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ECONOMIC DEREGULATION AND AIRLINE SAFETY

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1.0 Introduction

Both the Minister of Transport and the House of Commons Standing Committee on Transport have made it clear that reforming economic regulation of Canadian airlines should not have an adverse effect on safety.

> "I would like to indicate unequivocably that the Government will neither propose nor permit any economic regulatory reform that might be detrimental to safety standards." (Minister of Transport, 1985, preface p. 2.).

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> "So, even though safety is outside the Committee's Order of Reference, we feel compelled to state that whatever form the new national transportation policy finally takes, it must not in any way compromise safety." (House of Commons Standing Committee on Transport, 1985, p. 41.).

Given this common policy objective, it is desirable to investigate whether or not airline safety may be adversely affected by deregulation. The purpose of this paper is to provide evidence on this matter using passenger fatality data for both Canada and the United States.

2.0 Concerns About Safety

The Standing Committee noted on p. 41 of its report that some witnesses "were convinced that safety would be sacrificed to competition and profits" if deregulation were adopted in Canada. The reasoning appears to be that the removal of economic regulation would result in lower safety because increased competition would either result in losses or would motivate individuals to place greater emphasis on profits which, in turn, would cause airlines to cut corners on maintenance and operating practices.

The above reasoning overlooks several factors. First, it ignores the fact that one way to compete is on the basis of relative safety. Second, it takes no notice of the fact that changes in economic regulation will not change the operating/safety regulation performed by Transport Canada, or else it assumes that direct safety regulation is less effective without support from economic regulation. Third, it assumes the profit motive is reduced under regulation. Fourth, it ignores the fact that economic regulation has not guaranteed profits for all airlines, nor has deregulation in the United States resulted in losses among all U.S. airlines (Jordan, 1982, pp. 21-24, and 1985, pp. 13-16). Finally, even though Air Canada, CP Air, Eastern Provincial, Nordair and Quebecair all experienced losses before taxes in various years between 1979 and 1984, no concern has been expressed about the safety of these airlines.[1] This is surprising if, indeed, people believe that losses result in decreased safety. In the same vein, Pacific Western should be promoted as the safest airline in Canada since it is the only Level I carrier that has been profitable in each year since 1978 (or does this successful search for profits indicate that Pacific Western has cut corners and is the least safe of the Level I carriers?).

3.0 Methodology

Since the transition to deregulation in the United States began in late 1978 and early 1979,[2] and since the economic regulation of Canadian airlines continues (albeit with some liberalization since May 10, 1984),[3] it is possible to obtain some evidence on the effects of economic deregulation on airline safety by investigating the relative safety performances of scheduled Canadian and U.S. airlines. Comparing the records of scheduled passenger carriers in these two countries prior to 1979 will indicate their relative safety under both economic and direct safety regulation. Then, comparing their records after 1979, during which time the U.S. airlines were transitioning to economic deregulation, will indicate whether or not reducing economic regulation has had an adverse effect on safety (given the continuation of direct safety regulation in U.S.).

Safety can be measured in many different ways. For example, the U.S. National Transportation Safety Board regularly calculates and reports accident rates per million aircraft miles, per 100,000 aircraft hours flown, and per 100,000 departures. These measures are particularly useful when comparing diverse operations, such as commercial service with large transport aircraft relative to such service with small commuter aircraft, or relative to general aviation operations with very small aircraft. Other measures will be used in this paper -- specifically,

passenger fatalities per billion revenue passenger-miles (RPM) and passenger fatalities per million enplaned passengers, in both cases for scheduled operations by airlines operating jet aircraft. There are three reasons for adopting these measures. First, they are of prime concern to consumers. Second, since passenger fatalities are verifiable events that are always recorded, these measures are unambiguous and are little affected by differences in reporting policies and procedures. Finally, airlines operating jet aircraft are a fairly homogeneous group so that aircraft-based rates need not be used to provide commonality.

Scheduled passenger operations by carriers operating only propeller aircraft are excluded from this analysis. This is done both because of the differences in operations between jet airlines and commuter carriers and because U.S. commuter carriers were exempted from economic regulation back in 1952.[4] Thus, the major focus of economic regulation in the U.S. was on scheduled passenger service which, since the late 1960s, was largely conducted with jet aircraft.

4.0 Evidence

Table 1 presents the annual passenger fatalities and fatality rates in Canada and the U.S. for the two relevant periods. The first period covers 1969-78, the last ten years of economic regulation in the U.S., while the second period covers 1979-84, the first seven years of the transition to economic deregulation.

If the introduction of deregulation serves to decrease safety, one would expect the U.S. fatality rates to be higher in the 1979-84 period than in the 1969-78 period when economic regulation was in effect. However, Table 1 shows this was not the case. To the contrary, passenger fatality rates for the U.S. airlines decreased from an average of 0.86 fatalities per billion RPM in 1969-78 to 0.37 per billion RPM in 1979-85, and from 0.67 to 0.32 fatalities per million passengers. Thus, U.S. fatality rates during the recent period of transition to economic deregulation were less than half of what they were in the ten-years prior to the implementation of deregulation.

Comparisons between Canada and the U.S. provide added perspective to the subject. The Canadian carriers' average fatality rates were somewhat higher than those of the U.S. during the 1969-78 period, but they decreased more in the second period so that they were somewhat lower than the U.S. rates. In terms of RPM, the Canadian carriers' safety improved under continued economic regulation from 1.07 fatalities per billion RPM in 1969-78

Table 1

Passenger Fatality Rates in Scheduled Operations
Canadian and U.S. Airlines Operating Jet Aircraft, 1969-85

Year	Number of Passenger Fatalities		Fatalities per Billion RPM		Fatalities per Million Passengers	
	Canada	U.S.	Canada	U.S.	Canada	U.S.
A. Prior to the U.S. Airline Deregulation Act						
1969	0	130	0	1.02	0	0.74
1970	100	2	10.45	0.01	9.80	0.01
1971	0	174	0	1.29	0	0.97
1972	0	160	0	1.03	0	0.81
1973	0	197	0	1.20	0	0.94
1974	0	416	0	2.51	0	1.93
1975	0	113	0	0.68	0	0.53
1976	0	36	0	0.20	0	0.15
1977	0	60	0	0.30	0	0.24
1978	41	141	2.25	0.61	2.22	0.49
Sub-Total	141	1,429	1.07	0.86	1.04	0.67
B. Subsequent to the U.S. Airline Deregulation Act						
1979	14	318	0.66	1.21	0.65	1.01
1980	0	0	0	0	0	0
1981	0	1	0	.004	0	.004
1982	0	210	0	0.81	0	0.72
1983	23	8	1.18	0.03	1.27	0.03
1984	0	0	0	0	0	0
1985	0	174	0	.52*	0	0.46*
Sub-Total	37	711	0.25	0.37	0.25	0.32
17-year Total	178	2,140	0.63*	0.59*	0.63*	0.49*

*Partially estimated using preliminary traffic data for 1985.

Sources: Calculated using traffic data in Appendix A and fatality data from:
Canadian Aviation Safety Board, "AIDS Complete Record Print Summary," computer printout (March 28, 1985); and letter from Ms. Laura Pitts (March 7, 1986).
U.S. National Transportation Safety Board, Annual Review of Aircraft Accident Data (1975-78)
___, "Safety Information Press Release," (January, 1970-86).

to 0.25 in 1979-85, while the U.S. rate improved from 0.86 to 0.37 fatalities per billion RPM. In terms of passengers, the Canadian fatality rate fell from 1.04 to 0.25 fatalities per million passengers, while the U.S. rate fell from 0.67 to 0.32 fatalities per million passengers. Clearly, safety improved substantially in both countries in the second period regardless of whether economic regulation was present or was being phased out.

Since the decline in passenger fatality rates after 1978 was greater in Canada than in the U.S. it might be argued that safety would have improved even more in the U.S. had full economic regulation been retained. There are two reasons to question this argument. First, it happens that over one-third of the total U.S. passenger fatalities in the 1979-85 period were caused by one accident -- the crash on May 29, 1979, of an American Airlines DC-10 on takeoff from Chicago. This crash killed 258 passengers out of the total 711 fatalities for the entire seven years. Eliminating these fatalities from the 1979-85 data would reduce the U.S. fatality rates to 0.23 per billion RPM and 0.20 per million passengers -- slightly lower than the Canadian experience. The National Transportation Safety Board determined that this accident was caused by an engine separation resulting from "improper maintenance procedures which led to the failure of the pylon structure" (NTSB, 1980, p. 11). These procedures had been adopted prior to 1979 (during the period of economic regulation) and, therefore, it seems inappropriate to say that their adoption could have been influenced by deregulation.

Annual data in Table 1 provide the second reason to question the possibility that U.S. safety performance would have improved even more had economic regulation been retained. It can be seen that there were no passenger fatalities among these U.S. airlines in 1980 and in 1984. It happens that these were the first years in U.S. aviation history in which airlines operating large aircraft in scheduled service did not have a single passenger fatality. It is doubtful that this very desirable performance would have been achieved had the removal of economic regulation actually served to worsen safety performance.

5.0 The 1985 Record

Much has been made in the popular press about the fact that more airline fatalities occurred worldwide in 1985 than in any previous year. About 2,000 people died in airline accidents in 1985, and some individuals have used this fact to argue further that economic deregulation is causing decreased safety.[5]

Again, there are some problems with the argument. First, there has been a failure to recognize that while economic deregulation has been implemented in the U.S., most of the fatalities occurred on airlines that operated under unchanged economic regulation in their respective countries. The February 19 crash of an Iberia B-727 (148 passenger and crew fatalities), the June 23 crash of the Air India B-747 (329 passenger and crew fatalities), the August 12 crash of the Japan Air Lines B-747 (520 passenger and crew fatalities), and the British Airtours B-737 engine fire on August 22 (55 passenger fatalities) together accounted for 1,052 fatalities, but none of these carriers operated under deregulation in their own countries.[6]

Second, it can be seen in Table 1 that the 174 passenger fatalities in U.S. scheduled jet service in 1985 are not an unusually high total. Furthermore, the majority of them (126) were the result of the Delta Airlines crash at Dallas in which wind shear appears to have been the causal factor.[7] Surely this crash cannot be attributed to economic deregulation.

Not included in Table 1 are two crashes of U.S. airlines in charter operations. The crash of a Galaxy Airlines L-188A at Reno killed 64 passengers, and the Arrow Airways DC-8 crash at Gander killed 248 more, making a total of 312 passenger fatalities.[8] The Galaxy crash has been attributed to the pilots' failure to control the aircraft after an unexpected vibration developed because a ground handler failed to properly close an air-start access door.[9] The cause of the Arrow crash has yet to be determined. If people wish to argue that these accidents were influenced by economic deregulation, it seems fair to point out that they were the first passenger fatalities in U.S. charter operations since 1977, when 573 passengers and crew were killed in the Pan American/KLM ground collision at Tenerife in the Canary Islands.[10]

6.0 Conclusion

The above evidence and analyses support the conclusion that the removal of economic regulation in the U.S. has had no adverse effect on safety among scheduled airlines operating jet aircraft. To the contrary, the improved safety performance in both Canada and the U.S. since 1979 indicates that airline safety is the result of many factors other than economic regulation, and implies that high levels of safety will continue under the overall influence and control of direct safety regulation by the Federal Aviation Administration and Transport Canada.

A final point should be noted. One major result of economic deregulation has been appreciably lower fares in the U.S. which has encouraged rapid growth in airline travel (see Appendix A). This has doubtless resulted in more people traveling by plane rather than by automobile. Given the markedly superior safety record of air travel over automobile travel, it seems correct to conclude that a number of lives were saved in the U.S. simply because of the greater use of air travel due to economic deregulation. Indeed, given this transfer of travel from auto to airlines, there would have been fewer fatalities from travel on all modes even if the safety record of the U.S. airlines had deteriorated somewhat due to economic deregulation. Since this appears not to have happened, the overall effect of economic deregulation on total traveler fatalities is likely to have been positive, rather than merely neutral.

Footnotes

[1]Quebecair incurred losses during all six of these years. (Statistics Canada, 1979-84, Tables 3 or 6.)

[2]The Airline Deregulation Act of 1978, Public Law No. 95-504, 92 Stat. 1705, was adopted on October 24, 1978. Its key provisions began to come into force on January 1, 1979.

[3]The liberalization of economic regulation of Canadian airlines followed the publication of the New Canadian Air Policy (Minister of Transport, 1984). The result of this new policy has been to make Canadian regulation similar to that practiced by the U.S. Civil Aeronautics Board (CAB) during 1977-78 while the debate regarding the adoption of deregulation was underway in the U.S.

[4]Effective February 20, 1952, a blanket exemption from the CAB authorized any carrier operating aircraft having a maximum gross take-off weight of 12,500 pounds or less to provide scheduled service between communities not served by certificated carriers and from those communities to points served by certificated carriers. The aircraft size limitation was increased to 30 passengers/7,500 pound payload on July 18, 1972. Civil Aeronautics Board, Handbook of Airline Statistics, 1973 ed. (1974), pp. 515 and 530.

[5]Brampton Times (January 3, 1986), p. 1.

[6]Aviation Week and Space Technology (February 25, 1985), p. 36; (July 1, 1985), p. 32; (August 19, 1985), p. 30; and (August 26, 1985), p. 28.

[7]National Transportation Safety Board, Press Release SB 86-3 (January 13, 1986), Table 7.

[8]Ibid., Table 8.

[9]Aviation Week and Space Technology (February 3, 1986), p. 39.

[10]National Transportation Safety Board, Press Release SB 78-1, Table 1.

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Statistics Canada, 1979-84, Air Carrier Operations in Canada (October-December 1979 through 1984), Catalog 51-002.

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Appendix A

Scheduled Revenue Passenger-Miles and Passengers
Canadian and U.S. Airlines Operating Jet Aircraft, 1969-85

Year	Scheduled Revenue Passenger-Miles (000,000)		Passengers (000)	
	Canada	U.S.	Canada	U.S.
A. Prior to the U.S. Airline Deregulation Act				
1969	8,074	127,045	8,885	176,378
1970	9,568	133,547	10,202	175,212
1971	9,504	135,070	10,750	179,643
1972	11,407	154,656	12,068	198,027
1973	12,492	164,421	11,465	209,576
1974	14,181	165,579	12,796	215,380
1975	15,534	165,591	16,742	213,191
1976	16,128	182,042	16,851	232,344
1977	16,959	196,904	17,539	251,335
1978	18,191	231,121	18,481	287,789
Sub-Total	132,038	1,655,976	135,779	2,138,875
B. Subsequent to the U.S. Airline Deregulation Act				
1979	21,309	261,958	21,377	313,754
1980	22,462	254,551	22,608	292,759
1981	21,966	248,134	22,004	280,994
1982	19,934	258,964	19,625	290,541
1983	19,441	280,995	18,105	317,746
1984	21,195	305,686[b]	21,579	346,577[b]
1985	22,276[a]	335,900[b]	22,680[a]	380,000[b]
Sub-Total	148,583	1,946,188	147,978	2,222,371
17-year Total	280,621	3,602,164	283,757	4,361,246

[a]Estimated by increasing 1984 data by the 5.1 percent increase in unit toll plus charter RPM reported for the first 11 months of 1985.

[b]Preliminary data for Total Form 41 carriers.

Appendix A (continued)

Sources: Air California, Air Florida, PSA and Southwest Airlines, Annual Reports (1969-78), various pages.

I.P. Sharp, computer printouts of Schedules P1 and T1, CAB Form 41, for 1984.

Statistics Canada, Civil Aviation (1969), Cat. 51-202, Table 5.

___, Transcontinental and Regional Air Carrier Operations (December 1970-71), Cat. 51-001, Table 2.

___, Air Carrier Operations in Canada (October-December 1972-84), Cat. 51-002, Table 4.

___, Aviation Statistics Centre, "Service Bulletin" (January 1986), Cat. 51-004, Table 1.

U.S. Civil Aeronautics Board, Air Carrier Traffic Statistics (December 1969-84).

U.S. Department of Transportation, Office of Aviation Information Management, telephone conversation with Mr. Paul Gavel (March 5, 1986).