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**DEVELOPMENTS IN INTERNATIONAL CIVIL
AVIATION: WHAT ARE SOUTHERN AFRICA'S
STRATEGIC OPTIONS ?**

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ABSTRACT: This paper presents and analyses the major structural and operational changes in international civil aviation that are currently occurring. Out of the plethora of these changes are some that will have a greater impact than others on the operations, strategies and profitability of southern African airlines. These are mergers and "globalisation" of airlines in the developed world, liberalisation of aviation services in Europe (1993) and the attainment of democratic rule in South Africa. Some strategic options open to southern African carriers are presented. The strategies relate mostly to how the carriers should position themselves to compete on the intercontinental routes. A major conclusion reached is that it would be in the best interests of the carriers to work towards the formation of a single carrier that would operate from a chosen hub.

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Introduction

Developments and trends in the international aviation industry continue to change the modus operandi of the airlines. With the US already in its second economic cycle of a deregulated regime, Europe '93 promising to bring with it increased commercial freedoms, and the Asia-Pacific region's airlines becoming commercial bulwarks, it is only instructive to assume that there will be a global fall-out from these developments. Compared to other regions of the world, African airlines or more specifically southern African airlines, are the least prepared for these ominous developments in the international aviation scene.

In southern Africa, civil aviation is currently taken as an integral component of national defence, and a function of national political, social and economic policies. A financially healthy national carrier can be a valuable resource for any developing country.

There is a realisation, though, that an unsuccessful national carrier is not only a lost opportunity, but a real liability for countries that are saddled with heavy debt burdens, falling commodity prices, dwindling export revenues, an impoverished population, a poor industrial base, stagnating (falling) agricultural output, and spiralling costs. There are moves currently under way in southern Africa, particularly under the aegis of the Southern African Development Coordination Conference (SADCC), to fashion a common strategic response to the challenges of globalisation, consolidation, the South African "threat/opportunity" and European Community liberalisation of civil aviation in 1993. The competitive strategies considered have to take into account the important link between the tourism (safari) and the airline industry. Southern Africa's currently fragmented global strategy will have to be jettisoned as the southern African carriers grapple with the challenges of:

- * how to derive the advantages that a national carrier can deliver without placing a huge financial burden on the State
- * what changes, if any, to make in the operating environment to position their airlines to overcome operational problems unique to the African air transport market
- * how to respond competitively and effectively against stronger foreign carriers without government subsidies; and
- * how to find a strategic fit in view of the current developments in the international civil aviation industry

This paper examines issues and trends in the international passenger aviation industry - focussing principally on those that have strategic implications and forebodings for southern Africa's national carriers. The objective is to explore strategic options open to the carriers based in the region. The paper is organised as follows: it begins with a cursory examination of trends in the international aviation industry and their implications for southern African carriers. It proceeds to lay down the current scenario in the region before an exposition on the strategic options available to the region's carriers is presented.

The southern African region in this context refers to the following countries, Angola, Botswana, Lesotho, Malawi, Mozambique, Swaziland, Namibia, Tanzania, Zambia and Zimbabwe. All the countries listed above operate flag carriers whose nomenclature assumes that of their respective countries. The countries have been

selected because they are members of the Southern African Development Coordination Conference (SADCC) which is a cohesive organisation seeking coordinated regional development. The political will to cooperate already exists. It is therefore conceivable that economic cooperation can be fostered. A democratic South Africa has indicated it will be a member of SADCC. We present strategies herein that deliberately exclude South Africa, as its future is yet uncertain (at least for the medium term planning horizon).

Trends in international aviation

Taneja (1989) identifies major structural and operational changes in the international airline industry as being a result of the following factors:

- * a rising global interest in the free enterprise system as a means of obtaining faster economic and social development
- * the Pacific gaining on the Atlantic as a centre of economic might
- * consumer demands, at least in the more mature markets, for lower fares and broader price/service options
- * deregulation of the US airline industry and mounting pressure, directly or indirectly, for more liberalisation in international markets
- * automated systems, which are being used to reduce operating costs (in capacity planning, for example) and to enhance revenues through the use of more effective yield management techniques
- * the privatisation trend affecting many government-owned enterprises
- * technological advances in aircraft, such as non-stop range
- * limiting infrastructural constraints such as insufficient airport capacity at a number of airports around the world, which may seriously undermine the establishment of a more competitive system, and
- * noise regulations, particularly in Europe, which are forcing airlines based in less developed countries to choose either expensive fleet modernisations or extensive re-routing.

Of critical importance are the bilateral lattice of agreements which exist and their effect on competition, the inclusion of trade in aviation services in the Uruguay Round of Multilateral negotiations on services and regulations which impede an airline's ability to create optimal networks. There is also the danger of African countries still regarding trade in services as an afterthought (witness phrases such as a "tertiary economy") and a belief in outmoded mercantilism.

We now examine the exogenous trends that are most likely to have a profound impact on the operations of southern African carriers. These include:

- * mergers and globalisation of airlines in the developed world
- * liberalisation of aviation services in Europe (1993)
- * the attainment of majority rule in South Africa.

Mergers (consolidations) and globalisation

Europe

Mergers are currently taking two distinct forms: the formation of regional blocs, and transnational alliances. In Europe (SADCC's largest source market), aviation experienced increased concentration in the years 1987 to 1991 (Barret, 1992). He asserts that collusion on prices and capacity between national airlines has been strengthened by a series of alliances between national airlines, the notable ones being the acquisition of UTA and Air Inter by Air France which reduced the remaining independent French airlines to 3% of scheduled aviation performed by French airlines. KLM acquired a controlling interest in Transavia to achieve a 97% share of Dutch aviation. The collapse of German Wings gave Lufthansa a 98% share of scheduled aviation by German carriers. British Airways (BA) took over British Caledonian in 1987 to bring BA's share of scheduled aviation to 90%. In Italy, Denmark and Greece, national carriers dominate aviation (Barret, 1992).

In 1990, British Airways was involved with KLM to each acquire 20% of the proposed Sabena Airways (SWA). SWA was to succeed the Belgian carrier, Sabena, which was then undergoing a major financial restructuring to stem mounting losses. The deal would have created an airline serving seventy-five European cities from a Brussels hub, but it was called off amidst wrangling over government approvals as Sabena's financial situation worsened. British Airways has since acquired a stake in the restructured carrier (Ward, 1991).

As Europe moves towards liberalisation a number of national airlines are taking strategic equity stakes in smaller operators and forging alliances across continents. British Airways for instance has submitted an indicative bid for a privatised Qantas. The liberalisation of some of the bilateral agreements between Great Britain and the Netherlands, Britain and West Germany, Britain and Luxembourg, Britain and Belgium, and Britain and Switzerland has raised some hopes for improved performance of the non-US airline industry. Some commentators, however, see mergers and strategic alliances as having a negative impact on the contestability of markets. Morrison and Winston (1989:83) concluded that in the USA:

"Mergers have not diminished competition on high-density routes enough to threaten to erase deregulation's benefits, but by substantially foreclosing the possibility of increased competition on low to medium density routes, mergers have made it even less likely that deregulation will reach its full potential."

Since European aviation has few routes that are high density by North American standards, the anti-competitive impact of mergers will be greater. Mergers entail the use or monopoly of computer reservation systems and greater down and upstream integration by the merged carriers. It is posited that this raises the barriers to entry and makes operations for those already in the market much more onerous. Kahn (1990:348) states:

"The increasing sophistication with which the leading carriers - particularly the ones with the most fully developed computer reservation systems - have learned to practice what the industry euphemistically calls "yield management" has enabled them to take full advantage of that monopoly power while also creating possible insurmountable barriers to entry by truly new competitors."

It would be inappropriate to pre-judge what Europe '93 will entail for SADCC carriers. But the indications are that the contestability of the market will be lessened by the mergers and strategic alliances currently taking place.

The USA

The period since 1978 in the US deregulated airline industry has been marked by three phases stages:

- 1978-1985 the "Adjustment Phase"
- 1986-1987 the "Concentration Phase"
- 1988-1992 the "Transcontinentalisation or Globalisation Phase".

In the mid to late 1980s, "merger mania" swept the US industry as carriers fought for the critical mass needed to dominate their chosen markets. There are five US carriers that can be characterised as mega carriers: Continental, United Airlines, American Airlines, Delta Airlines and Northwest Airlines. In 1990, the surviving US major airlines carried 433 million passengers, which was 83% of all US traffic and 36% of the 1.2 billion passengers who flew world-wide (Ward, 1991). The US carriers have continued this trend towards concentration. They now dominate major hubs and transcontinental routes. They have made efforts to consolidate transcontinental operations ahead of the establishment of a single European community aviation market in 1993. The US carriers have increased their share of the main US - Europe markets and have used fifth freedom rights to establish intra-European hubs while Europeans have continually been denied equivalent hubs within the US. The US is currently re-negotiating bilaterals with a number of countries before the EC takes over the negotiations in 1993.

The US is not a major market for SADCC carriers. Only South African Airways (from southern Africa) flies to New York after Zambia Airways discontinued its operations in 1991. The issue, though, is that what happens in the US tends to be a harbinger of things to come in other OECD countries. The concentration in the US will lead to oligopolistic competition and barriers not only to entry but operation are heightened.

The Asia-Pacific

The Asia-Pacific region presents both threats and opportunities. At present no SADCC carrier flies to the Asia-Pacific region, although South African Airways does. Qantas flies to Zimbabwe and South Africa. Economic growth in the region has fuelled air travel growth. There is, in addition to discretionary travel, the prospect of growth in the business travel market as the region's capitals become major business centres. There are also signs that China is awakening. The Japanese Government is encouraging overseas travel in a move to reduce its trade surplus. Privatisation, for instance, of Singapore Airlines (Japanese and Malaysian Airlines are on line), has meant improved productivity for the airlines involved. Qantas is to merge with Australian and the Australasian common market is being created. Qantas might become a regional giant in its own right after privatisation and the merger with Australian.

Deregulation in the Asia-Pacific region has primarily been limited to domestic markets. National flag carriers have been losing their dominance in international routes. For instance Japanese Airlines and Qantas will have to compete with All Nippon Airways (ANA) and Toa Domestic Airways (for the former) and Ansett (for the latter) in both domestic and international routes. In China, seventeen independent airlines have been created to compete in the mainland's domestic market. Also, the tourism industry is on the rise in the region principally because of deliberate government policies designed to promote it.

An issue that might have some impact on the operations and plans of SADCC countries is the threat of overcapacity in the region due to purchases of new aircraft, increased frequencies and European and US carriers gaining fifth freedom rights to the region. There is concern that the trans-Pacific route may turn into another congested north Atlantic route. The carriers of the Asia-Pacific may then turn to the thinner trans-Indian route to Africa or South America. If southern Africa has not laid down its strategies of dealing with Asia-Pacific, it might be disadvantaged in subsequent dealings. Already, Japan is in the process of re-negotiating a bilateral agreement with South Africa.

The distinction between globalisation and concentration is blurred. Oum et al. (1991) assert that globalisation has not taken place - consolidation has. If globalisation does take place, it will be driven by the same factors that drive consolidation. The economies of scale concept does not adequately explain the functional relationships between inputs and outputs in the airline industry. Costs alone do not determine market structure. Demand plays a part and several aspects of demand favour large carriers. Approximately constant returns to network size exist for broad ranges of airline traffic, that is, adding or dropping cities from an airline's network does not raise or lower unit cost. By contrast, sizeable economies of traffic density seem to exist up to fairly large volumes of traffic (Oum et al. 1991). Once the minimum efficient traffic density is reached, the curve is flat over a wide range. Passengers favour larger carriers primarily because of lower information costs, perceived real or higher quality of service (such as better schedules and frequencies), and frequent flyer rewards (easier to accumulate with larger carriers).

Mega carriers, "such as the American 7 billion club" which are the off-spring mostly of consolidation, provide services on many continents. The carriers carry passengers between countries, but most of their traffic originates from the home base. Some have fifth freedom rights. The few that have sixth freedom rights, fly passengers from one foreign country to another via their home base, for example, KLM and Singapore (SIA). Few carriers have sixth freedom rights, which makes the concept of globalisation somewhat fetched.

A truly "global" carrier would be an airline which can gather feed traffic from many widely disparate points throughout the globe. A full coverage multiple hub carrier like American Airlines would be the equivalent of a global carrier. A global carrier should operate hubs in several countries. Although there are no global carriers at the moment, there are attempts to move in that direction. Mega carriers are building global networks. The mechanics of building global networks would take various forms. At the theoretical level, an extreme form of global consolidation would be for carriers from different countries to merge outright into a single surviving corporate identity. At the other end of the spectrum, carriers would keep their unique identities but use simple

marketing agreements to co-ordinate traffic flows. In between, there is a stronger form of marketing agreement, one which is solidified with an equity position but not a merger.

Outright transnational buyouts have precedents in SAS and Air Afrique. From an operational point of view, outright merger is the most viable form of consolidation, but there are many political obstacles. For instance in the US, Canada and Australia, foreign ownership is restricted to 25% of total equity. Airlines have therefore tended to go for simple carrier alliances, equity swaps, interlining and code sharing agreements. These strategic alliances are what the popular press refers to as globalisation.

Mega carriers will present formidable competition to SADCC carriers. One of the prerequisites of a successful network is to be able to tap into thinner markets. These markets provide feed to the main trunk carriers. It is conceivable that mega-carriers (as they thrive to strike lucrative strategic alliances) will seek to have feed from southern Africa. Strategies to deal with them have to be contemplated now.

Liberalisation of aviation services in Europe (1993) and development of regional blocs

Europe is the most popular destination for SADCC carriers. European carriers dominate the intercontinental market compared to other regions. Developments in Europe therefore have a direct impact on SADCC carriers' operations. In January 1993 the so-called "third package" will come into force in Europe. The third package will:

"constitute the final phase in the organisation of the Community air transport market" (Pilling, 1992:19).

The proposals are for common airline licensing, approval of fifth freedom in the EC, approval of cabotage in EC, removal of route capacity limitations, fare setting freedom, allocation of landing/take-off slots, and the EC to negotiate air service agreements with foreign countries. There is a general feeling that the EC will take a defensive posture with regards to foreign airlines. There is already some evidence of this, with the Commission urging flag carriers to defer re-negotiation of bilaterals that put the EC carriers at a "disadvantage" against North American carriers. The allocation of landing/take-off rights is another source of concern for SADCC carriers.

Canada and the US will soon form a common market in as much as Australia and New Zealand. The implications of these developments for African carriers are not yet clear. The common markets though might turn out to be more defensive. Besides, there is not much traffic between southern Africa and these regions. At present, they only represent opportunities if southern Africa were to fully develop its tourism industry. Currently, South African Airways flies to New York, and US airlines are set to resume services to Johannesburg. Qantas has already resumed services to South Africa and has subsequently reduced its frequency to Harare from two weekly flights to one. It is apparent therefore that SADCC carriers will be put at a disadvantage.

Annex IV of the EC third package deals with third country carriers. It explicitly prohibits price leadership by non-EC airlines for intra-EC trips. It also establishes the applicability of EC competition legislation to non-EC airlines on routes to, from and

within the Community and the code of conduct for computer reservation systems (CRSs). The defensive nature of the proposed package is captured in the Annex:

"The Community should avoid diminishing the value of the traffic rights credited by the Community legislation within the internal aviation market for Community air carriers" (Pilling, 1992:21).

In relation to SADCC carriers, none have fifth freedom rights in Europe. It is therefore hard to envisage any of the carriers gaining them after the EC takes over the negotiations.

The European carriers are currently consolidating their dominance over intercontinental traffic between Europe and Africa and the imbalance of frequencies is increasing. Their strategy is to select and build major hubs (Johannesburg and Nairobi) and to use these hubs as intermediate points beyond which they will employ their own equipment to provide some of the spoke services themselves, in the interests of both incremental revenue (traffic feed) and the market presence/product identity involved. For example, British Airways is using Johannesburg as a major hub with ten services per week and using their B747 to end destinations such as Durban, Cape Town and Gaborone. This poses a big threat to regional services such as Air Botswana which depend to a large extent (60%) on interline connecting traffic from and to intercontinental services. The EC will enforce strict noise regulations and this poses a problem to SADCC carriers most of whom operate second stage aircraft. Hush-kitting is expensive business for these cash-strapped carriers.

The South African threat ?

History and recent developments indicate that the western world and the Pacific Rim countries view South Africa as the future conduit through which investment and tourism should flow to Africa south of the Sahara. An independent South Africa may join SADCC, but the time horizon is not clear. South Africa as it stands poses a potent threat to the viability of SADCC carriers. The potency of this threat is apparent from the following facts (SATCC, 1991).

The largest SADCC economy, Zimbabwe, is less than 7% (in gross national product terms) of the size of that of South Africa. The whole of the SADCC fleet of civil aircraft with a capacity of more than 25 passenger seats totals approximately 50 and comprises 14 types, of which 60% are over 10 years old. Sixteen of these are in Angola alone. On the other hand, South Africa (SA) has 15 B747s, 8 A300s, 17 B737s and 11 new A320s to be delivered in 1992. Under the existing bilateral structure, SA enjoys access to 12 points within the SADCC region, whilst the 10 nations of SADCC collectively have only 3 points in SA, and 8 out of 10 only have one. This strengthens Johannesburg as a hub to the detriment of traditional SADCC hubs such as Harare. Jan Smuts airport (Johannesburg) is currently being upgraded to international airport status. The strategies of how to deal with SAA might are explored in later sections.

Characteristics of the southern African market

As far as through-plane services between southern Africa and other parts of the world, the most developed routes are between the region and Europe. Demand for air travel, particularly personal travel, has been largely influenced by migrant patterns, religious orientation and tourism.

The development of markets by most airlines in the region has been limited to providing domestic services and competitive service to foreign capitals, usually those associated with a previous colonial presence. Of the total international passengers travelling between Africa and other regions of the world, about 75% are travelling to and from Europe, about 20% to and from the Middle East, and only about 5% to and from all other areas. Figures for southern Africa alone are not available, but further disaggregation on the intra-regional traffic flows shows that the northern subregion accounts for more than five times the traffic to and from the western subregion and substantially more than the traffic to and from the remaining regions (SATCC, 1991).

A clear characteristic of the southern African market is that the intercontinental and even intra-continental routes are very thin. An examination of the economics of thin air service markets compared to higher density markets will assist in the formulation of strategic options open to SADCC carriers.

The economics of thin air service markets

Forsyth (1991) posits that thin air service markets face a number of cost disadvantages not faced by higher density markets, the major reasons being:

- * economies of aircraft size - larger aircraft tend to have lower per seat direct operating costs
- * frequencies are lower
- * there are economies of density in indirect operating costs
- * thin routes tend not to be competitive and are operated by monopolies or duopolists, which gives scope to raise prices above marginal costs. This results in X-inefficiency costs being passed on to the consumer.

The thin intercontinental routes between southern Africa and the favoured destination, Europe, tend to be long and have low densities. They are non-stop flights with no possibilities of improving load factors en route. At the core of the problem, though, lies the relationship between aircraft size and operating cost. Larger aircraft are cheaper to operate than smaller aircraft per unit capacity. This in turn leads to the trade-off between cost and frequency. Large aircraft can be used on thin intercontinental routes but at the cost of very low frequency. Problems of route structure and pricing are more acute for thin routes than they are for denser ones (Forsyth, 1991). Passenger convenience is a function of frequency and load factors (and thus the chance of getting a seat on a preferred flight schedule). As frequency increases, the choice range available to passengers increases. There will always be some combination of fare and frequency (and other variables) which will be in a set of passengers' preference map; they can be frequent, but expensive flights or infrequent but cheap flights. Airlines should strive to offer the optimal frequency/fare combination. When market density increases frequency,

aircraft size or both can be increased. Typically, some of the gain will be taken as an increase in frequency, and some as a reduction in fares. In a 1981 study Forsyth (1991) found that the elasticity of cost with respect to size was 0.74. This implies that the doubling of aircraft size would reduce direct operating costs by 16.5%. This would be a measure of lower bounds of the gains from increased density in as much as direct operating costs are concerned. The problem is that direct operations account for only 50% of total costs. Caves et al. (1984) estimated the economies of density at 1.24. These are simply measures of the sensitivity of costs to density and they make no allowance for the benefits of increased frequency that density brings. Forsyth (1991) cautions that these must be taken as lower bounds to the economies of density.

Caves et al. (1984) also found that sizeable economies of traffic density seem to exist up to fairly large volumes of traffic, that is, adding more flights or more seats per flight on a given route will result in lower per seat costs. However, once the minimum efficient traffic density is reached, the curve is flat over a wide range indicating that there are no more gains associated with greater traffic density. Intuitively this makes sense; once a set of destinations is being served, additional traffic does not require any increases in the fixed operation costs; advertising need not be spread out over more traffic allowing unit costs to fall. Figure 1 below illustrates this relationship.

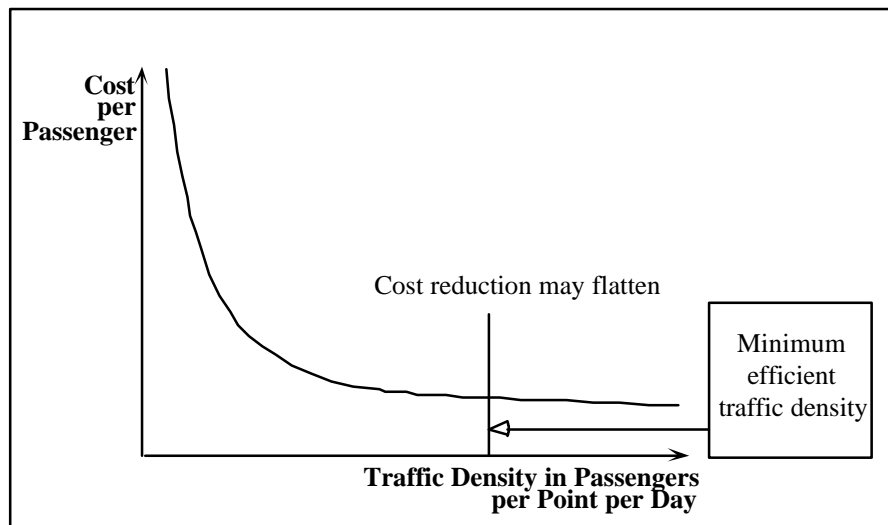


Figure 1 Economies of traffic density

When there are substantial economies of density, there is a gap between the marginal and average costs of passengers on a route and marginal cost pricing would fail to cover costs. With thin routes (especially long haul ones) the relative importance of frequency increases; the marginal cost per person travelling, of additions to frequency is greater than for dense routes. Indivisibilities then become more critical (a route may have one or two flights per day a week) than with dense routes (a sixth or seventh flight per day does not change convenience, in proportional terms, that much).

For thin intercontinental routes, network and pricing issues are particularly important since the frequency/size trade-off is critical and the costs per traveller of mistakes are larger. Typically the problems are the direct/indirect routing and the

stopping/non-stopping ones. With limited fifth freedoms in the African continent, this dilemma is obviated though. Gains from efficient route structures are large when markets are thin, and it is thus important to allow airlines the ability to operate the most efficient route structures feasible. Although gains would be had from longer stage length, these are offset for SADCC carriers because of the leanness of traffic, lack of resources, low load factors, and a declining tourism industry.

Strategic options for SADCC carriers

With many thin routes and regional traffic in Africa declining, and over-capacity on short-to-medium range aircraft, there is a need for African carriers to cooperate in fashioning out a common competitive strategy. Regional blocs in Europe, North America and the Australasian continents are developing and transcontinental strategic alliances are in vogue.

There are some signs that SADCC is on the path towards a common strategy. This would be a positive step in trying to overcome under-utilisation and high capital investments, which are necessary to obtain modern equipment and challenge the domination of European carriers. The success of SADCC airlines is very much dependent on the development of tourism, yet Africa's share of receipts from international tourism is only 2%. The main beneficiaries have been the European carriers who have freely been granted fifth freedom rights in Africa, which have until now been denied to African countries in Europe (Pilling, 1992).

The onus must be on SADCC airlines to reverse the north-south traffic patterns and to establish an east-west market for inbound tourism. But there must be a viable aviation industry. There are basically two markets that have to be considered in determining strategic options for SADCC carriers: the intercontinental market, and the regional and domestic markets.

The intercontinental market

The lack of coordination of strategy by SADCC carriers is graphically illustrated by their re-equipment program. Gross investments since 1989/90 and those planned for the next five years after 1990 amount to US\$400 million (SATCC, 1991). The re-equipment program will add to overcapacity which already hounds the region's carriers collectively.

Excess capacity means that the short term cost elasticities are smaller than long term cost elasticities, that is, costs can be reduced by decreasing the capital stock. If the SADCC carriers could collectively determine how much their output would increase if existing capacity was better utilised, they would be able to go around this problem. But which airline is willing to shed off capacity first? These are the direct and specific costs of regulation and policy rigidity.

The options open to SADCC as relates to the intercontinental market would be:

- * continue to "go it alone" as planned by flag carriers of individual countries
- * engage in extensive joint use of assets and cooperation in route planning and servicing
- * merge into one SADCC airline along the lines of SAS or Air Afrique.

The go it alone strategy (do nothing)

The "do nothing" strategy is not really open to SADCC. Going ahead with the projected investment in fleet and equipment will hardly give the independent airlines the desired levels of fleet utilisation and the requisite load factors to make an adequate return on investment.

To breakeven, SATCC (1991) projected that the airlines collectively need to produce 3800 million RPK by 1992/93, an increase of 20% per annum on 1989 levels. This must be at a load factor of 60% and 4000 block hours. This is a tall order given the bearish demand. Figure 2 below shows the growth requirements in the intercontinental market.

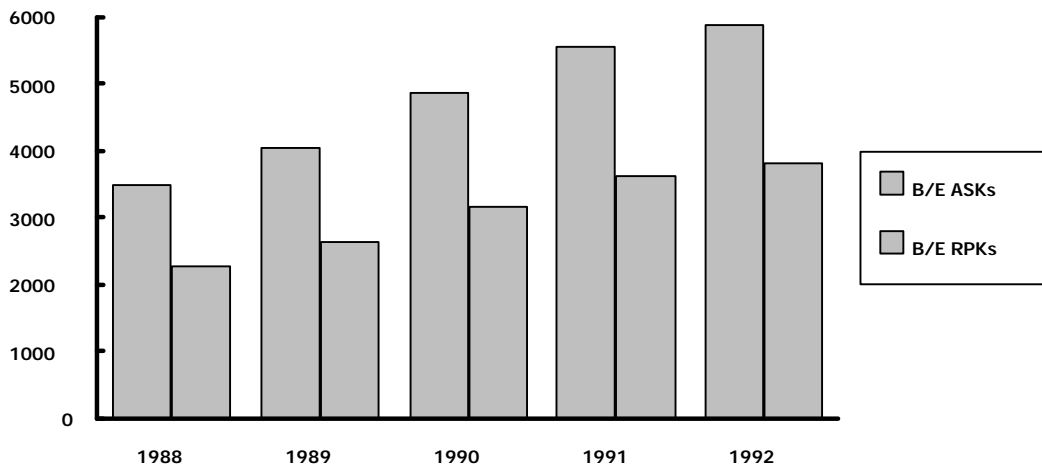


Figure 2 Breakeven points in the intercontinental market for SADCC airlines

Note: Breakeven covers full costs and requires 3600 hours per annum at 65% load factors.

The stark reality is that the SADCC airlines market currently grows at 4.5% per annum, way below the required breakeven levels. The planned independent investments will lead to excess capacity and SADCC carriers will have sufficient capacity to serve the natural growth of the market to the year 2000. This excess capacity will affect all carriers. The penalties for the excess capacity will be high. SATCC (1991) estimates that losses for the major carriers could amount to as much as US\$45 million in years 1992/93. These are shown in Table 1 below.

Table 1 Estimated Financial Statements -1993 (Base Case)

(\$US millions)	MOZAMBIQUE	ZIMBABWE		TOTAL	
	NAMIBIA	ZAMBIA			
REVENUE	39.7	24.9	48.6	106.5	219.8
OPERATING COSTS					
Fuel	6.4	6.6	11.1	33.7	57.7
Route Expenses	5.1	2.8	8.9	14.4	31.4
Passengers	5.4	3.8	7.6	23.6	40.5
Maintenance	4.9	3.1	7.6	16.0	31.5
Plane and Crew	21.9	7.9	23.1	23.4	76.3
DIRECT COSTS	3.9	24.2	58.	111.0	237.6
CONTRIBUTION	4.1	0.7	9.8	4.5	7.9
OVERHEAD	-4.0	-0.5	-5.3	-16.6	-26.5
PROFIT	-8.1	0.2	-15.1	-21.1	-44.4
Assumptions:					
Fuel Price	\$ 0.90	\$0.95	\$1.00	\$1.30	\$1.17
Yield (C/RPK)	9.5	8.0	7.5	9.5	8.4
Pax Commission	10%	10%	10%	10%	10%
Capital Cost	9%	9%	9%	9%	9%

Source: SADCC (1992)

Traffic from Windhoek (Namibia) will probably generate 40% load factors. The rest must come from sixth freedom traffic. Fifty percent load factors will result in additional losses of US\$2 million per annum.

SADCC carriers all carry sixth freedom traffic. It is possible that one carrier might be able to draw traffic away from the others, hence improving its profitability and perhaps making an adequate return on investment (ROI). It is important to note that this is a "zero sum game". The risk of airlines going ahead with their uncoordinated investments in an attempt to capture sixth freedom traffic from other SADCC carriers lies in the fact that all carriers face significant excess capacity and a price war would easily ensue. Given the already low yields, this could spell disaster for the industry. Sixth freedom passengers are generally price sensitive and the "aggressor" has probably more to lose.

If the SADCC carriers pursue the "do nothing" path, at best they could just reduce their losses rather than turn around to profitability even with attempts at opening up new routes, building up market share and taking up traffic from other SADCC countries. The latter seems to be the option that most of the protagonists are vying for.

Countries such as Tanzania, Malawi and Botswana have intercontinental traffic that is predominantly carried by non-SADCC carriers. SADCC carriers thus have an opportunity of capturing this traffic and thus easing overcapacity. But even under this scenario, the SADCC carrier would still be unable to get breakeven load factors. Tables

2 and 3 show that even if the SADCC carriers were able at most to capture a third of the traffic, they would still fall short of breakeven load factors.

Table 2 SADCC intercontinental traffic - potential market

	1989	1990	1991	1992
Shortfall (million RPK)	507	778	1108	1200
Other SADCC countries				
Botswana	136	141	147	153
Malawi	218	229	240	252
Tanzania	586	641	643	674
Total	940	984	1031	1079

Source: SADCC (1992)

Table 3 Intercontinental traffic taken up by foreign carriers from Botswana, Malawi and Tanzania

CARRIERS	MOVEMENTS	PAX	PAX/FLT	LOAD - B767
KLM	394	17800	90	48%
Swiss Air	196	13735	70	37%
British Airways	204	13938	68	37%
Gulf Air	195	12259	63	34%
Lufthansa	211	9249	44	23%
Air France	204	8537	42	22%
Tanzania	1404	75578	54	29%
Malawi	502	29000	56	30%
Botswana	312	16000	51	27%

Source: SATCC (1991)

Notes:

1. The figures exclude transit passengers.
2. Tanzania has recently (1992) acquired through wet-leasing two B767s which it intends to use on intercontinental routes thus further reducing the available potential traffic to SADCC carriers.

Most foreign carriers operating from these three SADCC countries compensate the respective airlines for their unreciprocated intercontinental services through pools, royalty payments or commissions on tickets sold. In the case of Air Malawi, such

payments contribute a significant proportion of their total revenues. Each airline would therefore have to decide whether it is commercially worthwhile to enter into joint venture route operations with SADCC carriers, and to sacrifice the alternative commercial income from extra-SADCC carriers.

Another option would be for the independent SADCC carriers to reduce capacity committed to the market. But the question is, who will start the ball rolling. Given the thinness of the markets, this would mean restructuring operations to a single aircraft. This would imply higher average operating costs and capital costs would increase by 15% per aircraft. Schedule reliability and frequency will be adversely affected. What would happen to the carrier fleets - most of which boast first and second stage aircraft? There appears to be no market for this type of aircraft. Even under this scenario, it would take 15 years of natural market growth (4.5% p.a.) to generate sufficient traffic to allow each airline to acquire an additional aircraft on a breakeven basis. The do nothing option is a non-starter. It is sure to see SADCC carriers fail.

The single carrier option

Under this option, SADCC carriers would merge their intercontinental operations. A single airline would be able to enjoy better flexibility, coordination and lower costs. Demand side forces tend to favour large carriers. Market equilibrium and therefore market structure is determined by the interaction of both supply and demand. For airline markets there are demand forces such that consumers prefer large airlines to smaller ones, all other factors such as price being the same. Large airlines are able to serve a number of points. There is also agreement that they have low information costs (search costs), higher quality of service and passengers are able to use one airline throughout their journey. Experts have estimated that the value of an on-line connection to be about US\$31 (Tretheway, 1991). There is also a lower probability of baggage losses and frequent flyer points are easier to accumulate with an airline that has a large network and higher schedule frequency.

A single airline would also benefit from feeder traffic that would go to it from the regional airlines. In the US trunk carriers have developed "families" of feeder airlines. A leaf could be taken out of the trunk airlines' operations. They have deliberately avoided operating feeder operations themselves for a number of economic reasons. Feeder traffic represents incremental traffic and any revenues from connecting feeder passengers is almost pure profit. Feeder passengers also tend to be full fare payers - hence there is a double leveraging of their impact on the profitability of air carriers. Tretheway (1991) asserts that one US airline president stated that the traffic from its feeder traffic accounted for 5% of total traffic, but this traffic accounted for all its profits. A single carrier would also have the clout to enter into international carrier alliances, which would probably bring another form of feed traffic. Flow traffic (international feed traffic) revenue has a positive leverage on the bottom line although not as much as domestic traffic in a hub-and-spoke network.

The operating unit costs would be lower under a single carrier. There would be rationalisation of marketing, administration and other costs. More focussed and expert management would give the airline a strategic edge. A larger airline would also be able to acquire a sophisticated computer reservation system. The single carrier option is the

most economically plausible option. The problem with this option lies in the fact that political involvement is necessary. Entrenched airline management and political opposition from governments are the most potent threats. However, joint use of assets and other forms of cooperation among the airlines would confer significant quick benefits to the flag carriers without the implementation problems of the single carrier option. Shared marketing, shared staff in foreign locations, common training and maintenance, while retaining the independent nature and identity of each carrier would bring about some of the benefits of a single carrier with few of the difficulties of merging (in the short term). Mergers could also begin with fewer airlines, with others joining later.

The joint use option (the intermediate option)

Under the joint use option, strategic alliances would have to be formed. The following principles could apply:

- * consolidate routes and traffic by means of joint ventures to ensure that adequate load factors can be attained, in part through route structures with two African stops, including SADCC countries currently without intercontinental services
- * airlines to discontinue unprofitable routes
- * sharing aircraft to be instituted.

The benefits from joint use would be higher utilisation of existing aircraft, standardisation of aircraft types in all new purchases, a regional network of SADCC carriers jointly reshaped to improve connecting services (hub and spoke system) and to direct traffic to/from the SADCC intercontinental carriers. Detailed route plans, schedules and exact sharing details will have to be worked out by airline managements. The capacity requirements of the joint use option will be a function of the future SADCC route network, forecasts for total passenger and cargo to/from the region, the potential changes in the SADCC airlines market share and the effects of competition at neighbouring traffic hubs (especially Nairobi and Johannesburg) in a changing political environment.

Through joint use, smaller aircraft, better coordination and the scrapping of the New York route, the joint use option will provide substantially better results. On the other hand the independent operations option will result in over-capacity and excess investment of US\$150 million in 1991 dollars (SATCC, 1991).

The intercontinental market and sixth freedom traffic

A large proportion of SADCC intercontinental traffic is sixth freedom traffic. For example, Zambia Airways' traffic, Namib Air's traffic and Air Zimbabwe's traffic to Australia. Sixth freedom traffic involves an airline from country A to country B via its home country C. An important consideration for success in a sixth freedom strategy is that the national fleet from country A to B must be fairly limited, but traffic from A to C and from C to B must be stronger. This has a number of implications for southern

Africa. Any strategy based solely on sixth freedom traffic to and from southern Africa is unlikely to be very profitable in the long run. Sixth freedom traffic to Europe must compete with more frequent direct flights from South Africa. Traffic to the US must compete with European hubs and Indo-Asian traffic must compete with Nairobi as a hub. The Qantas/Air Zimbabwe flights to Perth and Sydney have been profitable, but the attractiveness of this route has decreased with the resumption of the Qantas/South African Airways reciprocal flights.

Given the price sensitivity of sixth freedom traffic and the importance of increasing yields before any operations can be profitable, the SADCC carriers should be investing in capacity to compete for sixth freedom traffic with extreme caution.

The regional markets

The regional market has been regulated on the basis of bilaterals, with limited competition between airlines, few jointly operated routes and virtually no fifth freedom traffic. The regional markets can be generally characterised as:

- * a few core high density routes (such as the Bulawayo/Johannesburg one) with moderate frequencies and a number of secondary low density routes with low frequencies
- * poor aircraft utilisation due to poor scheduling, excess capacity, poor domestic infrastructure and poor operational characteristics of older aircraft.

Cooperation as outlined with respect to intercontinental routes would be the best option.

Choosing route structures

One of the strategic decisions of any business is defining the product it will produce and market. In the case of air transport, perhaps the key decision a carrier makes in this regard is its route structure (Trethewey, 1991). Air transport can be viewed as a logistical system. The hub-and-spoke systems add a node in the passenger journey, but their traffic pooling ability may allow increased service frequency (reducing the temporal dimension of the passenger's journey). The point is that air transport routing should now be thought of in terms of networks.

In the SADCC case, the governments would want to consider nominating a hub. A prima facie case could be made for Harare (Zimbabwe), which is presently a de facto one. Regional feed could then be flown to various global destinations by a single carrier.

Dealing with South Africa

The African National Congress (ANC) has indicated that a democratic South Africa will join SADCC. Besides their individual problems, many airlines feel threatened by the new strength of South African Airways (SAA). Even those airlines which already have a working relationship with SAA, like Air Madagascar, express some apprehension. Air Madagascar is worried that Antananarivo, the island's capital, may be left out of SAA's Far East schedule after it adds Tokyo rights to Taipei (Pilling, 1992).

SAA's flights to Australia, the US and the Indian sub-continent have been resumed. This has reduced the total market size of the Zimbabwe-Australia traffic and undermined Air Namib's flights to Canada. Plans for SADCC carriers for flights to Bombay and onto the Far East may not be able to count on any South African sixth freedom traffic.

SAA now flies to Europe directly over Africa. This reduces its flight time and lowers costs (shorter stage length). This has had an impact on the London and Frankfurt routes for Air Zimbabwe. Inter-continental traffic to South Africa is on the increase and this is enhancing the dominance of Johannesburg as hub. It might be five years hence before South Africa becomes a democratic country and all restrictions placed on it are lifted. In the meantime, the SADCC countries would want to consider strategies of dealing with SAA.

Perhaps the most plausible strategy would be to go for cooperation with SAA. This could be in the form of code sharing, interline agreements or even equity swaps, with a soon to be privatised SAA. The sheer population and commercial pull of Johannesburg and South Africa is too great for the SADCC countries to treat lightly.

A single airline including SAA would be an attractive option, but a difficult one to manage. But opportunities for sharing aircraft and joint operations exist. At present, Air Namib's aircraft sharing arrangement on the Windhoek to Johannesburg flight using a B747-SF is one such possibility. Joint use schemes could provide strong traffic from one SADCC capital to another via Johannesburg, hence exploiting the natural traffic patterns in the region to the advantage of SADCC carriers. Other areas of cooperation should be in maintenance and training. Given the differences in inter-continental fleet types it is unlikely that opportunities for maintenance sharing will be great. SADCC carriers will have to do their own servicing or do "end over end" servicing in Europe.

On the larger regional jets (B737), cooperative maintenance agreements become a distinctly attractive proposition since South Africa could offer scale advantages. South Africa also has well developed (and under-utilised) training schools in a number of technical areas.

The general issues of privatisation and deregulation

Privatisation and increased efficiency flowing therefrom is proving to be an attractive option for a number of efficiency seeking governments (Hensher and Beesley, 1992). It is easier for governments to be an effective umpire where there is no unambiguous separation between ownership, operation and regulation. Hensher and Beesley (1992) assert that the experiences of the past ten years provide a rich base of evidence to draw

on as a spring board for the on-going debate. Indeed the debate is raging in southern Africa as to the universal applicability of privatisation - is it only suited to the developed economies of the Western world and should not be willy nilly extended to the fragile economies of developing countries or otherwise?

In southern Africa, virtually all flag carriers are government owned and their privatisation will require political decisions. A notable feature of the countries involved is the entrenchment of the bureaucracy. The bureaucrats wield a lot of clout and it is generally not in their interests to relinquish control. Any wonder that the debate on privatisation tends to assume political dimensions as opposed to economic efficiency dimensions.

We would want to posit that SADCC carriers would be better off if they went for privatisation. This could bring in much needed foreign capital and management expertise to the privatised airlines. There would be need to make the offers more attractive to investors by removing foreign ownership restrictions on related industries such as the hotel and tourist resort industries. The governments could also make guarantees that profits could be repatriated.

Privatisation exposes the airlines to both capital markets and product markets. Note must be made of the fact that only Zimbabwe and South Africa have stock exchange markets. This should not, however, deter any government that is set on a path to privatisation. Putting the airlines to tender in small parcels could work as well as floating them. Hensher and Beesley (1992) assert that exposing a business to capital markets, and hence the possibility of a takeover is closely allied to exposing one set of managers to another. In this case, it will be the bureaucrats who would be the subject of a presumably more efficient management takeover. When the firm is exposed to the capital markets its cost of capital is a function of its perceived risk profile by the market.

"This strategically places a business in its correct risk spectrum, having an effect on the direct cost of raising capital at the margin" (Hensher and Beesley, 1992:5).

The same cannot be said of government owned enterprises. An argument can be advanced for SADCC governments to go for corporatisation before embarking on full throttle privatisation. Corporatisation can be an intermediate step used to prepare for full privatisation. Privatisation will also expose enterprises to the competition in the product markets. Lowering the barriers which inhibit open competition will force the privatised firm to be more competitive and to respond to the exigencies of the market. A firm seeking maximum profit will have an incentive to achieve productive efficiency. The private firm of traditional economics, which maximises profit, has a clear incentive to be productively efficient - profits can only be maximised if costs are at their minimum possible level. By transferring an enterprise to private operation, there may be a much greater incentive for productive efficiency, and this will probably result in greater efficiency being achieved.

There is an argument that corporatisation may still overly protect inefficient airlines. International airlines that have gone for corporatisation, such as Air Zimbabwe, are known to have been the recipients of successive "never to be repeated" subsidies.

British Airways and Singapore Airlines provide shining examples of what privatisation can do to airlines. Southern African airlines would be doing themselves some great deal of good if they seriously studied the option.

It has to be appreciated that privatisation does not necessarily mean more or less competition, or more or less regulation. The regulatory and competitive environments are quite a distinct question from that of the ownership of the enterprise. Regulation can change in a variety of ways, or not at all, at the time of privatisation (Ashworth and Forsyth, 1985). The generally accepted axiom is that economic deregulation does lower the barriers to entry in the aviation industry and by so doing make the industry more amenable to keener competition.

Windle (1991) in a study of world airline costs and productivity, found that the second largest factor in the unit cost differential between US and Europe was that of government ownership. He found that the European firm had 10.5% higher unit costs as a result of government ownership. He asserts that privatisation of the government owned European airlines would eliminate this difference. He goes further to say that any deregulation that allows pricing and route freedom will be likely to increase traffic density and productivity.

The twin issues of privatisation of the SADCC flag carriers and deregulation of the industry are political decisions that have to be made by individual governments. The regulators are keen to refer to the existence of economies of scale. This argument immediately points to some justification of monolithic government enterprises. The bureaucrats point out that average total costs (ATC) not only decline with the size of an organisation, but also with the traffic volume on the network. Empirical evidence though has proved that where there is government regulation of the industry, X-inefficiencies abound and fares are normally much higher than marginal costs.

Under a deregulated regime airlines are able to start operations with relatively low seed capital. This point is particularly pertinent for SADCC carriers as the pro-regulation lobby has persistently argued that only the governments of the region are able to garner the necessary seed capital. There is also the leasing source market for equipment which new entrepreneurs could tap. SADCC governments must be cognisant of the fact that the economic cost of regulation corresponds to the benefits of deregulation (Blauwems and van de Voorde, 1992).

So often, the argument advanced by pro-regulation bureaucrats is that high fixed costs are not immediately assignable to separate performances. Marginal cost pricing under this scenario would leave a deficit. The merits of this argument are questionable. Marginal cost pricing does lead to deficits only in the presence of scale economies, but do government owned monopolies necessarily enjoy these? Besides, it is quite possible for high fixed costs to occur in industries with diseconomies of scale. There is also some empirical evidence that economies of scale in the airline (Tretheway, 1991) industry are negligible. The argument should therefore not revolve around the share of fixed costs but the effect of output on average cost.

SADCC governments should at least investigate the pros and cons of both privatisation and deregulation. The ambivalence that currently characterises policy formulation as regards the role of market forces had better be rid of.

Conclusion

Although the airline industry in southern Africa will still be influenced by many external factors - such as the growth of the regional economy, international trade, tourism, and balance of payments, changes can be brought about through the development of multinational, or at least transnational, airlines with strong hubs at strategic locations in the subregion. Such a solution cannot be implemented, however, without the will and actions of governments. In SADCC, the political will already exists. The SADCC governments have realised that the continuation of parochial attitudes will only confine cooperation to such peripheral issues as group insurance, economic research, training, computer facilities, equipment inventory, and maintenance. Cooperation in such areas is useful, and already exists, but will not solve the airlines' structural problems, such as insufficient resources and low traffic densities.

SADCC governments have to realise 1) that worldwide regulatory constraints are being relaxed to varying degrees and at varying paces; 2) that they must harmonise their policies with other parts of the world to continue to be part of a total system; 3) that government owned flag carriers are expensive and; 4) that the multilateral regulatory system has weakened, and regionalism could be the way to protect the interests of the region and at the same time provide an antidote to strong competition from the outside.

If, as is claimed, SADCC is set on a course to become self-sufficient with respect to transportation and communication, then it is not unreasonable to assume that the next logical step would be the development of a strong multinational carrier, with strategically located hub-and-spoke systems. Such a system would circumvent the small traffic base dilemma of the individual partners by pooling their national markets into a subregional common market.

Cost improvements are most likely to be achieved through improved productivity, pooled resources, restructured fleets, and joint purchases (fuel, aircraft insurance etc). At the operational level, considerable advantages can be derived by sharing aircraft for thin routes or highly seasonal routes. Such decisions, however, call for standard aircraft, standard crew training, and to some extent loss of identity. Leasing may also help overcome some these obstacles, besides providing other benefits such as lessening the need for large capital requirements, and in the case of wet leases, avoiding the need for trained staff.

Taneja (1989) cautions that automation in the African airline industry must be examined very carefully. Cost effectiveness is the key consideration, and inasmuch as labour is relatively cheap and abundant, an optimal balance in Africa may be relatively labour-intensive. Improvements in revenue are most likely to come from increased aircraft utilisation, improved load factors and the development of feeder services and ancillary services. Utilisation can also be improved by the development of a hub-and-spoke feeder system. The effectiveness of these hubs will depend on the regulatory constraints on developing ideal route structures. All in all, cooperation is the way to go for southern African carriers.

References

Ashworth, M and Forsyth P J (1985) *Civil Aviation Policy and the Privatisation of British Airways* London: Institute of Fiscal Studies

Barret, S D (1992) Barriers to contestability in the deregulated European aviation market *Transportation Research A* 26(2), 159-165

Blauwems, G and van de Voorde, E (1992) *Incentives for Deregulation: An Economic Calculus* Mimeo, Antwerp: University of Antwerp

Caves, D W, Christensen, L R and Tretheway, M W (1984) Economies of density versus economies scale: Why trunk and local service airline costs differ *Rand Journal Economics* 15(4), 471-489

Forsyth, P J (1991) The economics of thin air service markets, strategic options for transport development in Papua New Guinea, pp 194-200 of *Proceedings of the Transport Sector Seminar held in Port Moresby in September 1991* Port Moresby: Department of Transport

Gialloretto, L (1989) *Strategic Airline Management: The Global War Begins* London: Pitman Publishing

Hensher, D A and Beesley, M E (1992) *Privatisation of public transit: Lessons from the wider experience*(Working Paper ITS-WP-92-1) Sydney: Institute of Transport Studies, The University of Sydney

Kahn, A (1990) Deregulation: Looking backward and looking forward *Yale Journal on Regulation* 7(2), 325-354

Morrison, S and Winston, C (1989) *The Economic Effects of Airline Deregulation* Washington DC: Brookings Institute

Oum, T H, Stanbury, W T and Tretheway, M W (1991) Airline Deregulation in Canada and its economic effects *Transportation Journal*, Summer, 4-22

Pilling, M (1992) Compromising the European dream *Interavia* 47, 18-21

SATCC (1991) *A Scenario Model for Transport Demand in the SADCC Region: The main results* (SATCC Briefing Paper) Garborone: SATCC

SADCC (1992) *Overcapacity in the SADCC Airline Industry* (SADCC Briefing Paper) Garborone: Southern African Development Coordination Conference (SADCC)

Taneja, N K (1989) *The International Airline Industry, Trends, Issues and Challenges* Ohio State University: DC Heath and Co, Lexington Books

Tretheway, M W (1991) *Characteristics of modern post-deregulation air transport*, Paper prepared for a Canadian Task force reviewing Canada's international aviation policy

Ward, J (1991) Globalisation, concentration and ownership - aviation issues and Australia's national interest in the 1990's Paper presented to the Transport Policy Workshop (27 August), Institute of Transport Studies, University of Sydney

Windle, R J (1991) The world's airlines: a cost and productivity study *Journal of Transport Economics and Policy* XXV, 31-49