MAINTAINING AIR SAFETY AT LESS COST: A PLAN FOR REPLACING FAA SAFETY REGULATIONS WITH STRICT LIABILITY

I. INTRODUCTION

Over the past several years, criticism of the Federal Aviation Administration (FAA) has increased from all sides while a series of severe aviation accidents has fueled public concern over the safety of domestic air travel.[1] Much of this criticism, some of it new, some of it not-so-new, has focused on three areas.

First, as noted by both the White House and Republican leaders on Capitol Hill, FAA regulations "impose[ ] a massive cumulative burden on airlines and have a direct and adverse impact on airlines' financial condition and [on] the air transportation system as a whole."[2] Some of this burden is due to the simple fact that new regulations generally do not replace old ones, but instead are simply added on top of the existing

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1 CLINTON V. OSTER, JR. ET AL., WHY AIRPLANES CRASH 3-4 (1992).

2 *Ways to Reduce Unfunded Federal Mandates and Regulatory Burdens on the Aviation Industry Without Affecting the Safety of the Traveling Public: Hearing Before the Subcomm. on Aviation of the House Comm. on Transportation and Infrastructure*, 104th Cong. 1-2 (1995) (statement of John J. Duncan, Comm. Chairman) [hereinafter *Unfunded Federal Mandates*].

regulations.[3] By some estimates, federal mandates cost the airline industry upwards of $500 million annually.[4]

Second, the FAA is slow in keeping pace with technology. Not only do many regulations lag far behind the state-of-the-art and thus fail to mandate the most effective or efficient means of promoting safety,[5] but FAA employees simply lack much of the expertise needed to regulate the airline industry.[6] At a recent hearing on airline safety, Senator Larry Pressler noted the FAA's "tombstone effect," and went on to assert that the FAA's failure to implement safety-enhancing programs in a timely manner resulted in several fatal airplane crashes.[7] Furthermore, the FAA is so understaffed that whatever regulations it does implement are unlikely to be closely monitored by inspectors.[8]

Third, the FAA is not only faced with internal conflicts of interest, but it also creates conflicts of interest in airlines and in aircraft manufacturers. For example, the FAA is charged under the Federal Aviation Act with the often competing goals of promoting air safety and encouraging the development of civil aeronautics and air commerce.[9] Regarding conflicts in the airlines themselves, the FAA does not carry out most detailed inspection work. Instead, the FAA delegates most of it to airplane manufacturers[10] and to commercial carriers.[11]

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3 Robert W. Poole, Jr., *Toward Safer Skies*, *in* INSTEAD OF REGULATION 207, 227 (Robert W. Poole, Jr. ed., 1982). One rule, for example, requires airplanes to carry a paper copy of the latest available weather report available for the destination city, seemingly unaware of the advent of radio communications during flight. 14 C.F.R. § 121.687(b) (1996).

4 *Unfunded Federal Mandates*, *supra* note 2, at 9 (referring to a 1993 report by the National Commission to Ensure a Strong Competitive Airline Industry).

5 Poole, *supra* note 3, at 223.

6 *Unfunded Federal Mandates*, *supra* note 2, at 95 (statement of James E. Landry, President, Air Transport Association of America). In fact, as early as 1980, experts warned that the "FAA's competence was falling far behind that of its industry counterparts to the point that FAA oversight of the new aircraft certification process was becoming superficial." In 1993, the General Accounting Office (GAO) concluded that this situation had not improved. *Oversight Hearing on Aviation Safety: Hearing of the Senate Comm. on Commerce, Science, and Transp.*,104th Cong. 28 (1995) (statement of Kenneth M. Mead, GAO Director, Transportation Issues, Resources, Community, and Economic Development Division) [hereinafter *Oversight Hearing*].

7 *Oversight Hearing*, *supra* note 6, at 3-4 (statement of Sen. Larry Pressler).

8 *Id.* at 30 (statement of Kenneth M. Mead) (In January 1995, the FAA had only "2,300 inspectors to oversee ongoing operations of 18,000 commercial and 184,000 active general aviation aircraft; 4,800 repair stations; 640 pilot training schools; 190 maintenance schools; and 665,000 active pilots.").

9 Poole, *supra* note 3, at 223.

10 *Id.* at 224. Some seventy percent of manufacturer-related inspection work is left to the manufacturers themselves. *Id.*

11 *Id.* at 227-28. In particular, although FAA inspectors spot-check airlines' work on occasion, most maintenance only needs to be supervised by an FAA-licensed mechanic who, as an employee of the airline, is faced with a conflict of interest. *Id.* As a case-in-point of how this system may breakdown, Eastern Airlines agreed in early 1991 to pay a $3.5 million judg-

In Washington, the recent political trend (which shows no signs of abating) advocates federal budget deficit reduction through decreased government expenditure. It is therefore befitting at this time to explore new, less-costly means of achieving the same ends traditionally pursued by government.

This Note proposes, in an effort to reduce both public and private expenditure while maintaining airline safety, to replace some functions of the FAA with a scheme of strict liability in tort.[12] The rest of the Note proceeds as follows. Section II presents an overview of the laws governing air travel, first examining historical treatment of airline liability, followed by discussion of the status quo. Section III presents a similar overview of strict liability and its development from Common Law times through the present. Section IV then introduces the concept of value-of-life and discusses its current use by the courts and government agencies. Next, Section V delineates a scheme for replacing many FAA safety regulations with a scheme of strict liability. In keeping with good scholarship, this section also discusses some potential limitations and shortfalls of the proposed scheme. Finally, Section VI concludes the Note with some discussion on the applicability of the proposed scheme to other industries.

II. AVIATION REGULATION AND LIABILITY

A. HISTORY OF AVIATION LAW AND REGULATION[13]

Federal government regulation of domestic airplanes began with the 1925 Kelly Act granting the U.S. Postal Service the power to enter contracts for mail carriage by air.[14] Shortly thereafter, the Air Commerce Act of 1926 established the Bureau of Air Commerce and charged it with establishing airways between cities, installing landing beacons, publishing maps, and disseminating weather information.[15] In 1938, Congress

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ment for falsifying maintenance records to cover up its failure to perform required maintenance. OSTER ET AL., *supra* note 1, at 20.

12 "'Strict liability' . . . means liability that is imposed on an actor apart from either (1) an intent [of the actor] to interfere with a legally protected interest without a legal justification for doing so, or (2) a breach of a duty to exercise reasonable care, i.e., actionable negligence." W. PAGE KEETON ET AL., PROSSER AND KEETON ON THE LAW OF TORTS § 75 (5th ed. 1984) [hereinafter PROSSER & KEETON]. Note, however, that a plaintiff asserting strict liability must still allege and prove causation and damages. Andrew A. Lemmon, *The Developing Doctrine of Rylands v. Fletcher: Hazardous Waste Remediation Contractors Beware*, 42 LOY. L. REV. 287, 289 (1996).

13 *See generally* PAUL S. DEMPSEY ET AL., 1 AVIATION LAW AND REGULATION §§ 1.01-1.08 (1992) (providing a thorough discussion of the history of airline regulation).

14 Also known as the Air Mail Act, ch. 128, 43 Stat. 805 (1925). The Air Mail Act of 1934 then transferred this power to the Interstate Commerce Commission. Ch. 466, 48 Stat. 933 (1934).

15 Ch. 344, 44 Stat. 568 (1926).

undertook the first of several reorganizations of federal regulatory oversight of aviation.

At that time, through the Civil Aeronautics Act of 1938, Congress established the Civil Aeronautics Authority and charged it with regulating both air-traffic and airfares.[16] Two years later, Congress divided the Authority into the Civil Aeronautics Board (CAB) and the Civil Aeronautics Administration (CAA), charging the former with economic (fare and market entry) regulation and the latter with air-traffic and safety regulation.[17] The CAA remained a part of the Department of Commerce from this time until 1958 when Congress reorganized it as the independent Federal Aviation Agency.[18] In 1967, Congress then renamed this agency as the Federal Aviation Administration (FAA) and placed it under the authority of the newly-formed Department of Transportation,[19] where it remains today.[20] The CAB continued to regulate the economics of the airline industry until the Airline Deregulation Act of 1978 phased-out its power.[21]

B. CURRENT ROLES OF THE FAA

In its current state, the Federal Aviation Administration (FAA) has two principal functions: management of the nation's air traffic control (ATC) system[22] and promulgation and enforcement of regulations pro-

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16 Ch. 601, 52 Stat. 973 (1938).

17 Poole, *supra* note 3, at 210-11. The CAB's Bureau of Safety, later reorganized as the National Transportation Safety Board (NTSB), was charged with investigating aviation accidents. DEMPSEY, *supra* note 13, § 3.08. The NTSB continues today in this investigatory role and also makes safety recommendations to other government agencies (including the FAA) which, although not having the force of law, have an eighty percent acceptance rate by these agencies. DEMPSEY, *supra* note 13, at § 3.08.

18 Federal Aviation Act, Pub. L. No. 85-726, 72 Stat. 731 (1958).

19 *See* Department of Transportation Act, Pub. L. No. 89-670, 80 Stat. 931 (1966).

20 Poole, *supra* note 3, at 211.

21 Pub. L. No. 95-504, 92 Stat. 1705 (1978). CAB authority over routes terminated in December 1981, and its authority over fares terminated in January 1983. *Id.* at 1744-45. The Department of Transportation, however, still maintains some economic authority over international aviation with regards to antitrust and consumer protection matters. CONGRESSIONAL BUDGET OFFICE, POLICIES FOR THE DEREGULATED AIRLINE INDUSTRY 3 (1988) [hereinafter CBO, POLICIES].

22 The ATC system is divided into three parts: air route traffic control, terminal traffic control, and flight service stations. The FAA maintains a strong, largely exclusive, presence in each of these areas. Air route traffic control (ARTC) is provided by FAA-run regional traffic control centers (ARTCCs) throughout the United States; each center controls certain areas of airspace, and travel through that airspace requires permission from controllers in the appropriate center. Terminal traffic control is provided by the FAA at airports, and guides aircraft after they leave ARTCC control, through landing, to their parking at the terminal gate. Flight service stations provide services to primarily general aviation aircraft, including weather briefings, communication with pilots flying under visual (not instrument-guided) flight, and aid to pilots in distress. CBO, POLICIES, *supra* note 21, at 37-39.

moting air safety.[23] The FAA's safety efforts are embodied in the Federal Air Regulations (FARs), a weighty tome of stereotypical governmental regulations.[24] For the most part, the FAA simply promulgates FARs dictating the minimum required safety standards, leaving to aircraft manufacturers and operators the decision whether, and to what extent, to exceed the requirements.[25] With regards to aircraft design and personnel qualifications, however, the FAA takes a more active role in certifying and licensing.[26]

Funding for the FAA's activities comes largely from two sources: the Airport and Airway Trust Fund[27] and Department of Transportation general funds.[28] Trust Fund revenues accrue from a variety of air-travel related sources, including excise taxes on tickets, fuel, and cargo.[29] FAA outlays include operation and maintenance of the ATC system and regulation of air safety.[30] Although the airport system is largely owned and financed by local authorities, the FAA does provide some financial support in the form of loans and grants for infrastructure development.[31]

For fiscal year 1997, FAA operation costs are estimated to be $4.8 billion. In terms of revenues, $2.7 billion will be funded through the Airway Trust Fund, while the remaining $2.1 billion will come from U.S. Department of Transportation general revenues.[32] In terms of expenditures, Congress allocated $487 million to be spent specifically on operations for maintaining air safety through regulation and enforcement.[33] Note, however, that this figure does not include the portion of the $333 million allocated to administrative overhead required to oversee the regulation and enforcement operations.[34]

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23 Poole, *supra* note 3, at 209. In fact, Congress's principal purpose in creating the FAA was promotion of safe air travel. National Organization for Reform of Marijuana Laws v. Mullen, 608 F. Supp. 945, 960 (D.C. Cal. 1985), *remanded on other grounds*, 796 F.2d 276 (9th Cir. 1986).

24 As of January 1, 1996, FAA regulations covered approximately 1,800 pages of the Code of Federal Regulations. Of these, some 850 pages were directed at the airlines themselves ("Subchapter C: Aircraft," §§ 21-49, covered 740 pages, while "Subchapter D: Airmen," §§ 60-67, covered 110 pages). *See* 14 C.F.R. §§ 1-199 (1996). For an overview of the FARs, see PAULaS. DEMPSEY ET AL., 2 AVIATION LAW AND REGULATION §12 (1992).

25 Poole, *supra* note 3, at 223.

26 *Id.* at 211-12.

27 *See* Tax, Equity and Fiscal Responsibility Act, Pub. L. No. 97-248, 96 Stat. 325, 565 (1982) (establishing the Fund).

28 CBO, POLICIES, *supra* note 21, at 39.

29 *Id.*

30 *Id.* at 42.

31 *Id.* at 44-45.

32 BUDGET OF THE UNITED STATES GOVERNMENT, FISCAL YEAR 1997, Appendix 743 (1996) [hereinafter FY1997 BUDGET].

33 *Id.* at 744.

34 *Id.*

C. CURRENT STATE OF AVIATION LAW

FAA safety regulations generally address one of six issues: pilot certification, aircraft certification and regulation, mechanic licensing, airline licensing, air traffic control, and hazardous material transport.[35] The first four of these categories, being the focus of this Note, are briefly discussed in turn:

- As regards pilot certification, the FAA regulates not only pilots themselves, including their medical fitness for flying,[36] but also the flight schools which they must attend to obtain certification.[37]
- Aircraft design regulations address three basic topics: minimum safety design standards; production conformity with prototype design; and production maintenance standards needed to conform with required safety levels.[38] These regulations also address the air carrier's duty to inspect, maintain, overhaul, and repair its aircraft in conformity with FAA standards.[39]
- The FARs also establish several categories of mechanic certification, each with an associated level of autonomy/responsibility that may be granted to the mechanic.[40]
- Despite the 1978 Deregulation Act's elimination of most market entry and exit provisions, airlines are still required to obtain a carrier certificate before beginning domestic or international air service.[41] In this vein, airlines must show "fitness" in the form of managerial skills, appropriate financing, consumer demand satisfaction, and willingness and ability to comply with appropriate laws and regulations.[42]

As noted in the introduction to this Note, all four of these types of FAA regulations are under fire, whether for their unnecessary intrusion into the air travel market or for their lack of effectiveness in achieving their purported goals. Before examining this Note's proposed scheme

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35 *See generally* DEMPSEY, *supra* note 24, § 12.

36 *Id.* § 12.10; 14 C.F.R. §§ 61 & 67 (1996).

37 DEMPSEY, *supra* note 24, §§ 12.01-12.17; 14 C.F.R. §§ 61.181-61.201, 141 (1996).

38 DEMPSEY, *supra* note 24, § 12.20; *see* 14 C.F.R. §§ 21-43 (1996).

39 DEMPSEY, *supra* note 24, § 12.27; 14 C.F.R. §§ 121-39 (1996).

40 14 C.F.R. §§ 65.71-65,105 (1996); *see also* DEMPSEY, *supra* note 24, §§ 12.31-12.35 (briefly outlining the requirements of and authorizations to the various categories).

41 Federal Aviation Act, *supra* note 18, §§ 401-402 (codified as amended at 49 U.S.C.A. §§ 41,101 & 41,102 (West 1997)).

42 DEMPSEY, *supra* note 24, § 12.43; 49 U.S.C.A. § 41,102 (West 1997).

for eliminating many of these regulations, the Note next presents a brief overview of strict liability and its application to air travel.

III. OVERVIEW OF STRICT LIABILITY

A. HISTORY OF COMMON LAW STRICT LIABILITY

Strict liability developed under English common law as a system of imposing liability on practitioners of inherently dangerous activities.[43] Traditionally, this definition encompassed the keeping of wild animals, keeping of fire, and blasting, but also extended to any activity deemed by the courts as unusual and abnormal in the community.[44] The leading case in this area, *Rylands v. Fletcher*,[45] held that a defendant would be liable for any damages resulting from an activity unduly dangerous and inappropriate to the place where it was maintained.

Although a turning point in English law, *Rylands* initially received mixed reaction in the United States by both state courts[46] and legal scholars.[47] The Restatement (First) of Torts explicitly limited *Rylands* to "ultrahazardous activities."[48] This approach generally placed the ultimate (financial) risk of engaging in new activities on the actors themselves, rather than on the non-participating public.[49] By the 1950s, however, most state courts came to accept the *Rylands* rule, at least in some respect.[50]

Aviation, as a fledgling activity, was regarded as posing a significant threat to structures, individuals, and crops due to its inherent ultrahazardous nature.[51] Thus, state courts and the Restatement[52] imposed strict liability on aircraft operators, but only for ground damage.[53] Presumably, the courts regarded air travel to be so hazardous that anyone

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43 PROSSER & KEETON, *supra* note 12, at 536-37.

44 *Id.*

45 159 Eng. Rep. 737 (1865) (water reservoir on the defendant's property broke due to unusually heavy rainfall, flooding the plaintiff's fields).

46 *See* Cahill v. Eastman, 18 Minn. 324 (1871) and Ball v. Nye, 99 Mass. 582 (1868) (adopting the *Rylands* rule). *Cf.* Marshall v. Welwood, 38 N.J.L. 339 (1876); Brown v. Collins, 53 N.H. 442 (1873); and Losee v. Buchanan, 51 N.Y. 476 (1873) (severely criticizing the *Rylands* holding).

47 Oliver Wendell Holmes, *The Theory of Torts*, 7 AM. L. REV. 652 (1873); Ezra Ripley Thayer, *Liability without Fault*, 29 HARV. L. REV. 801 (1916).

48 RESTATEMENT (FIRST) OF TORTS § 519 (1938) ("[O]ne who carries on an ultrahazardous activity is liable to another whose person, land or chattels the actor should recognize as likely to be harmed by the unpreventable miscarriage of the activity for harm resulting thereto from that which makes the activity ultrahazardous, although the utmost care is exercised to prevent the harm.").

49 Lemmon, *supra* note 12, at 294.

50 PROSSER & KEETON, *supra* note 12, § 78.

51 *Id.*

52 RESTATEMENT (FIRST) OF TORTS § 520 cmt. b (1938).

53 PROSSER & KEETON, *supra* note 12, § 78.

choosing to enter an airplane undertook such an assumption of risk as to waive most legal rights.[54] A position in favor of strict liability was similarly adopted by the drafters of the 1922 Uniform Aeronautics Act.[55] The Act was withdrawn in 1943, however, in recognition of safety improvements in air travel.[56] Although the Restatement (Second) still technically considers flying to be an ultrahazardous activity,[57] *Prosser & Keeton* suggest a division in current common law between standard flying (to which a negligence standard is applied) and unusual flying, such as stunt flying, crop dusting, and flying of experimental aircraft (to which strict liability is applied).[58]

B. LEGISLATIVELY-MANDATED STRICT LIABILITY

In 1908, Congress passed the first strict liability law in the form of a workmen's compensation scheme for U.S. government employees.[59] Two years later, New York state followed suit with a workmen's compensation law covering all workers in the state, civil servants or otherwise.[60] Most states passed similar laws soon thereafter, and currently all fifty states have some scheme of strict liability workmen's compensation.[61]

All these laws are true strict liability schemes in that they bar claims of contributory negligence, assumption of risk, and the fellow servant rule, as defenses.[62] The only matters at issue are (1) whether the worker and injury are within the scope of the act, and (2) what damages should be awarded.[63] In fact, many workmen's compensation laws go into great detail in specifying the monetary remuneration to be given.[64]

In 1906, Congress passed the first workmen's compensation law for common carriers; in this case, the law applied to railroads for injuries to their employees.[65] However, the United States Supreme Court declared the act unconstitutional as being outside the scope of the Commerce

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54 *See id.* § 78 (stating that flying was "regarded at first [as] the province exclusively of venturesome fools").

55 UNIF. AERONAUTICS ACT § 5, 9 U.L.A. 17 (MISC. UNIF. ACTS) (Edward Thompson Co. 1932) (act withdrawn 1943).

56 *Id.* at xvi.

57 RESTATEMENT (SECOND) OF TORTS§ 520A cmt. c (1977).

58 PROSSER & KEETON, *supra* note 12, § 78.

59 *Id.* § 80.

60 *Id.*

61 *Id.*

62 *Id.*

63 *Id.*

64 *See* MINN. STAT. ANN.§ 176.101 (West 1993) (specifying, for example, for an injury producing a "temporary total disability," compensation equal to 66-2/3 percent of the worker's weekly wage at the time of injury).

65 Federal Employer's Liability Act, ch. 3073, 34 Stat. 232 (1906).

Clause.[66] In 1908, the law was rewritten,[67] so as to apply only to employees involved in interstate or international commerce and was subsequently upheld by the Supreme Court.[68] On its face, the Act required some negligence on the part of the employer, so it was, in a sense, not a true strict liability scheme.[69] However, several Supreme Court rulings have made the Act much more similar to being a true strict liability scheme.[70]

One recent study credits this law, the Federal Employer's Liability Act (FELA), with saving some 32,000 lives over seventy-two years.[71] Another study shows that the general shift from a negligence system to a workers' compensation regime in the 1910s significantly reduced work fatality rates.[72] In this vein, a recent study by Professors Moore and Viscusi demonstrates that a shift from negligence liability to a workers' compensation scheme reduces workplace fatalities by about 33 percent.[73]

In 1893, Congress passed the first national strict liability non-workmen's compensation law in the form of the Federal Safety Appliance Act.[74] Still in effect today, the law requires railroads involved in interstate commerce to utilize certain safety devices on their trains.[75] Any rail carrier acting deficiently is held strictly liable for injury to its own employees or to others.[76]

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66 Employers' Liability Cases, 207 U.S. 463 (1908).

67 Ch. 149, 35 Stat. 65 (codified as amended at 45 U.S.C.A. §§ 51-60 (West 1996)).

68 Second Employers' Liability Cases, 223 U.S. 1 (1911).

69 Ch. 149, 35 Stat. 65, *supra* note 67 (creating liability for damages "resulting in whole or in part from the negligence" of a railroad's employees).

70 Gallick v. Baltimore & Ohio Rail Co., 372 U.S. 108, 120 (1963) (employer must compensate the employee for even improbable or unexpectedly severe consequences of a wrongful act; in this case, an insect bite); Webb v. Illinois Cent. Rail Co., 352 U.S. 512, 516 (1957); Rogers v. Missouri Pac. R.R. Co., 352 U.S. 500, 506 (1957) (employer's negligence need only play the "slightest" part in causing the employee's injury).

71 Gary T. Schwartz, *Reality in the Economic Analysis of Tort Law: Does Tort Law Really Deter?*, 42 UCLA L. REV. 377, 391 (1994) (citing Lars A. Stole, The Economic Effects of Liability Rules on Railroad Employee Accidents: 1890-1970 (1992) (unpublished manuscript on file with Gary T. Schwartz)).

72 James R. Chelius, *Liability for Industrial Accidents: A Comparison of Negligence and Strict Liability Systems*, 5 J. LEGAL STUD. 293, 303, 306 (1976).

73 MICHAEL J. MOORE & W. KIP VISCUSI, COMPENSATION MECHANISM FOR JOB RISKS 133 (1990).

74 Federal Safety Appliance Act, ch. 196, 27 Stat. 531 (codified as amended at 49 U.S.C.A. §§ 20,301-20,304, 21,304 (West 1997)).

75 *See* 49 U.S.C.A. § 20,302 (West 1997).

76 *See generally* PROSSER & KEETON, *supra* note 12, § 80 and cases cited at 45 U.S.C.A. § 1, n.19 (West 1996). *Cf.* Price V. Fishback, *Liability Rules and Accident Prevention in the Workplace: Empirical Evidence from the Early Twentieth Century*, 16 J. LEGAL STUD. 305 (1987) (finding an increase in the accident rate after the shift to strict liability). Gary T. Schwartz notes, however, that this increase may be simply the result of increased willingness of employees to file claims. Schwartz, *supra* note 72, at 393 n.74.

C. STRICT LIABILITY IN THE COURTS

Even where not mandated by law, strict liability continues to expand into new areas of activity. Courts often rationalize that strict tort liability provides manufacturers with incentives to improve the safety of their products.[77] As a result, courts have extended the doctrine to electric utilities[78] and commercial automobile lessors.[79]

Indicative of this general trend towards broader application of strict liability, the Second Restatement abandons the "ultrahazardous" litmus test in lieu of a six-factor test used to determine the degree of dangerousness of the activity.[80] In addition, the Restatement advocates strict liability for defective products,[81] largely codifying the seminal holding of *Greenman v. Yuba Power Products, Inc.*[82] Although not elaborating on the application of this section to air travel, the Restatement (Second) does note that airplane passengers should be considered "user[s]" for the

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77 Roger W. Holmes, *Strict Products Liability for Electric Utility Companies: A Surge in the Wrong Direction*, 29 SUFFOLK U. L. REV. 161, 171-72, n.60 (1995) (citing Beshada v. Johns-Manville Prods. Corp., 447 A.2d 539, 548 (N.J. 1982); Hall v. E.I. DuPont de Nemours, 345 F. Supp. 353, 368 (E.D.N.Y. 1972); and Vandermark v. Ford Motor Co., 391 P.2d 168, 171-72 (Cal. 1964)).

78 Holmes, *supra* note 77, at 162 n.7.

79 Cintrone v. Hertz Truck Leasing, 212 A.2d 769, 781 (N.J. 1965).

80 RESTATEMENT (SECOND) OF TORTS § 520 (1977). In full, the Section states:

> In determining whether an activity is abnormally dangerous, the following factors are to be considered:
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> (a) existence of a high degree of risk of some harm to the person, land, or chattels of others;
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> (b) likelihood that the harm that results from it will be great;
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> (c) inability to eliminate the risk by the exercise of reasonable care;
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> (d) extent to which the activity is not a matter of common usage;
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> (e) inappropriateness of the activity to the place where it is carried on; and
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> (f) extent to which its value to the community is outweighed by its dangerous attributes.

81 RESTATEMENT (SECOND) OF TORTS § 402A (1977). In full, the Section states:

> (1) One who sells any product in a defective condition unreasonably dangerous to the user or consumer or to his property is subject to liability for physical harm thereby caused to the ultimate user or consumer, or to his property, if
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> (a) the seller is engaged in the business of selling such a product, and
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> (b) it is expected to and does reach the user or consumer without substantial change in the condition in which it is sold.
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> (2) The rule stated in Subsection (1) applies although
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> (a) the seller has exercised all possible care in the preparation and sale of his product, and
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> (b) the user or consumer has not bought the product from or entered into any contractual relation with the seller.

82 377 P.2d 897 (1963) (manufacturer of power tool held strictly liable in tort for injuries sustained by the plaintiff as a result of a defect in the design and manufacture of the tool).

purposes of the section.[83] In this vein, this section of the Restatement has at times been applied to air travel by various state courts.[84]

Commercial aviation is no longer considered an ultrahazardous activity for passengers and thus not subject to strict liability.[85] Even ground damage is generally no longer subject to strict liability claims.[86] However, air carriers must still maintain a very high degree of care when transporting the public.[87] As a result, carriers will be liable for the slightest negligence proximately causing injury or damage to persons or property.[88] In addition, the doctrine of *res ipsa loquitur* ("the thing speaks for itself") has been widely applied to airline accidents.[89] Furthermore, some courts have held violations of the FARs to be negligence as a matter of law.[90] In all, the application of these common law doctrines makes carrier liability appear strikingly similar to common-law imposed strict liability.

However, there exists no federal tort law governing air carrier or manufacturer liability; state law controls the matter.[91] In this vein, the Tenth Circuit stated in *Cleveland v. Piper Aircraft Corp.* that Congress, in granting the CAB the power to promulgate safety regulations, intended for a mutual coexistence of state common law remedies and federal regulation of air travel, at least with regards to aircraft design, if not for aircraft operations as well.[92] As a result, compliance with federal

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83 RESTATEMENT (SECOND) OF TORTS § 402A cmt. k (1977).

84 *See, e.g.*, First Nat'l Bank v. Tex Sun Beechcraft, Inc., No. 05-91-00956-CV, 1992 WL 86624 (Tex. Ct. App. 1992) (fatigue fracture, due to water soluble decals attached to the propeller, held to be a defect); and Rudisaile v. Hawk Aviation, Inc., 592 P.2d 175 (N.M. 1979) (airplane leased without oil in the engine held to be "defective" within the meaning of § 402A).

85 DEMPSEY, *supra* note 24, § 13.11.

86 William K. Jones, *Strict Liability for Hazardous Enterprise*, 92 COLUM. L. REV. 1705, 1747 (1992).

87 DEMPSEY, *supra* note 24, § 13.11 (citing PAUL S. DEMPSEY & WILLIAM E. THOMS, LAW AND ECONOMIC REGULATION IN TRANSPORTATION 255-75 (1986)).

88 *Id.* (citing Haldane v. Alaska Airlines, 126 F.Supp. 224, 226 (D. Alaska 1954)).

89 DEMPSEY, *supra* note 24, § 13.12.

90 DEMPSEY, *supra* note 24, § 13.14 (citing RESTATEMENT (SECOND) OF TORTS § 286 (1977); Rathvon v. Columbia Pac. Airlines, 633 P.2d 122 (Wash. App. 1981); Farnsworth v. Steiner, 601 P.2d 266 (Alaska 1979); and Todd v. United States, 384 F. Supp. 1284 (M.D. Fla. 1974)).

91 Patrick. J. Shea, Note, *Solving America's General Aviation Crisis: The Advantages of Federal Preemption over Tort Reform*, 80 CORNELL L. REV. 747, 763 (1995). *See also* Mary A. Wells & David G. Mayhan, *Federal Preemption of Strict Liability Claims in Aviation Litigation: A Fresh Look*, 27 TORT & INS. L.J. 693 (1992) (providing a general overview of federal preemption law and its recent application by the courts).

92 985 F.2d 1438, 1444 (10th Cir. 1993), *cert. denied*, 510 U.S. 908 (1993) ("Congress . . . intended to allow state common law to stand side by side with the system of federal regulations it has developed."). As *Cleveland* dealt with design standards, it is unclear whether the court would have held operation regulations to be non-preemptive as well. *See also* Shea, *supra* note 91, at 779-80 (discussing the court's reasoning in *Cleveland*).

aviation safety standards does not preempt tort suits under state law, and thus, air carriers and manufacturers consistently face law suits for air mishaps, regardless of their compliance with the FARs.[93]

IV. VALUE-OF-LIFE

Although the term "value-of-life" is charged with moral and philosophical connotations, it need not be so.[94] To an economist or government regulator, the concept of value-of-life is invaluable for performing accurate cost-benefit analyses involving (on the cost side) the risk of death or injury.[95] In this vein, "fatal risk reduction values," as value-of-life estimates are euphemistically referred to by the federal government, are used by such agencies as the Nuclear Regulatory Commission, the Consumer Product Safety Commission, the Occupational Safety and Health Administration, the Environmental Protection Agency, and the Department of Transportation (within which the FAA resides).[96] Similarly, value-of-life estimates may be used by courts in assessing damages to be awarded to a tort victim's survivor.[97]

A. METHODS OF VALUING LIFE

Two common schemes exist for assessing the value of human life: the human-capital approach, and the willingness-to-pay approach.

The human-capital approach, the oldest method for valuing life, is based on Adam Smith's assertion that a person's monetary value is equal to the value of his lifetime output.[98] In this vein, an accident victim's

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93 Shea, *supra* note 91, at 763.

94 Geoffrey L. Gillis & Stephen J. Spuit, *The Value of Life in Tort Litigation: the Advent of the Economic Approach*, 75 MICH. B.J. 540 (1996).

95 *See* W. Kip Viscusi, *Equivalent Frames of Reference for Judging Risk Regulation Policies*, 3 N.Y.U. ENVTL. L.J. 431 (1995) (outlining the basic cost-benefit approach to regulation and the use of value-of-life estimates therein); *but see* [JUSTICE] STEPHEN BREYER, BREAKING THE VICIOUS CIRCLE: TOWARD EFFECTIVE RISK REGULATION (1993) (recasting traditional economic tests that use value-of-life figures in ways that avoid the need for such estimates).

96 Gillis & Spuit, *supra* note 94, at 540. For a comprehensive account of value-of-life estimates used by government agencies, see Ted R. Miller, *Willingness to Pay Comes of Age*, 83 NW. U. L. REV. 876, 886-91 (1989).

97 RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 197 (4th ed. 1992). *See, e.g.*, Pasquale v. Ohio Power Co., 418 S.E.2d 738, 753-56 (W. Va. 1992) (holding, in a civil wrongful death action, that the value of a decedent's life is a permissible argument, and that the simple lost-wage method of calculation is not the only monetary way in which the value-of-life may be calculated). *Cf.* Roberts v. Stevens Clinic Hosp., 345 S.E.2d 791 (W. Va. 1986) (holding that the West Virginia wrongful death statute explicitly forbids value-of-life measurements, and impliedly rationalizing that this must be the case since such a value is infinite).

98 ADAM SMITH, THE WEALTH OF NATIONS 30-31 (Edwin Canaan ed., 1937) (1st ed. 1776).

value-of-life is based on her earning potential.[99] This figure, in turn, is determined through economic forecasts of her future earnings.[100]

One can apply this method with relative ease on a case-by-case basis. Thus, the human-capital approach is well-suited to assessing the amount of compensation that should be provided after an accident to a victim's next-of-kin to restore his or her economic well-being. As a result, this method was traditionally used at common law.[101]

However, the method has its shortcomings. First, the accuracy of the value-of-life calculated is only as accurate as the forecasts of future earnings. Thus, the method is largely inapplicable to children for whom no reliable income forecasting is available.[102]

Second, the human-capital approach has a different theoretical basis than that behind regulatory cost-benefit analysis. The approach is largely backward-looking in that it aims to recreate the past (*ex post*) by returning the victim's next-of-kin to his or her pre-death economic status quo. Regulatory cost-benefit analysis, on the other hand, aims to save lives *ex ante*. This foundational difference reduces the method's applicability to regulatory cost-benefit analysis insofar as individuals value past (*ex post*) and anticipated (*ex ante*) losses differently. In this regard, many studies have shown that individuals demand less compensation *ex post* than *ex ante*.[103]

Another popular method for valuing life is the willingness-to-pay approach. This method, which avoids both shortcomings of the human-capital approach, determines the value-of-life by assessing the implicit value that individuals place on their own lives. This value, in turn, is based on individuals' willingness to purchase safety-enhancing devices (e.g., smoke detectors or automobile air bags) and/or their demand for financial compensation for undertaking risky activities (e.g., coal mining

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99 *Id.*

100 POSNER, *supra* note 97, at 198.

101 Gillis & Spurr, *supra* note 94, at 540.

102 POSNER, *supra* note 97, at 183.

103 For two seminal papers on this topic, see Daniel Kahneman et al., *Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias*, 5 J. ECON. PERSP. 193 (1991); and Daniel Kahneman et al., *Experimental Tests of the Endowment Effect and the Coase Theorem*, 98 J. POL. ECON. 1325 (1990).

or underwater welding).[104] Scientific studies estimating the value-of-life tend to use this approach.[105]

One significant shortcoming of this approach, however, is that it generally fails to take into account the individual characteristics of the decedent and instead relies on aggregate data.[106] Some individualization is available, however, insofar a the value-of-life may be based on a subset of the population at large—e.g., airplane passengers, coal miners, etc.[107] In addition, the method suffers from "selectivity bias" in that individuals may make their choices with imperfect information, often underestimating the risk of harm, and therefore tending to undervalue their lives.[108] Regardless, insofar as this approach calculates *ex ante* value-of-life, it is better suited to regulatory situations than the *ex post* human-capital approach.

B. EMPIRICAL VALUES OF LIFE

In 1993, Professor Kip Viscusi surveyed some twenty-five willingness-to-pay studies of the value-of-life.[109] He asserts in his article that, although the value estimates in these studies vary widely depending on the characteristics of the populations exposed to the risk, reasonable estimates of the value-of-life cluster in the $3 million to $7 million range.[110]

On the low end of the spectrum, the FAA assesses the value of a single life at $1.5 million.[111] Other agencies, on the other hand, implicitly place a much higher value on life. For example, Occupational Safety and Heath Administration (OSHA) asbestos regulations cost $89 million per life saved.[112] Thus, if OSHA were to use standard benefit-cost analysis in determining whether to implement these regulations, it must either value life as worth upwards of $89 million or grossly undervalue the costs of regulatory implementation.

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104 *Id.* at 198. For further reading on this method, see Craig A. Olson, *An Analysis of Wage Differentials Received by Workers on Dangerous Jobs*, 16 J. HUM. RESOURCES 167 (1981); Rachel Dardis, *The Value of Life: New Evidence from the Marketplace*, 70 AM. ECON. R. 1077 (1980); and RICHARD THALER & SHERWIN ROSEN, THE VALUE OF SAVING A LIFE: EVIDENCE FROM THE LABOR MARKET IN HOUSEHOLD PRODUCTION AND CONSUMPTION 265 (Nestor E. Terleckyj ed., 1975). For general background, see M.W. JONES-LEE, THE VALUE OF LIFE: AN ECONOMIC ANALYSIS (1976); and Richard Zeckhauser, *Procedures for Valuing Lives*, 23 PUB. POL'Y 419 (1975).

105 Gillis & Spurr, *supra* note 94, at 540-41.

106 *Id.* at 541.

107 *Id.* at 542.

108 *Id.* at 541-42.

109 W. Kip Viscusi, *The Value of Risks to Life and Health*, 31 J. ECON. LIT. 1912 (1993).

110 *Id.* at 1942.

111 RALPH NADER & WESLEY J. SMITH, COLLISION COURSE: THE TRUTH ABOUT AIRLINE SAFETY 37 (1994). Also see this book for a harsh criticism of current FAA policies and practices.

112 Viscusi, *supra* note 109, at 1912-13.

V. A PLAN FOR FAA REFORM

It is often difficult, if not impossible, to assign a single cause to an air accident since many accidents have several contributing factors.[113] One congressional study concludes that only a fraction of fatal air accidents can be attributed to a single cause.[114] Recognizing this problem, the National Transportation Safety Board (NTSB) classifies accidents by a variety of methods, including causes, factors involved, and the sequence of events leading up to the accident.[115] However, in order simplify the end result of the investigatory process, the NTSB ultimately categorizes aircraft accidents by the first occurrence in the chain of events that caused the accident.[116]

Faced with the complexity of the NTSB's investigatory reports, on one hand, and the over-simplicity of its final categorizations, several studies of accidents have established their own categories, based on the overall focus and/or needs of the study.[117] Similarly, this Note establishes its own three categories of contributory factors:

- Failure of equipment under the operational and/or maintenance control of the airline (equipment failure);
- Error by airline personnel, or by personnel directly responsible to the airline (personnel error); and
- All other error and/or failures (other error).

With this background established, this Note proposes the following scheme of airline deregulation:

- Elimination of all FAA standards governing air carrier equipment, pilot conduct, and company operations;[118]

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113 OSTER ET AL., *supra* note 1, at 25.

114 OFFICE OF TECHNOLOGY ASSESSMENT, U.S. CONGRESS, SAFE SKIES FOR TOMORROW 96 (1988) [hereinafter SAFE SKIES].

115 *Id.* at 95.

116 *Id.*

117 *See, e.g.*, SAFE SKIES, *supra* note 114, at 96-97 (The Office of Technology Assessment established twenty categories based on type and, in some instances, sequence of errors); *but see* OSTER ET AL., *supra* note 1, at 26-29 (establishing only nine categories, based only on the type of causal factor (equipment, pilot error, air traffic control error, etc.)).

118 Certain FAA regulatory functions not affected by this scheme are necessary for setting standards that lead to greater safety. For example, the FAA determines the protocol to be used in airplane-to-airplane communications. These coordination efforts should not be eliminated, since the FAA's role here is as a market facilitator, not as a regulator *per se*.

Similarly, the FAA should remain a regulator of airports, to a certain extent, where it is not efficient for a single airline to operate alone. Thus, control tower personnel and equipment should remain under the guidance of the FAA. Were this otherwise, a free-rider problem would result and expenditure in these areas of common-benefit would be less than optimal. Generally speaking, equipment and/or personnel which serve one airline alone should be

- Enactment of a scheme for strict liability in tort, payable to the injured or the decedent's next of kin, if injury to person or property is attributable to either equipment failure and/or personnel error (where some "other error" contributed to the mishap, liability will be assessed in proportion to the contribution by the air carrier's equipment and/or personnel);
- Determination, by the National Transportation Safety Board,[119] of an appropriate value-of-life (the calculation of which is discussed below); and
- Establishment of standards for minimum insurance to be carried by airlines (either through an independent insurer or through self-insurance by the carrier).

In 1988, the U.S. Office of Technology Assessment (OTA) completed a survey of thirty-five fatal air accidents occurring between 1975 and 1986.[120] To each accident, the OTA attributed one or more causal factors, and determined one of them to be the initiating causal factor.[121] Applying the OTA's results to the three categories established by this Note, the OTA found 57 percent of fatal accidents to be caused, at least in part, by personnel error, with 34 percent for equipment failure.[122] When categorizing these fatal accidents by initiating causal factor alone, the OTA found personnel error to be the initiating factor in 43 percent of the accidents, with equipment failure accounting for 26 percent.[123] These figures tend to demonstrate that factors entirely under the control of the air carrier are a contributory factor in a very high percentage of fatal air accidents.

A. AIR CARRIER BEHAVIOR UNDER THE SCHEME

Faced with such a strict liability scheme for their actions, air carriers will perform cost-benefit analyses to determine whether to institute a particular safety-enhancing measure. An example will elucidate this point. First, assume that an independent company just introduced a new and improved ground proximity warning device having a present-discounted

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owned/employed by only that airline, with strict liability directed at that airline. Resources that cannot be equitably or efficiently allocated to a single airline should remain under FAA guidance.

119 It is preferable for the NTSB, rather than the FAA, to choose the value-of-life due to the FAA's internal conflicts of interest, as noted in Section I, *supra*.

120 SAFE SKIES, *supra* note 114, at 96-97.

121 *Id.* at 97.

122 SAFE SKIES, *supra* note 114, at 97 Table 5-4.

123 *Id.*

cost of purchase and upkeep of $100,000.[124] Second, assume that the NTSB determines the value-of-life to be $1 million for the purposes of the strict liability scheme proposed.

The airline, in performing a cost-benefit analysis for whether it should purchase and install the new device, will compare (1) the present-discounted value of the cost of the device against (2) the probability-adjusted present-discounted value of lives saved.[125] Mathematically, the airline will seek to determine whether C (the total cost of the device) is less than pV (the benefits), where p equals the probability that one life will be saved by the device,[126] and V equals the value-of-life set by the NTSB. The airline will install the new device if (and only if) the costs are less than the probability-adjusted value of lives saved; i.e., if $C < pV$.

Applying the numbers assumed above, the airline will install the new device if the probability of it saving one life is greater than ten percent; i.e., if $p > 0.1$. Under this Note's scheme, the determination of this probability will be left up to the airline. This approach is consistent with the Note's argument that airlines themselves are better equipped and better informed than government regulators at determining the usefulness of equipment and the like. As a result, the NTSB's only means of affecting an airline's actions is to alter the value-of-life.

If, for instance, the NTSB sets the value-of-life to be only $10,000, an airline would only install the new warning device if p equals 10; i.e., only if is certain that the device will save ten lives. On the other hand, if the NTSB sets the value of life at $10 million, the airline will install the device if the probability of it saving a single life is merely one percent. Thus, through its official determination of the value-of-life, the NTSB can significantly alter the choices made by the airlines.

If the NTSB chooses a low value-of-life, an airline will maintain only minimal safety standards. However, if the NTSB instead selects a high value-of-life, the potential tort liability to the airline will be high, and thus it will choose a higher level of safety. This scheme therefore permits the NTSB to largely determine, through its value-of-life figure alone, the level of safety maintained by the airlines. This process may then be used to counterbalance industry underestimation of the benefits

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124 It is necessary to assume, in this simple example, that the device is independently developed and marketed. If, on the other hand, the airline sponsored the research and development of the device and shared in its earnings, that fact would have to enter into the cost-benefit analysis.

125 *See* POSNER, *supra* note 97, at 160-61, 164 (explaining cost-benefit analysis by way of Judge Hand's opinion in United States v. Carroll Towing Co., 159 F.2d 169, 173 (2d Cir. 1947)).

126 Where the device will save more than one life, p can be adjusted appropriately to a value greater than one. For example, if a device is expected to save (on average) five lives over its operational life, the probability (p) of it saving one life equals five.

of safety measures and/or short-sightedness on the part of the airline industry (in terms of amortizing expenditures over time).

B. ADVANTAGES AND DISADVANTAGES OF THE SCHEME

1. *Advantages*

There are four significant advantages to this proposal, vis-à-vis the current system of regulation and inspection. First, costs of writing and enforcing regulations are eliminated. The only additional costs are those required to set an appropriate value-of-life. Since this value is currently calculated by the FAA, the framework is already in place, and thus, incremental costs are probably minimal.

Second, the scheme places most decision-making power directly in the hands of the individuals who possess the greatest knowledge—the airlines themselves. It is a well-founded tenet of modern economic theory that information costs can have an appreciable impact on transaction costs and market efficiency.[127] As a result, economic efficiency is maximized when decisions are left to the individuals who possess the greatest knowledge concerning an issue.

Third, the scheme reduces litigation costs since negligence issues no longer need to be decided by the courts. Causation matters will probably still be disputed. However, total litigation costs should fall.

Fourth, the scheme need not increase safety and maintenance costs to the airlines. In choosing a high value-of-life, the NTSB may inspire airlines to incur additional costs. However, at least theoretically, the NTSB can choose a value-of-life that maintains the same level of safety and maintenance as is currently in place. Furthermore, the scheme may, in fact, reduce overall safety and maintenance costs by granting airlines the freedom to choose the most cost-effective safety and maintenance methods.

2. *Disadvantages*

There are some potential disadvantages to this proposal. However, they can be mitigated by fine tuning and/or stylizing the proposed scheme. Furthermore, any disadvantages that remain should be offset by the gains noted above.

First, an overestimate of the value-of-life set by the NTSB will result in additional expenditure by the airlines. Nonetheless, this potential problem may be lessened through more accurate, detailed, and rigorous valuation. Second, lack of FAA regulations and/or regulatory guidance

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127 A. MITCHELL POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS 12-13 (2d ed. 1989).

may increase airline costs by requiring them to hire personnel to perform the cost-benefit analyses previously undertaken by the FAA.

Third, consumer anxiety is likely to increase. This problem, however, can be largely alleviated through a public relations campaign aimed at explaining the new scheme and its overall advantages—how it will reduce prices with no loss of safety. In addition, the FAA has come under public fire recently for failing to prevent airline tragedies.[128] Thus, the public is probably willing to accept a new system for maintaining airline safety.

VI. CONCLUSION

The commercial airline industry is an ideal candidate for the strict liability scheme proposed for several reasons, of which some are unique to airlines, others are not. For one, airlines are heavily regulated with regards to safety. Thus, the potential efficiency gains from deregulation are high.

Second, consumers' control over their own safety is minimal—passengers have no role in flying the airplane, and their safety role is largely limited to fastening their seatbelts. Thus, contributory negligence is rarely an issue in assessing liability.

Third, airline travel does not, for the most part, result in positive externalities[129] requiring government intervention. Phrased alternatively, air travel does not result in such gains for the common good that the government needs to intervene to promote a higher level of supply than would occur without intervention.[130] Furthermore, any such externalities may be captured under other laws, non-unique to aviation (i.e., patent, copyright, etc.).

Other industries possessing some or all of these characteristics, and thus potential candidates for similar strict liability schemes, are:

- Railroads and other mass-transit systems (both passenger and freight);
- Prescription and over-the-counter medications (although the potential for consumer contributory negligence may make strict liability impractical here); and

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128 *The FAA Should Inspect Itself*, Editorial, WASH. POST, May 23, 1996, at A20. *See also The FAA's Self-Inspection*, Editorial, WASH. POST, Sept. 21, 1996, at A18.

129 "An 'external economy' [a.k.a. positive externality] is defined as a favorable effect on one or more persons that emanates from the action of a different person or firm." PAUL A. SAMUELSON, ECONOMICS 474 (9th ed. 1973).

130 *Id.* at 474-75.

- Medical malpractice (although losses of positive externalities may outweigh efficiency gains from deregulation).

With regards to air travel, at least, the time has come to reevaluate the FAA's role in regulation. Although its role in coordinating air traffic is (probably) a worthy one, its regulation of the internal operations of commercial air carriers is not only an unnecessary drain on the nation's pocketbook but is financially taxing to air commerce and the economy as a whole. The same level of air safety can be maintained, at significant savings, through a carefully-crafted system of strict liability.

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