on routes which link together major or secondary centres of population with the very remote areas of the country; there is, further, a limited amount of regular air services on routes too thin in traffic to be served by the fleet capacities developing in regional operations.

These 'third level' operators operate mainly, but not exclusively, single engine and bimotor piston fixed wing aircraft in the provision of local air service, feeder services, developmental route services, extensive charter operations, and specialty services. It is in combining these various functions that the third levels have been able to widen their revenue base

sufficiently to sustain each type of service. Specialization in any one function seems inappropriate; those carriers operating strictly bush-flying charter operations are not recognized, in general, therefore, as 'third level' carriers even though charter activity remains the mainstay of all third levels.

D) Operating Environment (Exogenous System)

In accounting for the weak economic base of the regionals, Studnicki-Gizbert¹ suggests that:

1. year-to-year fluctuations in demand (as a result of dependence on north-south traffic dictated by levels of resource development activity, and subject to the changing patterns of discovery and exploitations of individual projects),
 2. seasonal fluctuations in demand,
 3. directional traffic imbalances,
 4. short average stage lengths,²
- and, 5. low traffic densities,

¹ Studnicki-Gizbert, The Regional Air Carrier's Problem (Queen's Printer, Ottawa, 1966), Chapter II.

² A good discussion of these problems is found in Wheatcroft, S. J., The Economics of European Air Transport, (Manchester University Press, Manchester, England, 1956), Ch. 2.

have combined to produce severe financial difficulties which periodically have introduced instabilities into the industry. The smaller scales of operation, combined with short to very short-haul routes resulted in loss of economies and higher unit costs relative to mainline operators. Furthermore, the thin traffic on routes accounted for low station utilization and the use of smaller, less efficient equipment. In conclusion, therefore, Studnicki-Gizbert states, "For these reasons the economic base of the regional carriers' routes tends to be weak, which results in the difficulty these carriers experience in assuming reasonable financing of their expansion, and which is reflected in occasional periods of various financial difficulties If the regional carriers are to continue to perform their task properly and if the crises which continued to plague them in the past are to be avoided positive action aimed at strengthening and stabilizing their operations is required."¹

Two important considerations bear on this discussion.

"A large long-haul aeroplane operated over short-haul sectors may well be more expensive to operate, per seat mile, than a smaller aeroplane designed for shorter stages."² Foremost,

¹ Studnicki-Gizbert, Ibid., p. 6.

² Wheatcroft, S. F., The Economics of European Air Transport, op. cit., p. 37.

therefore, is the need to fit aircraft to the traffic available. Efficiency requires the development of a sector of the air transport industry which develops fleet suitable to thin short stage markets even though such a sector will ultimately always operate at costs per unit substantially higher than those produced by larger carriers in dense markets. Such 'specialist' firm positions may also require augmentation by limiting fields of service, such as geographically designated areas of service,¹ ". . . it seems an inescapable conclusion that the top management of an airline with a concentrated and homogeneous market is likely to be more efficient in the assessment of the preferences of its customers than . . . an airline of an equal size but with a more diverse and widespread market."² The specialist role of the third level operator in serving a confined geographical area may therefore be a necessary element of efficiency. However, it is still apparent that, even though in certain markets, specialist firms may be most effective in terms of cost efficiency and markets sensitivity, their costs, relative to the larger

¹This concept is that pursued in regional policy which designates each regional carrier's geographical area of responsibility, and limits its operations through policy to such designated geographical regions.

²Wheatcroft, S. F., Ibid., p. 70.

carriers operating over lengthier and denser route systems, will be high. The structure of costs will therefore show an increase as 'third level' operations become suited to any market. In itself, however, such situations do not explain why any sector of an industry is financially troubled. Economic viability will be assured where revenues cover costs. A second consideration is therefore to acknowledge that even though costs may be driven higher through the economic environment of operation, if sufficient revenues can be returned, there is no need to feel that the problem of the third level sector of commercial carriers is to be found in the need to strengthen its revenue base. Self-sufficiency is not simply a question of higher costs. It is a question of why firms cannot achieve revenues high enough to sustain economic viability in the provision of adequate services incurring relatively higher costs. These latter questions are reserved for later discussion.

The present situation of the third level carriers, as a sector paralleling¹ the operations of the regionals (on a minor

¹Their functions are essentially the same:

1. provision of local air services
2. feeder services
3. developmental route services
4. charter services

scale), suggests an external or exogenous environment creating at least as weak an economic base as that faced by the regional carriers in 1965. At the same time, their role in providing services to the most isolated areas in the country and in thin markets, where few alternative transport modes exist, has given these carriers an importance in national policy which may be considered well beyond proportion with their size relative to the national commercial aviation industry.

As noted, the third level firms have exhibited irregular growth from small size bush operations to carriers comparable in stature to the regional carriers of the early sixties. There is a dependency on demands of the more remote areas of the country to service natural resource developments, tourist activities, and basic services to isolated or semi-isolated communities. With a decline in any one of these sources of demand, revenues may decline drastically leaving the carrier with an over-expanding fleet of excess capacity. Of particular relevance, then, are the dependencies on contracts to service the irregular or limited demands of construction programs and resource developments. Seasonal or limited activity periods associated with such projects may create only temporary requirements for increased frequencies. After a healthy beginning, individual firms may lose their major

sources of revenue, subsequently decline, and consolidate with other carriers. A boom-and-bust quality is therefore attributed to the third level sector.

Periods of profitability and rapid growth have thus often met with periods of consolidations following declines in resource development activities. Furthermore, it should also be noted that 'exogenous' change, in the form of surface transportation and ground handling facilities, may introduce competition on short-hauls or allow the use of more advanced and consumer-preferred equipment. Either change can alter traffic demands significantly,¹ and leave carriers in a serious position regarding revenues.

Seasonal fluctuations in demand also present serious operational difficulties for the carriers. Such conditions make it extremely difficult for the carriers to achieve satisfactory annual rates of utilization on their equipment which

¹For example, surface connections between local points and secondary centres may reduce the use of air services between these points. Secondly, development of strip facilities at Norway House will allow the basing of direct turbo services from that point to Winnipeg. Hence, traffic from the Norway House region may wish connection with Norway House to take advantage of the newer technology, abandoning direct services to Winnipeg in smaller or more obsolete aircraft. Such changes may have serious repercussions on the carriers already operating in the area.

is responsible for the higher costs these carriers encounter.¹ The problem is most serious, however, in the maintenance of a network of scheduled services. Demand fluctuations create periods of the year where economic routes may become uneconomic, incurring substantial losses for the carriers. Given the third levels' small endeavour into regular services, therefore, the losses threatened by market fluctuations do not appear as severe in the case of these operators. It is more in operation that such external circumstance create problems for the third levels. Greater staff flexibilities and multi-specializations are required. Major overhauls, vacations, and accounting and marketing preparations will be deferred to the off-seasons, while staff and capacity are utilized to the maximum during peak-demand periods in line maintenance and flying operations. These changes put a strain on the carriers to accommodate their markets with the flexibilities required. It also detracts from higher levels of specialization which, in the interests of efficiency, these firms might wish to employ.

¹Higher utilizations of equipment reduce unit costs of output by spreading the fixed charges, essentially depreciation, accumulated by idle aircraft.

A comparison of quarterly fluctuations, based on available data, emphasizes the conclusions made above:

IV. 6. - QUARTERLY FLUCTUATIONS IN TOTAL UNIT TOLL REVENUES
(Based on 1970 and 1971 Quarters)

Quarters	Total Unit Toll Revenues (\$)		% Deviations from the Means	
	Statistics Canada Financial Classifications		Statistics Canada Financial Classifications	
	III ^a	II ^b	III	II
1970:				
1st	1,889,055	10,842,502	- 2.4	-27.8
2nd	2,603,915	14,145,769	+34.5	- 5.3
3rd	2,671,976	17,352,390	+37.8	+15.5
4th	1,700,356	14,406,703	-12.2	- 4.1
1971:				
1st	1,216,687	14,580,163	-37.2	- 2.9
2nd	1,536,580	18,842,056	-20.7	+25.4
Means -	1,936,428	15,028,263		

(a) Representative of 'third level' operation

(b) Representative of 'regional' operation

Source: D. B. S., Air Carrier Operations in Canada
(Ottawa, Information Canada, quarterly issues) Table 2.

It is evident that both regional and third level carriers face serious fluctuations in revenue (demands) in the seasonal structure of their operations. Comparison, as above, suggests that the fluctuations are even more volatile for the third level

operator. A similar examination of charter operations emphasizes this situation most strongly:

IV. 7. - QUARTERLY FLUCTUATIONS IN TOTAL CHARTER REVENUES
(Based on 1970 and 1971 Quarters)

Quarters	Total Charter Revenues (\$)		% Deviations from the Means	
	Statistics Canada Financial Classifications		Statistics Canada Financial Classifications	
	III ^a	II ^b	III	II
1970:				
1st	7,327,275	6,536,981	-45.4	- 5.9
2nd	15,096,360	7,501,905	+12.5	+ 6.7
3rd	25,032,537	8,826,313	+86.6	+25.5
4th	7,748,147	5,094,576	-42.2	-27.5
1971:				
1st	8,482,238	6,764,522	-36.7	- 3.7
2nd	16,795,954	7,445,839	+25.2	+ 5.9
Means -	13,413,751	7,028,356		

(a) Representative of 'third level' operations

(b) Representative of 'regional' operations

Source: D. B. S., Air Carrier Operations in Canada, op cit., quarterly issues, Table 2.

Given that third level carriers' greatest percentage of services are located in their charter activities, it can be forcibly concluded that they face a system of demands far more volatile

in their fluctuations than those encountered by any higher level carrier. This characteristic is an essential factor in the environment of the third level operators.

The importance of the variability of demands facing the third levels relative to all other carriers cannot be over-emphasized; and is clearly established below:

IV. 8. - QUARTERLY FLUCTUATIONS IN ALL SERVICES
BY MILES FLOWN, 1970

Quarters	Percentage Deviations from Annual Means			
	Statistics Canada Financial Classifications			
	I	II	III	IV
1st	- 8.6	-11.3	-19.4	-32.8
2nd	+ 1.1	+ 3.9	+ 5.4	+ 6.0
3rd	+16.5	+15.3	+50.1	+58.7
4th	- 8.9	- 7.9	-36.0	-31.8

Source: D. B. S., Air Carrier Operations . . . , op. cit., quarterly issues, Table 1.

The need for flexibility in each third level carrier's operation to meet the fluctuating patterns of demand which it faces over its route system is therefore the major requirement to maintain viability. Obviously, the flexibilities gained by class 3 and class 4 authority operations are necessary. The 'taxi' function,

discussed earlier, is here developed to its greatest extent.

There appears little hope in the carriers' ability to generate sufficient off-peak traffic to develop enough business to compensate for this essential characteristic of third level operations. The maintenance of flexibility in operation and variability in the cost structure appears the major means to a viability of services.

There is little also that a carrier can do to compensate for the essentially northward traffic¹ imbalances encountered. While passenger services reveal a relative balance, cargo re-supply movements are found to be essentially northward. These directional traffic imbalances raise costs and prices discouraging traffic. Yet, aside from maintaining mixed configuration aircraft, there appears little the third level carriers can do.

Costs are further raised by the nature of the stages over which the carriers operate. The diseconomies of short-haul are well-known, and it need be established only that these

¹For example, in ATC Decision No. 3193, April 1971, Midwest notes: "The traffic on the direct DC-3 service Winnipeg-Norway House is directional, with 70% being northbound and 30% south bound, whereas on the inland shuttle service 90% is north bound and 10% south bound . . . such aircraft are not suitable for mixed passenger-freight configuration as there is no provision for segregating the two . . ."

diseconomies are most prevalent in the third level markets:

IV. 9. - AVERAGE STAGE LENGTHS OF
CANADIAN AIR CARRIERS, 1970

Average Stage Lengths (Miles) by Services	Statistics Canada Financial Classifications				
	I	II	III	IV	V
Unit Toll	495.0	310.3	112.6	71.1	58.3
Charter	1,775.4	454.7	121.8	81.9	.092

Source: D. B. S., Air Carrier Operations in Canada
October - December 1970, op. cit., Table 1.

The stage lengths over which the third level carriers operate on the average, are not only extremely short relative to higher level operations, but show considerable variance in route system patterns. These features result not only in high unit costs but in greater difficulties in obtaining aircraft suited to the wide range of stages over which they will be utilized. Third level operators combining relatively long-haul and short-haul shuttle services may be forced to use aircraft over stages for which they are not suited simply to meet the average traffic needs and, at the same time, maintain adequate aircraft utilizations.

In short, third level carriers will be observed to

operate in markets featuring:

1. year-to-year fluctuation.
2. seasonal fluctuations.
3. directional traffic imbalances.
4. short and variable stage lengths.

and, 5. low traffic densities.

Each factor presents itself in a more extreme version than that faced by the regional carriers, and, as a result, there is a great difference in the costs of services provided by these two levels of carrier.

E) Cost Conditions

Examinations of cost performance in the third level sector are difficult where the analysis wishes to find generalized results. Depending on the time of purchase and markets entered,¹ acquisition costs on aircraft can vary substantially. There may be major differences in the operational costs of identical aircraft where route systems, utilization rates, labor contracts, managerial skill, spares' policies, and methods of finance differ. The terms available on loanable funds, on lease arrangements,

¹New aircraft, used aircraft, or aircraft rentals.

and the firm policy on depreciation, can all combine to produce experienced costs divergent by more than twenty percent when determined on a fully allocated basis.

Consider the following reported data as an example:

IV. 10. - REPORTED OPERATING COSTS
(Divergences in Beaver DHC2 Reports)

Aircraft Type	Capacity (Passengers)	Reported Operating Expenses/Hour (\$)	Unit Costs/Hour (\$)
Beaver DHC2	8	45.77	5.72
		49.94	6.24
		56.50	7.06
		61.16	7.77
		76.74	9.62
		78.85	9.86
Range (unit costs/hour) = 4.14		% Deviations from the Mean	
Mean (unit cost/hour) = 7.71		-25.8	
		-19.1	
		- 8.4	
		+ .01	
		+24.8	
		+29.2	

Source: D. B. S., D. B. S. Service Bulletin, vol. 3, No. 49
(Ottawa, Aviation Statistics Centre, 1971).

Hence, cost data reported will reveal considerable variance, and it is difficult, therefore, to forward generalizations or interpretations of cost performance without keeping this basic fact in mind.

Qualitatively, certain aspects of cost performance will be noted and supported by aggregative data. Exceptions to these results should not overrule these generalizations, but should, on the contrary, be expected.

A comparison of the cost structures of the different level carriers reveals the relatively more variable nature of costs, with the majority of expenses concentrated in the flying operations category, in the third levels' operations:

IV. 11. - SOURCES OF OPERATING
COSTS BY PERCENTAGES
(Annual Results, 1970)

Operating Categories	Statistics Canada Financial Classifications		
	I	II	III
Flying Operations	22.8	37.5	45.1
Maintenance	16.9	18.8	27.9
General Services and Administration	49.8	35.0	18.3
Depreciation and Amortization	10.4	8.7	8.6

Source: D. B. S., Air Carrier Financial Statements, 1970 Annual Results (Ottawa, Information Canada, 1971) Table 1.

Again, greater insurance against losses incurred by declining demand is assured. The higher proportion of maintenance costs encountered by the third levels reflects the fact that the piston and older aircraft operated by the carriers require greater maintenance to stay in service. Finally, the low administrative and general costs may be attributed to the low levels of promotion, passenger services, and administrative overhead maintained by the third levels in proportion to their outputs.

The comparable figures for depreciation and amortization as a source of cost to the third levels is maintained essentially by the higher levels of debt incurred by these carriers relative to the regionals and mainline carriers:¹

IV. 12. - INTEREST EXPENSE
AS A PERCENTAGE OF TOTAL OPERATING EXPENSE
(By Statistic Canada Financial Classifications)

Categories	Statistics Canada Financial Classifications			
	I	II	III	IV
Total Operating Expense (\$)	600,427,805	84,340,029	74,314,828	27,895,063
Interest Expense (\$) ^a	38,334,677	6,035,387	3,304,800	924,602
Percentages	15.6	13.9	22.5	30.3

(a) Includes interest on all kinds of debt - premiums, discounts, long and short-term debt.

Source: D. B. S., Air Carrier Operations in Canada
October - December 1970, op. cit., Table 2.

¹Who may be able to either achieve better terms on loanable funds or finance equipment through retained earnings.

At the same time, the costs incurred by the third level carriers are, as expected, significantly higher than either main-line or regional carriers:

IV. 13. - AVERAGE COSTS (¢)
(By Financial Classifications 1970)

Unit Categories	Statistics Canada Financial Classifications			
	I	II	III	IV ^a
Flying Operations Cost/Ton-Mile	10.9	22.8	35.1	271.0
Total Operating Expense/Ton-Mile	47.7	60.7	77.8	593.0
Flying Operations Cost/Revenue Passenger-Mile	1.4	3.3	4.1	56.5
Total Operating Expense/Revenue Passenger-Mile	6.2	8.8	9.2	124.0

(a) The substantially higher costs encountered within this classification may be attributed to:

- i) helicopter (high cost) and specialty aircraft (low utilization)
- ii) specialty services which result in long air time but little mileage produced.

Source: D. B. S., Air Carrier Operations in Canada, op. cit.,
Table 2.

The economies in operating larger capacity equipment over denser long-haul routes appears the major cause of such cost differentials.¹

Costs reported also reveal the economies of higher utilizations and the amount of excess capacity maintained by carriers during the off-peak periods of demand:

IV. 14. - VARIATIONS IN QUARTERLY OUTPUTS AND COSTS
(Financial Classification III, 1970)

Outputs ^a :	Quarters 1970			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Total Ton-Miles	100	126.9	326.5	118.1
Revenue Passenger-Miles	100	116.7	354.7	130.6
Costs ^b :				
Flying Operations	100	129.7	166.7	111.6
Maintenance	100	117.1	143.5	98.8
General Services and Administration	100	107.3	132.8	116.1
Unit Costs ^c :				
Total Operating Expenses/ Ton-Mile (\$)	1.35	1.28	.61	1.23
Flying Operations Cost/ Ton-Mile (\$)	.55	.56	.28	.52

(a) Let outputs in 1st quarter represent an index = 100

(b) Let costs in 1st quarter represent an index = 100

(c) These represent average costs allocated to each level of output per quarter.

Source: D. B. S., Air Carrier Operations in Canada, op. cit., 1970 Quarterly Issues, Tables 1 and 2.

¹In specific, note that Level II and III flying operation cost/ton-mile differ by 12.3 cents; yet total operating expense/ton-mile differences have only increased to a margin of 17.1 cents.

It is evident that output levels show great seasonal fluctuation placing maximum strain on the carriers in the third quarter. Higher load factors are implied in the fact that operating costs do not rise in the same proportions as increased outputs; furthermore, increased utilizations of existing capacities over the peak periods of demand show substantial reductions in costs. It is obviously in the carriers interests to seek increased utilizations of idle capacities during the periods of low demand; while costs remain more variable relative to mainline and regional operators, third level carriers are still in a position where costs cannot be fully reduced in respect to fluctuations in demand:

IV. 15. - COMPARISON OF QUARTERLY
CHANGES IN OUTPUTS AND COSTS^a
(By Percentage Changes in Quarters)

Outputs:	Quarters 1970			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Ton-Miles	-	+26.9	+226.5	+ 18.1
Revenue Passenger-Miles	-	+16.7	+254.7	+ 30.6
Costs:				
Total Operating Costs	-	+19.7	+ 48.4	+ 7.8

(a) Again, using 1st quarter results as a datum

Source: D. B. S., Air Carrier Operations in Canada, op. cit., 1970 Quarterly Issues, Tables 1 and 2.

There is, therefore, a 'fixed cost' element in the operations of third level air carriers and a need to develop off-peak traffic to offset the losses encountered.

F) Revenue Conditions

Economic stability or viability will depend on the relationship between the structure of costs and revenues encountered by the firms in an industry. As noted, third level carriers maintain cost structures which are variable relative to the operations of larger scheduled carriers. However, conditions in the economic environment served produce higher relative costs and severe demand fluctuations. In the short run, there is a significant element of fixed resources in the industry and hence, the concomitant appearance of excess capacity and economic losses during declines in demand may be expected.

Indeed, such is the case in third level operations and internal cross-subsidization of temporal services is a prevalent feature:

IV. 16. - OPERATING INCOMES (\$) ^a QUARTERLY RESULTS FOR 1970 (By Financial Classifications)

Statistics Canada Financial Classifications	Quarters 1970			
	1	2	3	4
I	-3,577,747	10,001,207	30,653,344	-9,662,773
II	- 873,946	629,507	2,258,335	-1,309,574
III	-3,918,420	2,601,780	8,543,342	-4,580,494
IV	- 946,293	1,176,771	2,738,513	-2,162,670

PERCENTAGE DEVIATIONS
IN QUARTERLY OPERATING INCOMES
(From the Quarterly Means Established 1970)

Statistics Canada Financial Classifications	Quarters 1970			
	1	2	3	4
I	-152.2	+ 45.9	+347.3	-241.0
II	-269.1	+ 21.8	+337.1	-353.5
III	-559.4	+205.0	+901.6	-637.0
IV	-301.1	+150.2	+482.2	-559.8

(a) Operating Incomes - net income before allowing for:

- i) non-operating income
- ii) interest expenses
- iii) income taxes

Source: D. B. S., Air Carrier Operations in Canada
October - December 1970, op. cit., Table 2.

As shown above, the degree of temporal cross-subsidization may be considered even greater in the case of third level operations than in the other levels of carrier. Seasonal fluctuations in demand therefore may be considered responsible for higher overall fares; policies aimed at gaining greater variability in costs are therefore necessary.

On an annual basis, revenues have shown the pattern of boom and bust suggested earlier.

IV. 17. - NET INCOME AFTER INCOME TAXES (\$)
(By Statistics Canada Financial Classifications)

Years	Statistics Canada Financial Classifications			
	I	II	III	IV
1966	11,434,638	15,156	1,458,721	957,937
1967	6,942,061	- 738,406	3,432,075	565,492
1968	10,558,605	- 920,777	969,857	1,362,942
1969	5,043,108	-2,815,131	478,549	- 252,940
1970	- 68,969	-1,008,241	111,475	- 383,650
1971	3,800,000	3,684,263	5,907,849	489,157

Sources: D. B. S., Civil Aviation Annual 1966-69, (Ottawa, Queen's Printer, 1967-70), Table 12. D. B. S., Air Carrier Financial Statements Annual 1970-71, (Ottawa, Information Canada, 1971-72), Table 2.

One curious feature is evident. Although third level carriers operate over a system of markets substantially similar to those systems encountered by the regional carriers, in the aggregate there is no report of losses equivalent with those encountered by the regional carriers. While no data was available on the variances in net incomes earned by the third levels, it appears that the sector has been able to remain viable in its economic environment. This success, it is felt, is attributable to the greater incidence of activity under class 3 and 4 licensed authority. Such licensing permits the carriers the flexibilities

necessary to establish a greater variability in their cost structures and this feature has allowed them to survive in markets similar to those faced by the regionals.

Obviously, however, there is a need to examine individual third levels to examine rates of failure, variances in profitabilities, and individual returns on assets before making positive statements regarding this sector's stability and performance of service. However, failing such data, the following aggregative performance will be noted:

IV. 18. - AVERAGE NET INCOME
AS A PERCENTAGE OF AVERAGE TOTAL ASSETS^a
(As Representative of Return on Investment (%))

Years	Statistics Canada Financial Classifications			
	I	II	III	IV
1966	3.3	.04	4.22	3.55
1967	1.6	-1.54	5.90	1.73
1968	1.8	-1.65	1.47	3.39
1969	0.7	-3.14	0.53	- .69
1970	-0.007	- .83	0.14	- .98
1971	0.43	3.04	5.86	1.00

(a) See Table 2, Chapter IV.

Sources: D. B. S., Civil Aviation Annual, op. cit., 1966-69, Table 12. D. B. S., Air Carrier Financial Statements Annual, op. cit., 1970-71, Table 2.

As a generalization, therefore, third level carriers, in terms of generating a return on investment, have fared better than any other sector of Canadian commercial aviation. Only a wide variance in the levels of individual third level profits would indicate that there is a major need to strengthen the revenue base of third level carriers, in proposals similar to those put forward for the regional operators.

G) Investment Behaviour

Those aspects of third level economic behaviour which perhaps warrant the greatest attention are policies towards re-equipment and fleet modernization. Purchases of aircraft will represent the carrier's future abilities to attract traffic, to compete with rivals, and to offer various standards of service. Hence, investment decisions are a variable which will absorb much of the attention of managements, which will have particularly enormous effects on the long-run viability of any specific organization, and which will, therefore, be a guarded strategy of the highest levels of carrier management. Strategies to secure markets in competition with other carriers which surround the dispersions of available fleet, scheduling of equipment, and the levels of passenger service can only be considered short-run adjustments to given or static circumstance. It is in the expectations regarding present investments that opportunistic,

or overly-optimistic decisions may result in serious future market disequilibriums, instabilities, and necessary wasteful readjustments. Yet, the importance of investment strategies, as a variable critical to the firm's financial viability, make them an element over which the firms wish to maintain full responsibility.

The objective of concern in regulation, however, should be with developing dynamic efficiency; that is the ability to adapt to 'exogenous' changes over time in a manner which avoids serious maladjustments in individual markets. The task set, therefore, is to maintain equilibrium of capacity with total demand, or the sum of individual demands in city-pairs. More specifically, adjustments should be made which maintain the structure of capacity, or fleets, in equilibrium with the structure of demands, presented as the network of various types of demands which the industry serves. It is a state which is required both for the individual firm, and for the industry designated as a whole. In short, capacity, ideally would be guided so as not to become excessive, leading to cutthroat competitions and instability, yet at the same time be not so restricted as to generate super-normal returns to the carriers in the industry. It is an equilibrium which is obviously difficult to maintain

at a very fine level, as decisions to invest are derived from future expectations, and are therefore subject to risk-avoidance, stochastic elements in the system, and uncertainty.

While the regulatory authority can therefore never hope to achieve the ideal result pictured above, there are certain economic characteristics of the third level sector which deserve greater consideration:

1. the ability to finance necessary re-equipments
2. the prevalence of short-term and imprecise investments planning
3. the prevalence of divergent or inconsistent investments
- and, 4. the effects of institutional rigidities on a system of fluctuating markets.

Each aspect warrants individual consideration; a different regulatory approach to the question of individual firm investment planning may be required.

The regulatory authority, in the exercise of its powers to licence entry both by function (class of licence) and capacity (weight grouping authority), has controlled the carriers' access to markets. Licensing has therefore become a prime determinant of any individual carrier's ability to operate profitably; control of accessibility has meant control of revenues.

Indirectly, therefore, there is a definite functional relationship between the regulatory policies towards the carriers and their respective abilities to re-equip. As Schumpeterian analysis argues, profits may be the prime factor in the system's ability to dynamically adapt to exogenous change and in the development of an entrepreneurial and innovative industry.¹ Quantitative analysis of the exact marginal adjustments required in the profit rate to secure dynamically adaptive and innovative systems, while at the same time avoiding 'excessive' returns contrary to consumer interests, cannot be attempted. The important point here is that the profit performance of any firm is to a significant degree determined by regulatory decisions; profits, at the same time, determine the terms on loanable funds which firms will encounter in capital markets, as well as the rate at which pools of retained earning may be accumulated. Regulatory policy, therefore, in restricting carriers to weak or irrational route systems may be instrumental in retarding an individual carrier's ability to adapt (i. e. re-equip) to change, and survive viably in the long-run.

¹The relationship between profits and successful innovation is by no means clear. This latter suggestion is therefore only cautiously forwarded.

In the areas of third level operation, it has been noted that:

- a) in the aggregate, firms have operated with substantial financial success relative to other levels of commercial air carriage;
- b) the profitabilities encountered by firms have largely followed short-term demands or contracts; in operating over these systems of fluctuating demands,¹ carrier successes have shown a marked correspondence to their abilities to secure lucrative markets.

What is suggested is that while there is a general viability in third level operations, certain carriers, either through successful management, correct anticipations of change in the economic environment, or through holdings of the necessary licences, have been able to develop relatively stronger profitabilities than rival firms. Through the filtering of capital markets and the institutional restrictions of the licensing authorities, therefore, the stronger carriers have been able to become more adaptive to exogenous change, and in the long

¹Consider the following specific cases:

- a) TransAir dependency on Dew Line operations.
- b) MidWest dependency on Hydro projects at Grand Rapids and Gillam.
- c) Northland dependency on demands for float plane markets.

run, the result has been a tendency towards increasing concentrations in the airlines.

As a generalization,¹ it has also been suggested that the small business characteristics of the third level carriers have led them away from well defined long-term plans for either market or fleet developments. As a result, gross misjudgments in the acquisition of aircraft have periodically appeared. Admittedly, there are problems in forecasting future demands with accuracy, but the severe consequences of excess capacities and the increased costs of low utilizations indicate the need for greater care. As noted, there is a definite tendency in the industry to excess capacity, to the use of management intuition, enthusiasms, and, perhaps, over-indulgence, in expansions of fleet, and to the use of investments as the basis for satisfying hopes for route awards. Aspirations tend to be high while absolute capital requirements are low: the threat of excess capacity creation appears an ever-present feature.

Studnicki-Gizbert has considered the problem of re-equipment and fleet modernization from two points of view:

¹It is necessary to note that a small minority of third level carriers do maintain the resources to institute well-developed policies and investment planning. Such conditions tend to arise with larger scale and greater financial stability.

- "(i) The financial burden resulting from the acquisition of modern equipment . . . can only be justified if this equipment finds sufficiently high utilization and achieves adequate load factors . . .
- (ii) The choice of suitable equipment which should be able to replace satisfactorily the older aircraft without proliferation of the aircraft types."¹

The former view refers to the need for securing aircraft fitted to the needs of the markets in which they operate. Given the technological and operating cost characteristics of various aircraft types, there will be some optimal choice of aircraft for the route system faced by any carrier. Inevitably, averaging is involved, as utilization requires operating specific aircraft in numerous markets; choice of aircraft will be such as to meet, on the average, the marketing requirements of the several routes consisting the firm's route pattern. The economies involved in developing homogeneity in operations (i. e. developing carriers specialist in catering to thin short-haul markets with smaller capacities) derive from the maintenance of more standardized fleets and route segments, which lessens the need for averaging or operating aircraft over segments which they are not ideally suited to serve. The latter view of Studnicki-Gizbert refers to the diseconomies prevalent in mixed fleet operations, which

¹ Studnicki-Gizbert: The Regional Air Carrier's Problem, op. cit., p. 20.

accumulate where carriers attempt to serve markets of too diverse nature or where carriers develop fleet in a random manner as opportunities present themselves. It has been observed that there are definite functional relationships between utilization rates, suitabilities in equipment, and the costs encountered in operations. On the revenue side of production, it has been observed that break-even fare levels react inversely to increased load factors, higher utilization, and a better 'fit' of aircraft to its operating environment. The conclusion is therefore that there may be particular economies both in cost and fares where fleets are planned into orderly developments, based on the benefits of fleet and route system homogeneity, and the specialist doctrine. Third level operations, on the other hand, have often exhibited mixed fleet and diverse market operations; a more definitive statement regarding the types of markets they will serve and greater attention to orderly fleet development by the regulatory authority may therefore be useful in increasing the efficiency of operations.

Essentially, carrier choice in equipment may be considered determined by:

1. availability of capital restraints,
2. the nature of the route systems facing carriers,
- and, 3. managerial influences.

As the process of licensing will have major influences on the first two factors above, the regulatory authority must assume some responsibility for orderly development, if increasing seller concentrations are to be avoided.

Third level carriers have also revealed these other features¹ in their choice of equipment:

1. a reluctance or inability to modernize fleets,
2. a general desire to move into larger equipment,
- and, 3. a corresponding general desire to gain entry into denser markets.

In moving towards fleet modernization, the carriers may be unwilling to modernize due to lack of financial ability, due to lack of competitive incentives, or simply due to the effective marketability of old equipment in the markets served. The elements involved may be best revealed by a comparison of two of the larger capacity third level aircraft:

¹Again, subject to widespread exception.

IV. 19. - COMPARISON OF
OPERATIONAL CHARACTERISTICS, DHC6 AND DC-3
(Representative Third Level Aircraft, New and Old)

Items	Aircraft Types	
	DHC6 (Twin Otter)	Douglas DC-3
Years of introduction	1960's	1930's
Present Purchase Price	\$400 - \$600,000	app. \$50,000
Ideal Range	875 miles	1,500 miles
Configuration	mixed/20 passenger/ STOL	non-convertible/ 28 passenger
Cost Structure ^a (in Percentages:		
Flying costs	41.3	49.4
Maintenance	30.8	40.3
Depreciation	<u>27.9</u>	<u>10.3</u>

(a) Based on average operating costs/block hour, experienced by Canadian Carriers (1969).

Source: Statistics Canada, Aviation in Canada, (Ottawa, Information Canada, 1972), Table 7.5.

The following characteristics are noted:

- (1) the older equipment is available at much lower initial capital cost and will therefore be attractive to the entrant firm or the less profitable operator;
- (2) in convertibility, suitability to short-haul thin markets, and STOL characteristics, the newer equipment may be better fitted to market requirements in third level operations;

- (3) the older equipment shows a higher proportion of variable to fixed costs as its operation is subject to greater maintenance and often, greater flying costs.

Third level operators, therefore, may be content to maintain fleets of older equipment and to expand capacity with these lower capital cost aircraft; marketability and low depreciation charges will make the older equipment fully competitive with the new. However, newer equipment may be considered better suited to the markets served or simply more trustworthy aircraft. Policy aiming at modernizations of fleet must therefore induce greater incentives to re-equip with newer equipment than are provided by the market.

The long-term problem is in terms of increasing seller concentrations. With time, the variable costs of maintaining old equipment will increase and firms who have modernized will develop variable cost advantages over the older fleet carriers. Where competitive struggles or excess capacity arise, the modernized carrier, in cutting fares to variable cost levels, may achieve significant pricing advantages over the less ably equipped carriers. The older fleets may be caught in a "cost squeeze" which reduces their ability to

sustain viable operations or compete in markets; increased industrial concentrations may derive.

The desire to move into denser markets with larger equipment is also a feature which may lead to problems of excess capacity. Carriers have regularly attempted route extensions connecting thin route systems to large traffic generating centers.¹ Such connections have resulted in the spoke pattern common to third level operations,² with its concomitant weaker loads towards the farthest range of thin markets. Choice of equipment has been complicated in that aircraft selected must satisfy a greater range of markets and densities. If carriers decide to move into large equipment on the basis of a single strong terminal, there is danger of either low utilization or poor load factor performance. Subsequently, such requests may evolve into requests for further extensions of stub-end points³ into further strong terminals.⁴ The developments of such 'upward pressures' in growth aspirations will only be effectively dulled

¹ e.g. Ilford-Riverton's extension into Winnipeg.

² e.g. Norcanair's extension into Prince-Albert - Saskatoon - Regina.

³ The farthest, weakest market extensions.

⁴ For example, TransAir's prairie service may be viable with extensions westward onto Edmonton or Calgary.

with regulatory policy which more strictly defines the areas accessible to third level carriers by operational definitions, either according to function or equipment. The case for greater control of investments may be furthered.

The final concern in investment regulation considers divergent or inconsistent investments. As noted, centralized control of investments could remove such elements from the commercial air system. While it is unlikely individual firms will give up control of their freedoms of investment choice, there does appear need for some greater involvement or 'indicative' investment planning by the regulatory authority. Central economic planning of this sort by the regulatory authority, stressing greater effort in gathering market data for individual decision-makers, a more long-term concern with third level economic development, and greater consultations in investment decisions by the provincial government, the private carriers, and the federal regulators, do require consideration. The small business character of the third levels, the 'exogenous' effects of provincial decisions, and the tendency towards excessive capacities all suggest the need for such measures. Co-ordination, rather than competition, in these areas may be better suited to the public interest given the investment behaviour of third level firms.

Regional policy notes, ". . . where an air carrier has a sound financial structure and adequate prospects, it can obtain financing . . . problems in this connection . . . may have resulted from weaknesses in capital structure, from uncertainty . . . or from small size . . ." ¹ This situation is obviously true of the third level carriers. The policy continues to note, "A co-operative approach . . . might offer advantages that are not available if each carrier approaches this problem separately . . . individual carriers have, upon occasion, acquired aircraft without due regard to the suitability of the facilities on the proposed routes." ² The policy suggests an advisory or consultative role for the regulatory authority in co-ordinating investments. The precedent has been established, therefore, and is even more necessary to third level operators.

In conclusion, third level services are characterized by the absence of well-developed investment policies, and the importance of 'exogenous' decisions on the viability of operations. Conditions which tend to generate under the system of licensing allow some carriers greater adaptability to technological and exogenous change, leading to the development of

¹"Statement of Principles for Regional Air Carriers"
Tabled in the House of Commons, October 20, 1966.

²Ibid.

market structures which are highly interdependent or monopolistic. Providing better opportunities for ill-equipped carriers to reorganize their fleets into rational, efficient, and more viable systems may be considered necessary to avoid long-term tendencies towards increased concentration. The means employed may be:

1. indicative investment planning by the regulatory authority,
2. increased access to loanable funds to carriers disadvantaged through institutional rigidities,
- and, 3. greater flexibility in allowing carriers to strengthen their revenue bases towards balanced competition.

Chapter V

CONCLUSIONS

The difficulties in deriving conclusions about a non-defined industry, from an extremely small sample of representative firms operating in a limited geographical area and from data available only in limited and highly aggregated form, are considerable. However, there are certain basic characteristics revealed, certain common problems encountered, and, therefore, certain concluding recommendations which, if forwarded with some restraint, may be argued.

The small sample of Manitoba third level carriers surveyed, while not sufficient basis for generalization, does suggest wide variability in profitability. The economic problem of the third level air carrier, therefore, is not the need for greater revenues in view of the cost structures he faces, but the need for greater cost efficiencies and a greater balance in the profitabilities (i. e. financial strengths) of the numerous carriers. The essential policy theme should therefore emphasize increased productivity and opportunity for the weaker carriers. In concluding on the regionals' situation, Studnicki-Gizbert notes, ". . . the strengthening of the regional carriers' revenue base is essential to enable them to modernize their fleet, which in turn requires high utilization of equipment. Without equipment modernization the regional carriers will be simply squeezed out by the cost pressures

due to increasing . . . costs."¹ The third level situation is obviously qualitatively different.

The incidence of costs given the operational features of class 3 and 4 licence authorities plus cost structures which feature largely depreciated aircraft and facilities, a minimum of passenger handling services, and low administrative overheads, is relatively variable. The nature of fares under class 4 licences, the monopolistic position of air services in serving isolated points (i. e. lack of substitute transport has generated inelastic demands in remote areas), plus the concern of the regulatory authority in protecting the viability of operators, have resulted in a fare structure suited to the revenue requirement of the third level operator. A strong revenue position in combination with higher degrees of variable costs have thus allowed the third level operator to sustain a solvent operation, even when operating over a dynamically fluctuating and uncertain system of markets, and even where the regional carriers experienced serious financial difficulties.

Economic generalizations are forwarded, but only with the greatest caution and the acknowledged criticism that

¹ Studnicki-Gizbert, The Regional Air Carrier's Problem op. cit., p. 21.

individual cases will differ significantly.

As a first generalization, third level operators represent small businesses with short-run opportunistic operations, lack of markets investigation, lack of equipment planning, and little provision for future fleet modernizations, characteristics consistent with their small size and lack of specializations. Market behaviour may therefore be considered ad hoc; fleet and route developments will be triggered by individual requirements and it is unlikely therefore that a programmed pattern of aircraft acquisitions and route system developments will occur. On the contrary, the industry is characterized especially by the prevalence of mixed fleets, due both to the diversity of markets serviced, and the varying opportunities for aircraft acquisition. Hence, as a first condition, it may be stated that the third level industry reveals a tendency to investments in obsolete equipment, over capacity, and heterogeneous fleets.

The operating environment of the third levels reveals that the greatest problems facing the carriers are the seasonal and cyclical fluctuations in demand. In its licensed system of markets, there is therefore an uncertainty as to long-run developments and a need for flexibility in services in order to

maintain a viable operation. Relatively high operating costs, given the structure of markets served by the third levels appear inescapable, yet inefficiencies revealed in costs beyond those necessitated through the economic environment may be noted. Inflexibilities in discarding obsolete or excess equipment, in re-arranging route systems into 'rational' patterns, and in developing means to integrated systems have caused inefficiencies and lead to merger activity. As a result, firms have had to maintain mixed fleets at low levels of utilization to maintain market footholds, and merger activities have led to an increasing imbalance in the competitive abilities of the various carriers. Such imbalances can only lead to further seller concentration, an increasing recognition of oligopolistic interdependence, and either service deteriorations to the public or an increased role for the regulatory authority.

In conclusion, the opportunistic behaviour of third levels combined with the importance of 'exogenous' decisions in determining markets for the carriers have created a situation where the possibilities of inconsistent and divergent investments are highly likely. The need for some better overall co-ordination of investments is evident, and it is here that regulatory

policy must also place emphasis. Continuing market disequilibriums in supply and demand can only lead to wasteful periods of readjustment.

A) The Regulatory Environment

Present regulation of third level operators is essentially based on control of market entry, revealing a basic concern with the probabilities of excessive entry and instability. Two requirements are therefore placed on the regulatory authority, the need to interpret the public interest and the need to set criteria by which to select carriers to service particular markets.

The particular concern, in the question of public interest, is that the ATC operates with extensive authority under legislation which provides only an ambiguous framework, given the numbers of performance trade-offs which the air carriers encounter. Foremost, therefore, is evidence of no consistent pattern in third level decisions and the pressing need for a set of enunciated principles establishing the directions in which third level operations will be allowed to develop, in the long-term, and in the public interest. Goals definition and a better handling of the trade-offs involved would obviously create an element of certainty, ensuring more

orderly development of investments and applications to the regulatory authority. Without some better definition of objectives, it would seem the regulatory authority will remain indecisive in assuring that movements towards higher levels of social welfare are attained.

However ill-defined in existing legislation and regulation, the public interest in this examination has centered on the following principles:

1. productive efficiency - a static concept implying both internal carrier cost efficiency and general system efficiency. The objective recognizes the need for rationalization of route systems and industry configuration, the elements of the specialist doctrine, and the need for sufficient competition to ensure efficiency with public benefit.
2. dynamic efficiency - a concept implying a transportation system dynamically adaptive to exogenous change. The objective recognizes the problems of fluctuating demands, and the role of profits and flexibility in ensuring the proper response in the system to such changes.
3. service integration - a concept implying a transportation system with each mode properly suited to its markets and co-ordinated activities by all

- carriers. The objective recognizes the role of co-operation and limited collaboration in ensuring complementarity of supplemental activities.
4. stability - a concept implying viability of firm operations, concern with orderly investment and developments in the industry, and avoidance of excessive entry. The objective recognizes the tendency to excess capacity in the third level carriers' operation and the role of regulation in limiting competition to ensure regularity and orderly progress.
 5. competitive presumption - a concept implying the greater effectiveness of market rivalry relative to administrative regulation in ensuring consumer choice, incentives to productive and dynamic efficiency, and normal profits. The objective recognizes the cost in resources to regulate in the public interest and the expediency in allowing market forces to control behaviour.
 6. allocative efficiency - a concept implying that the income distributions resulting from the regulation of the commercial air transport system will meet with social priorities. The objective recognizes the element of normative judgment in distinguishing

social groups for income transfers and remains a political question.

Given this multitude of considerations, without a dictation of objective weightings, the regulatory authority is maintained in a constant quandry of decision and the firms must try guess-work in developing initiatives and long-term policies.

The concern with carrier selection has involved the regulatory authority particularly with licensing. On the thin routes common to third level operations there has been a tightness in route authorizations showing particular concern with:

1. the adverse effects of diversion and duplications in raising costs and destroying the viability of the operations of third level carriers.
2. greater concern with maintaining the self-sufficiency and regularity of class 1 and 2 than with the irregular services of class 3 and charter operations.
- and, 3. the competitive presumption where essentially captive markets are concerned.

Regulation, therefore, has been concerned mostly with establishing seller concentrations. Lesser attention is paid to regulating conduct through merger and fares activity. In these regards, the ATC has felt satisfied to focus major attention

on mainline and regional operations, who, after all, maintain the large majority of commercial air services. It is mainly in answer to public complaint that regulatory decisions interfere in fares and merger proposals established by the third levels. Indeed, given the limited resources of the regulators, there may be a strong case for taking such a structuralist approach to regulation and avoiding the larger problems in developing more rigorous standards for performance.

Given the extent of their share of national output and disproportionate tying-up of regulatory resources, arguments for de-regulation of third level carriers may be presented. It is argued that only where essentiality¹ of air services is established should regulatory authorities show substantial concern.

A qualitative change in the nature of regulation is thus suggested. It has been noted that the indeterminacy of oligopolistic market structure has made it difficult to deter-

¹Likely, regular class 2 services will be supported. In any case, services to isolated points may be considered essential. Communities dependent on air transport have come to establish:

- a) regularity,
 - b) reliability,
- and, c) dependability, far beyond other objectives, and therefore, substantial regulatory protection of such markets may be required.

mine behaviour and performance from seller concentration. At the same time, the problem of easy entry without regulation is prominent in third level operations and strict limits on capacity are therefore required to ensure efficiency and stability. Yet, given the economic environment in which third levels operate, the rigidities of licensing entry to points and protecting markets has perhaps caused sufficient inflexibility to induce greater merger activity and seller concentration than is necessary or desirable. Given the nature of irregular and charter licences, and the concentration of third level operations in such services, it may be that competitive market forces could be allowed greater freedom as far as entry is concerned. Except at points where class 1 and 2 services have been established, policy could allow class 3 and 4 operators to operate under conditions of unrestricted entry into all points not serviced by at least regular operations. Increased flexibility would allow operators to rationalize route systems more adequately in response to exogeneous change. The existence of open competition would also produce a competitive thrust into third level operations.

At the same time, easy entry would still threaten stability. Therefore, instead of limiting by the present policy of licensing entry, the regulatory authority would

operate so as to control investments thereby maintaining limited capacity but not restricting entry. Dynamic efficiency would be enhanced, and the regulatory authority would have to re-orient itself into indicative or compulsory investment planning and a consideration of market forecasting.

In other words, the regulatory authority would have to move away from a structuralist approach and into an interventionist planning approach in supervising third level operators.

B) The Third Level Carriers' Problem

The 'third level' carriers' problem derives from their small size and uncertain economic environment. This environment represents an exogenous system of markets giving the third level operators an even weaker economic base than that experienced by the 'regional' carriers. However, the institutional obligations placed on these carriers have not been as large a burden as those placed on the regional carriers in the 1960's. As a result, as a basis of reference, regional policy can only extend to the 'third level' operations to a limited extent.

A great proportion of this discussion has centered on the development of regional policy in 1966. The policy was created in answer to economic circumstances paralleling the third level present position to a significant degree. The objective was to maintain regular services to secondary centres

over routes proving uneconomical to mainline operators' fleet development. To fill in and meet such obligations, it was necessary to find ways and means of improving the economic position of the regional carriers. There was a particular need for operators to specialize in structuring their operations to most efficiently meet their needs and to reduce fleets to the minimum capacities required to meet such commitments. The carriers, however, were set to the task of meeting socially obligated services supported by internal cross-subsidizations. At the same time that public policy moved away from such systems, (with Wheatcroft's report¹ in 1958, "The most effective manner in which Air Canada can be absolved from the obvious economic strait-jacket in which it finds itself because of the burden of social routes, is to divest itself of these routes to the regional carriers"² and the Royal Commission on Transportation in 1961, "No particular form of transport should be singled out as an instrument of national policy if any burden is involved in the performance of its function unless sufficient (public) compensation is provided"³), the regional

¹Wheatcroft, S. F., Airline Competition in Canada, op. cit., 1958.

²Wheatcroft, S. F., Ibid., p. 42.

³Royal Commission on Transportation March 1961, (Queen's Printer, Ottawa, 1966), p. 13.

carriers found themselves in serious financial difficulties because of such social obligations.

The regional policy, therefore, was conceived to meet the regionals' obvious need for greater traffic and revenues in order to sustain efficient utilizations and raise the capital necessary to re-equip their obsolescent equipment with modern technologies, competitive in operations to the secondary centres and more satisfactory in meeting the service requirements of those regional centres.

Given these objectives - regular and scheduled services to secondary centres by specialized carriers, fleet modernizations to socially satisfactory service levels, and the avoidance of extending services irrationally under internal subsidy, the regional carriers' policy needed to establish:

1. the carriers involved, through a delineation of airlines, scope of services, and relationship with other carriers,
2. the extent of government support in aiding the carriers to fulfill their objectives,
3. the extent of aids to allow re-equipment programs,
- and, 4. the nature of route allocations policy.

In short, it was up to the regulators to provide a definitive statement of public policy, creating a certain framework in which the carriers might clearly see their roles, and, thereafter, through private initiatives organize their operations to most adequately suit such purposes.

The particular problem of the regionals therefore was to meet the burden of social obligations by developing more rational carrier operations¹ (increased efficiency), by designating geographical areas² of operation sufficient to provide enough revenues to sustain an economic and self-supporting operation, and in creating conditions enabling the carriers to re-equip.

Aside from those public obligations imposed in maintaining a system of regular or scheduled routes, the carriers'

¹ Studinicki-Gizbert notes,

"The healthy development of regional carriers requires a proper balance between the diversification of services and preserving the advantages of mutual complementarity and compactness of the operation. This pragmatic approach does not allow a strict delineation of the regions or strict definition of the types of services to be combined." from: The Regional Air Carriers' Problem, op. cit., p. 84. Indeed, such an approach will obviously develop in establishing the 'third level concept', and some regulatory discretion will always remain.

² The exclusive nature of such a proposal obviously presents serious public policy concern. Air service has public utility or externality features which imply a particular need for careful public regulation.

economic problems were felt to derive from the following features of their economic environment:

- a) year-to-year fluctuations in demand, given the dependence of traffic on the levels of resource development activities as well as changing patterns of discovery and exploitations of individual projects.
 - b) seasonal fluctuations in demand.
 - c) directional traffic imbalances.
 - d) short average stage lengths and low traffic densities.
 - e) equipment needs and capitalization problems.
- and, f) diversity of functions and fleet, required to produce:

- i) provisions of local air services
 - ii) feeder services
 - iii) developmental route services
 - iv) essential services
- and, v) charter services.

The economic environment in which the third level carriers operate appears as weak, if not more so, an economic base on which to sustain operations. However, given the nature of its obligations under class 3 and 4 license autho-

rities and the revenue strengths in providing such services, third level carriers have been able to survive profitably. Even where route abandonments by the regional carriers to avoid the needs for internal subsidy have resulted in the maintenance of class 2 authorities by the third levels, overall viability has been substantially maintained. Hence, there is a significant difference in the third level carrier's problem relative to the regional carrier.

Regional carriers required increased revenues and public protection to ensure their ability to extend high standard regular air services; third level carriers only operate to a limited extent in providing scheduled or regular services and therefore have not faced the losses characteristic of regional operations in the 1960's. Thus, while requiring a definitive statement of public policy regarding the role of these carriers in order to consistently shape fleets and organization to meet such requirements, the third level industry does not suggest the urgency for financial strengthening characteristic of the regionals' problem.

Where regional policy, therefore, has emphasized measures to ensure viability, third level policy should focus more on the development of long-term efficiencies and high standards of service.

The main problem in third level operations is that they are small operators, lacking depth in market studies, developing ad hoc approaches to short-run operations and investments planning, and operating under particular conditions of uncertainty. Such a position has often created divergent and inconsistent investments leading to inefficiencies through mixed fleets, idle equipment, or financially unstable operations.

The tendency of these smaller carriers to invest in obsolescing aircraft creating overcapacity, heterogeneous fleets, and high variable cost operations has often caused inefficient firms to find their operations increasingly subject to the cost-price squeezing of efficient competitors. Unless such tendencies are regulated, these inefficiencies will continue and, in the long-term, increasing seller concentrations may derive. Overall, also, a general co-ordination of investments is lacking; provincial decisions, private industrial decisions, and federal regulatory policy will all shape the environment in which third level carriers must survive. A better consultation and co-operation between all these interests will provide that exogenous change does not arise so unexpectedly for the capabilities developed by the smaller operators; lags in adjustments towards rationalized systems may then be avoided to a greater extent.

C) Public Policy Recommendations

The inflexibilities in the licensing system could be removed if replaced by an effective system of centralized investment planning by the regulatory authority. The increase in competition provided by free entry to all points not served by regular air transport would induce greater efficiency as carriers are given greater flexibility to rationalize route systems. The prevalence of open competition should derive those benefits alleged to accrue from open market rivalries. Where third levels are operating class 2 services into isolated points and such services are considered essential, regulatory policy should be able to operate as at present - limiting entry to ensure stability of services. The other de-regulations of entry, however, would require some level of intervention with control over individual carrier investment policies. The increased needs of gathering information and deciding criteria for matching capacity with demands will likely increase the resources allocated to the regulatory authority. Whether such policy would be possible obviously depends on its acceptance by the carriers. Still, maintenance of current licensing inflexibility and a lack of direction in investment planning has likely contributed to considerable inefficiencies in operation. As noted, inflexible licensing has created irrational

or inefficient carrier operations where exogeneous change has developed, and merger activity has been necessary as the best avenue to readjust systems and restore efficiency. Such factors have developed competitive imbalances which promise only further concentrations, unless provisions, through regulatory leadership, can be established to modernize fleets and allow greater flexibility in allocations of such equipment. Centralized investment planning and control will therefore need to be emphasized, in increasing the standards and efficiency of third level operations.

In short, public policy in the regulation of third level carriers would seem best directed in:

1. developing a definitive description of the third level industry by carriers, by function, by licensing obligations, and equipment, as the major framework against which to develop the proper long-term investment strategies.
2. developing a greater competitive balance in relationships between carriers¹ in the industry

¹At present, for example, MidWest, with the combined resources of itself and TransAir plus all class 1 and 2 licences is in an ideal position to out-perform all less advantaged carriers. If class 3 and 4 operations are opened to free competition, it is likely this carrier would command all markets in due course.

to ensure that increased industrial concentrations, unless considered in the public interest, can be avoided.

3. re-orienting regulatory controls away from route authorizations and into economic planning, controlling investments through some system of 'indicative' planning, compulsory investment direction, or co-operative developments between carriers.

While investment regulation remains a controversial issue, it will be most useful in circumstances where:

- a) private firms maintain poorer information than the central authority and where, in acting individually they will misallocate resources,
- b) where investment planning appears as a means of ensuring economic stability by maintaining aggregate supply in a 'reasonable' equilibrium with the level of projected demands.¹
- c) where investment co-ordination ensures externalities through timing complementary investment or, where, through standardizing equipment, integration of systems and subcontracting to specialist firms is eased.

¹ Here, a Leontif - system of economic organization may be useful in forecasting carrier requirements.

In short, investment planning is a means of curbing the misallocations generated by pessimistic, opportunistic, or overly optimistic individual carrier investment schemes. The circumstances outlined above are obviously major features of the third level industry. As Wheatcroft notes in regard to competition, co-operation, and planning, ". . . preconceptions that these things are mutually exclusive and incompatible should be rejected."¹

¹Wheatcroft, S. F., The Economics of European Air Transport, op. cit., p. 229.

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APPENDIX A
TRANSAIR LTD. OPERATIONS

1. - SOURCE PERCENTAGES OF REVENUE, 1969

Sources	TransAir	Air Canada
Unit Toll Services:		
Passengers	.57	.82
Express	.01	.02
Freight	.05	.03
Excess Baggage	.002	.003
Mail	.03	.04
Total	.66	.96
Charter Services	.32	.02

Source: D. B. S., Civil Aviation 1969, (Ottawa, Queen's Printer, 1970), Tables 1 and 2.

General conclusions as to the nature of costs, based on reproduction of the unit costs experienced by firms, must therefore be treated with caution. The operating circumstances of each may vary considerably; wide variations are therefore inevitably encountered. Calculations of optimal scales are correspondingly thwarted.

2. - SOURCE PERCENTAGES OF REVENUE, 1970.

Sources	TransAir
Unit Toll Services	.77
Charter	.23

Source: D. B. S., Air Carrier Operations in Canada October - December 1970 (Ottawa, Information Canada, 1971), Table 4.

It can be seen that TransAir's services depend more on charter operations than the mainline carrier; but that unit toll passenger services are becoming increasingly the major source of income.

3. - TRANSAIR FLEET
(As of October, 1971)

Aircraft Type	Number	Terms of Ownership	Power Plant
Hawker Siddeley AW650 (Argosy)	1	Leased	turbo
Hawker Siddeley HS 748	2	Leased	turbo
Nihon YS11	2	Leased	turbo
Boeing 737	2	Leased	jet
Douglas DC6	1	Owned	piston
Douglas DC3	3	Owned	piston

Source: Statistics Canada, Fleet Report Inventory of Commercial Aircraft in Canada, (Ottawa, Aviation Statistics Centre, 1972).

All are reasonably large capacity aircraft with the DC-3 capacity (28 passengers) the smallest passenger craft in the fleet (and the most obsolete), and the Boeing 737 (115 passengers) the largest. Obviously, markets chosen for operation should accommodate the various requirements of such a fleet.

APPENDIX B
THE AERONAUTICS ACT

The statutory powers presented by the Act to the Commission allow it to operate in fulfilling three separate functions - advisory, legislative and judicial.

Sections (12) and (13) direct the Commission to undertake investigations and surveys ". . . relating to the operation and development of commercial air services in Canada . . .", and to direct recommendations to the Minister of Transport ". . . in the exercise of his duties and powers . . .", as well as in regard to its studies. Its first function is therefore as an advisory body to the Government.

Section (14) gives the Commission broad powers in legislating regulations regarding:

- a) terms and classifications of licences,
- b) requirements in both the form and extent of information, regarding nearly all imaginable dimensions of airline economic behaviour,
- c) penalties and exemptions in respect of compliance with its regulations,
- d) establishment of classifications or groups of carriers,
- e) prohibitions of merger activity,

and, f) proper regulation of commercial tolls.

In line with the broad objectives of Government policy, therefore, the Commission's second function is to legislate regulations regarding the conduct of the air carriers.

Finally, Section (16) provides the Commission with the control of licences made necessary for the legal operation of a commercial air service by Section (17) of the Act. The three important conditions in licensing are those presented in subsections (3), (6), and (8), of Section (16) in the Act.

Subsection (3) requires that ". . . the proposed commercial air service is and will be required by the present and future public convenience and necessity." Subsection (6) gives the Commission power to prescribe routes and areas to be served, to attach to the licences such conditions as may be considered,

". . . necessary or desirable in the public interest . . .",

and to,

"impose conditions respecting schedules, places of call, carriage of passengers and freight, and, subject to the Post Office Act, the carriage of mail."

Finally, Subsection (8) gives the Commission the right to,

". . . suspend, cancel, or amend any licence or any part thereof where in the opinion of the Commission, the public convenience and necessity so requires."

Its third function, therefore, is essentially judicial. In adjudicating between individual private interests, the Commission is to establish conditions of operation which will, in its opinion, best serve the public interest.

As a final observation, it should be noted that Section (18) of the Act allows for the granting of assistance to carriers,

"The Governor in Council may authorize the Minister to enter into a contract with any carrier for the grant of such assistance, financial or otherwise, as may be specified by the Governor in Council payable out of moneys to be appropriated by Parliament for that purpose."

Subsidy, therefore, is given a definite part in the governing statute but it is set as a Cabinet responsibility. Furthermore, funds drawn from the Treasury are a matter of both public and governmental sensitivity, and one might easily theorize that their issue would be a matter of avoidance to the Government.

In summary, the legislation of the Aeronautics Act would seem to give the Canadian Transport Commission extensive powers in controlling the economic activities of the commercial

air carriers. Indeed, extremely adequate controls exist for controlling conditions of entry, levels of fares, and the quantities and qualities of air services in Canada. Except for its inability to extend subsidies autonomously, the Commission would seem to possess sufficient authority to regulate commercial services in line with "the public interest" and in respect to its functions as an advisory, legislative, and judicial agency. Governed overall by broad Government policies, the Commission is allowed a wide exercise of powers which, except for the possible inefficiencies generated in such a large bureaucratization, appear necessary to the proper economic regulation of the industry.

A criticism is that the powers of regulation granted in the regulation do not distinctly allow for regulating the dynamic properties of the air transport industry. The ability of an air transport system to properly adjust to changes in its 'economic circumstance' or exogenous variables, over time will depend most heavily on concomitant changes in the structure of the resources employed by the system. Dynamic change will require adaptability. In this respect then, conspicuously absent from the Act are provisions which would allow the Commission to properly regulate the investments of air carriers.

There is no requirement in the Act for the filing of prospective capital purchases and of information regarding proposed expansions in equipment and in the route system. Furthermore, no provisions allow the Commission the statutory authority to direct the investment programs of the air carriers. Any significant benefits which might be derived from regulation by centralized investments planning are dismissed; and, therefore, these deficiencies in the legislation may be considered serious.

APPENDIX C
THE NATIONAL TRANSPORTATION ACT 1966-7
NATIONAL TRANSPORTATION POLICY - SECTION (3)

"It is hereby declared that an economic 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, and that these objectives are most likely to be achieved when all modes of transport are able to compete under conditions ensuring that having due regard to national policy and to legal and constitutional requirements

- 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 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, carries traffic to or from any point in Canada under tolls and conditions that do not constitute:

- i) unfair advantage - in respect of such traffic beyond that disadvantage inherent in the location or volume of the traffic, the scale of operation connected therewith, or the type of service or traffic involved.
- ii) an undue obstacle - to the interchange of commodities between points in Canada or unreasonable discouragement to the development of primary or secondary industries or to export trade in or from any region of Canada or to the movement of commodities through Canadian ports; and this Act is enacted in accordance with and for the attainment of so much of these objectives as fall within the preview of subject matters under the jurisdiction of Parliament relating to transportation."

Source: The National Transportation Act, (Statutes of Canada 1967, Chapter 69). underlining added.

APPENDIX D
CLASSIFICATIONS AND GROUPING OF COMMERCIAL
AIR SERVICES AND CARRIERS

"The following classes of commercial air services are established for the purposes of these Regulations:

- (a) Class 1: Scheduled commercial air service, being a service that is operated wholly within Canada and that is required to provide public transportation of persons, goods or mail by aircraft, serving points in accordance with a service schedule at a toll per unit of traffic;
- (b) Class 2: Regular Specific Point commercial air service, being a service that is operated wholly within Canada and that is required to provide, to the extent that facilities are available, public transportation of persons, goods or mail by aircraft, serving points in accordance with a service pattern at a toll per unit of traffic;
- (c) Class 3: Specific Point commercial air service, being a service that is operated wholly within Canada and that offers public transportation of persons, goods or mail by aircraft, serving points consistent with traffic requirements and operating conditions at a toll per unit of traffic;

(d) Class 4: Charter commercial air service, being a service that is operated wholly within Canada and that offers transportation, on reasonable demand, of persons or goods from the base specified in the licence issued for that commercial air service or the base declared by the Committee to be the protected base for that commercial air service at a toll per mile or per hour for the charter of an entire aircraft, or at such other tolls as may be allowed by the Committee, and includes recreational flying;"

NOTE:

". . ."protected base" means an area twenty-five miles in radius measured from the main post-office of the base of a Class 4 air carrier . . . to and from which area the Committee, by conditions inserted in the licences of other Class 4 air carriers, has prohibited or restricted operations of such other Class 4 air carriers, and which area is declared by the Committee to be a protected base;"

Class 5: refers to private contract carriers.

Class 6: refers to flying club operations, for training and recreation on a non-profit basis.

Class 7: refers to specialty air services, ". . . for any purpose not provided for by any other class of service . . ."

"Each class of commercial air service established . . . is divided, on the basis of the weight of the aircraft authorized to be operated, into the following groups:

- (a) Commercial air services operated with the fixed wing aircraft,
 - i) Group A, having a maximum authorized take-off weight on wheels not greater than 4,300 pounds,
 - ii) Group B, . . . greater than 4,300 pounds but not greater than 7,000 pounds,
 - iii) Group C, . . . greater than 7,000 pounds but not greater than 18,000 pounds,
 - iv) Group D, . . . greater than 18,000 pounds but not greater than 35,000 pounds,
 - v) Group E, . . . greater than 35,000 pounds but not greater than 75,000 pounds,
 - vi) Group F, . . . greater than 75,000 pounds but not greater than 150,000 pounds,
 - vii) Group G, . . . greater than 150,000 pounds but not greater than 350,000 pounds.
 - viii) Group H, . . . greater than 350,000 pounds, and

(b) Commercial aircraft operated with rotating wing
aircraft. . ."

from CTC, General Order No. 1972-1 Air, Part I,
Section (3).

APPENDIX E
REGULATORY REQUIREMENTS

Each carrier must publish a tariff containing tolls and condition of carriage pertaining to its services; changes require 30 days notice to the regulatory authority. The principal consideration is avoiding price discriminations, and reasonableness as relating to costs and efficient production: Part V, Section (45), CTC General Order No. 1972-1 states,

- "(1) All tolls and terms or conditions of carriage established shall be just and reasonable and shall always, under substantially similar circumstances and conditions, with respect to all traffic of the same description, be charged equally to all persons at the same rate.
- (2) No air carrier shall in respect of tolls:
- (a) make any unjust discrimination against any other person or other air carrier;
 - (b) make or give any undue or unreasonable preference or advantage to or in favor of any person or other air carrier in any respect whatever; or
 - (c) subject any person or other air carrier or any description of traffic to any undue or

or unreasonable prejudice or disadvantage in any respect whatever."

It is the judicial task of the Air Transport Committee to determine such cases.

Regarding merger activity Section (45), CTC General Order No. 1972-1 requires that parties to such activity,

- "(1) must notify Air Transport Committee.
- (2) the Committee will decide whether the merger:
 - (a) unduly restricts competition, or
 - (b) is otherwise likely to be prejudicial to the public interest.
- (3) The Committee will also decide whether to notify the Director of Investigation and Research under the Combines Investigation Act."

APPENDIX F
LICENCE REQUIREMENTS ON
CLASS 1 AND CLASS 2 SERVICE

The only justifiable delays for such services are weather or conditions affecting safety. Otherwise, schedules are to be rigidly adhered to, and flights must go regardless of whether traffic is sufficient to meet bread-even load factors on that segment.

General Order No. 1972-1 Air, however, provides a measure of flexibility in operating scheduled services allowing for:

- (1) flight deferrals - where no traffic is available at the time of departure.
- (2) flight cancellations - where it is not required before the next departure of another scheduled flight closely timed to the cancelled flight; and where the succeeding flight has sufficient capacity to handle all demands.
- (3) consolidations of traffic - where it may all be handled by a single flight.
- (4) avoidance of intermediate points - where no destination or origination of passengers occurs.

APPENDIX G
LICENCE HOLDINGS AT TIME OF MERGER

Northland Unit Toll Licences:

- | | | | |
|----|-------------------------|--|--|
| 1. | 1266/61 (NS)
serving | Base - Wabowden | Class 2 |
| | | S. Indian Lake
Nelson House
Wabowden
Cross Lake
Norway House. | |
| 2. | 419/49 (NS)
serving | Base - Winnipeg | class 2 |
| | | Berens R.
Little Grand Rapids
Poplar River
Norway House
Cross Lake | Wabowden
Nelson House

Red Lake
Sioux Lookout
Thunder Bay
Warren's Landing |
| 3. | 168/47 (NS)
serving | Base - Norway House | class 3 |
| | | Brochet
Lynn Lake
Pukatawagan
Granville Lake
The Pas | York Factory
Ilford
Shamattawa
God's Lake |

MidWest Unit Toll Licences:

1. 1787/68 (NS) class 2 base Winnipeg
 serving Gillam
2. 1258/61 (NS) class 3 base Winnipeg
 serving Grand Rapids
 Gillam

Source: Canadian Transport Commission, Directory of Canadian Commercial Air Services, (Ottawa, Queen's Printer, 1968).

APPENDIX H
MANITOBA SYSTEM OF UNIT TOLL SERVICES

TransAir has developed regular and scheduled services using turbine and turbo-prop equipment (large capacity) under two licences:

- class 1 Winnipeg - The Pas - Flin Flon - Lynn Lake
 Thompson - Churchill
- class 2 Winnipeg - Gillam - Churchill

These services consist the basic framework of developed service at regular frequencies. MidWest maintains the remainder of regular services operated under class 2 authority, as well as an additional class 3 service:

- class 2 Winnipeg - Little Grand Rapids - Berens River
 Poplar Point - Norway House - Ste Therese Pointe -
 Garden Hill - Red Sucker Lake - God's Lake -
 Narrows - God's River - Oxford House
- class 2 Norway House - Cross Lake
- class 3 Norway House - The Pas

In effect, these services represent the main unit toll services available in Manitoba. Competition with, and supplemental local and feeder services to, these main networks of service are provided mainly by Ilford - Riverton Airways Ltd. and Lambair Ltd., though on a restricted basis:

1. Ilford - Riverton -
 - class 3 base Winnipeg - Riverton, Island Lake, Red Sucker Lake, God's Lake, Gillam.¹
 - base Ilford - Split Lake Shamattawa.

2. Lambair -
 - class 3 (base) The Pas - Nelson House, Thompson, Cross Lake,
 - (West) Norway House, Moose Lake, Easterville, Grand Rapids
 - class 3 (base) Thompson - Oxford House, God's Lake, Narrows, Island Lake (St. Theresa Pte. Garden Hill), Kelsey, Split Lake, Gillam.²

In conclusion, therefore, it is suggested that as a general pattern, Ilford - Riverton has developed a complementary and supplementary service to MidWest in traffic flowing from the Island Lake Region to Winnipeg. Lambair acts to serve local

¹Restricted to no pick-up of traffic in Winnipeg - Gillam market.

²There are several restrictions:

(a) No pick-up of turnabout traffic between Cross Lake and Norway House.

(b) No development of direct services competing on

The Pas - Norway House

The Pas - Thompson

traffic connecting with the regional centres The Pas, Norway House, and Thompson in the West, and Norway House, Gillam and Thompson in the East. The northeast remains an area of sparse population and little development of unit toll services.

Source: Canadian Transport Commission, Directory of Canadian Commercial Air Services (Ottawa, Information Canada, 1971).

APPENDIX I
POPULATION STATISTICS

Indian/Metis Residents (by Reserve or Community)

Island Lake	2,250
God's Lake	894
Oxford House	611
Shamattawa	334
Little Grand Rapids	392
Berens River	741
Poplar River	343
Norway House	2,420
Cross Lake	1,688
South Indian Lake	152
Brodiet	215
Grand Rapids	499
Easterville	95
Moose Lake	372
Nelson House	1,261
Split Lake	550
Wabowden	360
	<hr/>
TOTAL:	13,167
	<hr/>

Source: Data accumulated by The Community Welfare Planning Community Agency, Winnipeg as of June, 1968.

APPENDIX J
 FLEETS OF ILFORD-RIVERTON AIRWAYS LTD.,
 LAMBAIR LTD., AND MIDWEST AIRLINES LTD.,

Compare the fleets of the following carriers:

1. Ilford - Riverton Airways Ltd.:

AIRCRAFT	NO.	GROSS TAKE-OFF WEIGHT (lbs.)	CAPACITY (Passengers)
Commando C46	1	50,000	freight
Canso PBY5A	1	35,000	18 - 26
Douglas DC3	1	30,000	28
Beech 18C-45	1	9,000	8 - 9
Beech D185	1	10,000	8 - 9
Cessna 180	3	2,750	4 - 6
Cessna 185	3	3,500	4 - 6
Cessna 206	1	3,750	4 - 5
Cessna 402	1	6,500	6 - 8
Dehavilland DHC 2	1	5,500	8
Dehavilland DH3	1	8,000	12
Dehavilland DHC2 (Turbo)	1	5,500	9
Grumman Goose	1	9,500	10
Norseman	1	8,000	7
Piper PA23 (Aztec)	1	4,000	4
Cessna 172	1	2,500	4 - 6
Cessna 185	1	3,500	4 - 6
TOTAL NUMBER	21		

(5 owned, 16 leased)

(all piston aircraft, except for the Turbo-Beaver, with most capacity between 4-12 passenger aircraft).

2. Lambair Ltd.:

<u>AIRCRAFT</u>	<u>NO.</u>	<u>GROSS TAKE-OFF WEIGHT</u> <u>(lbs.)</u>	<u>CAPACITY</u> <u>(Passengers)</u>
Bristol 170	1	45,000	freight
Dehavilland DHC6	2	11,000	18
Dehavilland DHC3	5	8,000	12
Dehavilland DHC2	2	5,000	8
Britten Norman	1	6,000	N.A.
Cessna 180	6	3,000	4 - 6
Piper PA23	2	4,000	2
Bell 47 helicopter	4	3,000	-
Alouette 2	1	3,750	-

TOTAL NUMBER: 24

(20 owned, 4 leased)

(all piston aircraft, except for the turbo Twin Otter, with most capacity in 4 - 12 passenger range)

3. Midwest Airlines Ltd.:

<u>AIRCRAFT</u>	<u>NO.</u>	<u>GROSS TAKE-OFF WEIGHT</u> <u>(lbs.)</u>	<u>CAPACITY</u> <u>(Passenger)</u>
Hawker Siddeley Argosy	2	100,000	freight
Canso PBY5A	3	35,000	freight
Douglas DC3	2	30,000	28
Beech D185	1	10,000	8 - 9
Dehavilland DHC6	3	12,000	18
Cessna 206	1	3,750	4 - 5
Grumman Goose	2	9,500	10
Pipper PA23 (Aztec)	2	5,500	4
Piper PA30 (Apache)	1	3,600	5

<u>AIRCRAFT</u>	<u>NO.</u>	<u>GROSS TAKE-OFF WEIGHT (Lbs.)</u>	<u>CAPACITY (Passenger)</u>
Piper PA31 (Navajo)	1	6,500	9
Bell 206 (helicopter)	3	3,250	-
Bell 47 (helicopter)	11	2,500	-
<hr/>			
TOTAL NUMBER	32		

(30 owned, 2 leased) (all are piston aircraft, except for the turbo Argosy and Twin Otter aircraft, with most capacity between 4 - 10 passenger aircraft)

It is evident that all carriers maintain heterogeneous fleets with major capacities ranging between 4 - 12 passenger aircraft, but with limited ability to serve traffic in Twin Otter (13 passenger) and DC3 (28 passenger) capabilities. Each fleet also maintains large freight capacity aircraft; while Ilford-Riverton exhibits the greatest heterogeneity of fleet (17 aircraft types out of 21 operated), both MidWest and Lambair have diversified into helicopter operations.

Source: Fleet Report Inventory of Commercial Aircraft in Canada, as at October 15, 1971, Statistics Canada, Air Transport Committee.