THE IMPACT OF GOVERNMENT POLICY ON AIRLINE PROFITABILITY

by

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Dedicated to a faithful Christian, a selfless soldier, and a remarkable friend:

Airman Christoffer P. Johnson

Jul 5, 1990 - Feb 17, 2011

"Greater love has no one than this: to lay down one's life for one's friends"

John 15:13 (NIV)

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ABSTRACT

The primary goal behind this study was to identify themes in expert opinion to determine if regulation adversely impacts the profitability of airlines. Safety and compliance officers for airlines were the selected study population due to their understanding of balancing safety with sustained profitability. A survey was utilized for the collection of data, and a qualitative method was used to derive themes from respondent answers. Qualitative analysis of the topic was necessary due to the complex macro-economic factors impacting airlines. Through the expert-accreditation approach, valuable themes were discovered that clearly indicated the perceived impact of regulation on the profitability of airlines. When analyzed, this data lends credence to the supposition that regulatory reform is necessary in the aviation industry. Furthermore, the data can assist regulators and airline lobbyists in determining the most beneficial manner reform can be implemented in the aviation industry.

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LIST OF ABBREVIATIONS

AA – American Airlines

AAI – American Aviation Institute

ACMI – Aircraft, Crew, Maintenance, Insurance

CFR – Code of Federal Regulations

DOT – Department of Transportation

EAPP – Enhancing Airline Passenger Protections

GDP – Gross Domestic Product

IRB – Institutional Review Board

FAA – Federal Aviation Administration

NTSB – National Transportation Safety Board

CHAPTER I: INTRODUCTION TO AIRLINE REGULATION

The burden of regulation can be seen throughout the history of airlines. The aviation industry has been stringently controlled by the federal government since the 1920s (Chmura, 1993). In addition to government controlled agencies imparting their will upon the aviation industry, states and international politics have also played a significant role in the regulation of the airlines (Capitol Confidential, 2012). Though many of these regulations were founded on a noble basis (increased safety, decreased pollution, etc.), every regulation comes with an inherent cost. Often, the Federal Aviation Administration (FAA) justifies a new regulation by showing a cost savings over time that should offset the initial investment, but some argue that the continual implementation of new regulations makes this recovery of assets all but impossible.

To combat the effects of a stringently controlled industry, the Airline Deregulation Act of 1978 was implemented. This was designed to increase competition and allow the aviation industry to follow the free market principles often championed in the United States (95th Congress, 1978). Deregulation allowed airlines to determine routes and fares, but it did not address the vast government oversight of safety, security, and operational procedures. This has led to an industry with a mixed regulatory system, which has caused much debate as to the net effect of regulation on the aviation industry.

As Alfred Khan stated in his book *The Economics of Regulation*, "recent experience clearly suggests that the mixed system may be the worst of both possible worlds" (Khan, 2002, p. 35). This statement was made because Khan recognized that partially regulated industries suffer from the combined disadvantages of governmental interference, and artificially inflated competition. This artificially inflated competition

results from bailouts and Chapter 11 bankruptcies (Zhang, 2010). Artificially inflated competition originates when organizations are permitted to restructure under Chapter 11 protection, which includes paying no interest on their debt. This creates a form of hyper-competition in the aviation industry that results in price wars creating a marginal yield on tickets (Zhang, 2010). To compound the issues present from hyper-competition in the aviation industry, increasing governmental regulations are resulting in higher fixed costs for airlines (Bhaskara, 2011). The higher fixed costs, when combined with price wars, are perceived by many to be devastating to airlines as they may pose a significant financial burden on the industry (Public Broadcasting Service, 2000). However, the federal government maintains that their regulations are essential to safe and efficient operation of the aviation industry, and airline profitability is primarily affected by global economics.

Evolution of Government Regulation in Aviation

Government regulation of the aviation industry did not begin until 23 years after the Wright Brothers' first flight at Kitty Hawk. Regulation began with the Air Commerce Act of 1926 (FAA, 2008). This regulation was developed to provide federal oversight on aircraft certification, airman certification, and the development of airways. Following this, the federal government continued to expand the powers of its regulatory agencies to meet the outcry from the public for increased safety in the aviation industry. In 1938 the Civil Aeronautics Act was enacted, which gave the federal government the power to set fares, determine air carrier routes, and conduct accident investigations (FAA, 2008). During this time, airlines operated with guaranteed profitability, but did so while being controlled as if they were public utilities (Robson, 1998). With government control regarding access to routes, entrants to the industry, and passenger fares, the aviation

industry was free of competition, but progress in the industry slowed dramatically as federal oversight continued to increase (Robson, 1998).

Realizing the economic inefficiency of the aviation industry, President Carter's chief economist, Alfred Khan, made an effort to deregulate the aviation industry in 1978 (Public Broadcasting Service, 2000). This effort was successful and, within a year, airlines were free to set fares and determine route structures (FAA, 2008). Due to this, the aviation industry began to flourish, and from 1978 to 1998 the number of airlines in the United States more than doubled (Smith & Cox, 2008). However, at the same time as this drastic increase in competition, the government began to increase safety and security regulations in the industry. Those regulations resulted from issues such as: increasing threats of terrorism in aviation, public pressure following several high profile accidents, increasing labor protection, and increasing environmental consciousness (Jenkins, Marks, & Miller, 2011). Overall, the drastic expansion of regulations increased airline fixed costs relating to labor, technology, and government taxation (Jenkins, Marks, & Miller, 2011). The government inflation of fixed costs became a major controversy in an aviation industry now operating on marginal profits due to hyper-competition from deregulation (Smith & Cox, 2008).

Presently, government regulation continues to expand in the aviation industry. As accidents occur, security threats continue, and environmental concerns increase, the federal government continues to implement new regulations aimed at protecting passengers that utilize the aviation industry (Jenkins, Marks, & Miller, 2011). Although there is an extensive cost analysis conducted before implementing regulations in the aviation industry, many analysts argue the cost/benefit analysis of proposed regulations

by the federal government is often not accurate. If true, this means regulations pose a significant financial burden to the airlines while providing minimal improvements to safety and security (Stellin, 2013). This controversy has resulted in a significant debate regarding federal regulation's true impact on airline safety and security when measured against the financial impact of the regulations on airline vitality in the hyper-competitive aviation industry.

<div align="center">**Significant Regulatory Disputes in the 21st Century**</div>

High Taxation

A report from the American Aviation Institute (AAI) highlights the impact of taxation on the aviation industry from 2009 to 2011. As stated in the report, "Consumer regulations introduced by the current administration (since 2009) have added $1.7 billion per year in airline cost, or $5.39 per round-trip itinerary." (Jenkins, Marks, & Miller, 2011, p. 4). As of 2013, the rate of taxation is estimated at $61 per $300 ticket sold, or 20% of total cost, (Stellin, 2013; Department of Transportation, 2013). Additionally, proposed tax hikes in President Obama's 2014 budget are expected to increase the rate of taxation to $75 per $300 ticket sold (Stellin, 2013). Such tax hikes are expected to cause a reduction in airline passengers by 17.7 million (Jenkins, Marks, & Miller, 2011). If this estimate holds true, the number of enplanements in the United States for 2014 will be equal to the number of enplanements in the year 2000, approximately 710 million (FAA, 2012). This decline in passenger service contributes to airline fleet reductions, which have been declining since 2004 (FAA, 2010). This is evidenced by Table 1.

Table1

Commercial Fleet Reductions

U.S. COMMERCIAL AIR CARRIERS AIRCRAFT FLEET CALENDAR YEARS 2002 – 2009

Legend: Mainline-AC, Cargo, Regionals

Year	Mainline-AC	Cargo	Regionals
2002	4,118	1,056	2,499
2003	4,022	993	2,549
2004	4,024	993	2,747
2005	3,906	1,001	2,830
2006	3,898	1,012	2,784
2007	3,983	974	2,787
2008	3,795	960	2,700
2009	3,666	854	2,612
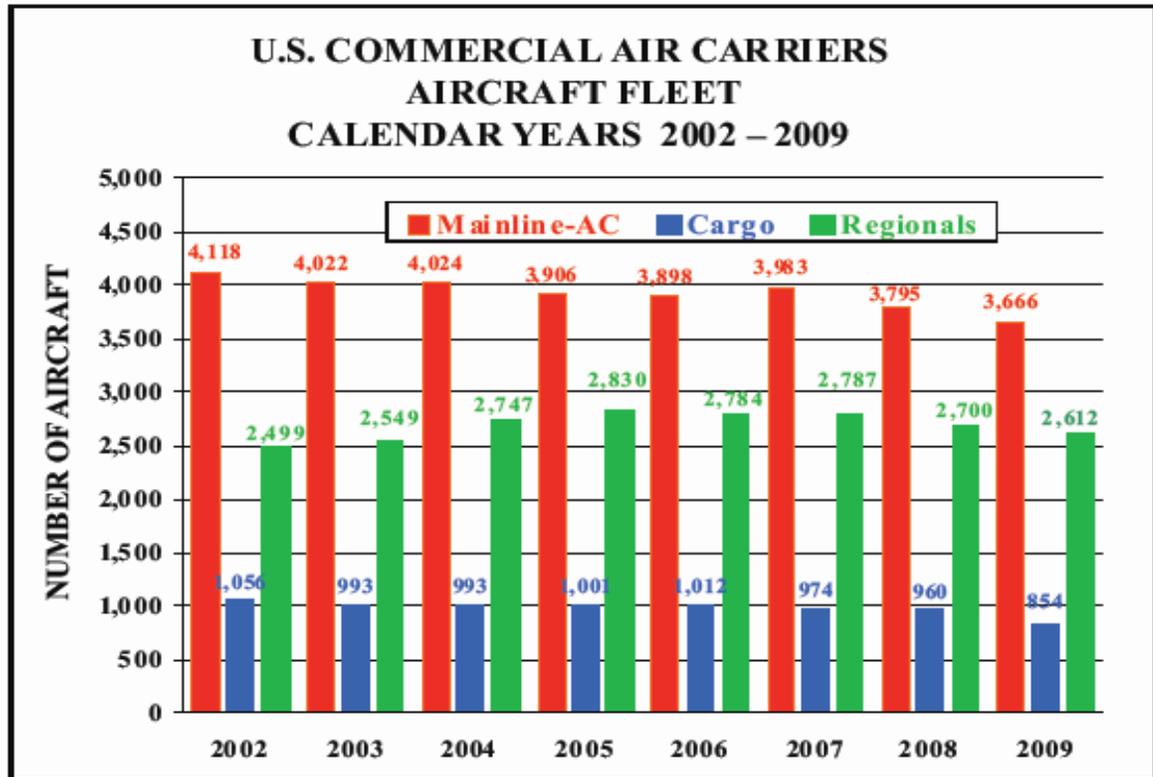
Note. From FAA Aerospace Forecast: Fiscal Years 2010-2030*, 2010*, Federal Aviation Administration

Overall, many analysts believe these reductions indicate a venerable aviation industry that is increasingly devastated by government taxation (Delta Airlines, 2013; Stellin, 2013). Although this argument seems to be a clear indication of the impact of government regulation on airlines, the federal government is quick to counter. They say the dramatically reduced growth in aviation, from an average 20 million passenger per year increase from 1970 to 2000 down to 1 million passenger average growth from 2000

to 2012, is the result of airline issues following Sep 11, 2001, increasing fuel prices since

2003, and the economic recession of 2008 (FAA, 2010). Furthermore, they state that the

rate of taxation is necessary for the safe and efficient operation of the aviation industry

(Department of Transportation, 2013; United States Goverent Accountability Office,

2011). The claims for safety seem readily supported by the steady fall of accident rates

since government regulation began in the late 1920s. A report in *The Desert News* by

James Gattuso (July 2013) states:

> In both 1928 and 1929, the overall accident rate was about one per every million
>
> miles flown. In today's system, an accident rate of that magnitude would result in
>
> nearly 7,000 fatal accidents each year. From that point on, though, the accident
>
> rate dropped rapidly and consistently. In the 1970s, there were 46 fatal accidents
>
> involving U.S. carriers. By the 1990s, the total dropped to 30. In the past 10 years,
>
> there have been nine.

This decline clearly shows a benefit of regulation through history; however,

analysts are quick to point out that accident reduction has exponentially slowed in recent

years. Per the National Transportation Safety Board (NTSB), "major accident" is defined

as, "a Part 121 aircraft was destroyed, or there were multiple fatalities, or there was one

fatality and a Part 121 aircraft was substantially damaged." When evaluated by NTSB

standards, the average major accident rate from 1997 to 2011 remained consistent, with a

slight spike in 2001 following 9/11, and in 2008 following the Colgan crash in Buffalo,

New York (NTSB, 2012). This is evidenced by Table 2.

Table 2

Aviation Accident Statistics

Year	Accidents				Aircraft Hours Flown (Millions)	Accidents (Major)
	Major	Serious	Injury	Damage		
1992	3	3	10	2	12.36	0.243
1993	1	2	12	8	12.106	0.079
1994	4	0	12	7	13.124	0.305
1995	3	2	14	17	13.505	0.222
1996	6	0	18	13	13.746	0.436
1997	2	4	24	19	15.838	0.126
1998	0	3	21	26	16.817	0
1999	2	2	20	27	17.555	0.114
2000	3	3	20	30	18.299	0.164
2001	5	1	19	21	17.814	0.281
2002	1	1	14	25	17.29	0.058
2003	2	3	24	25	17.468	0.114
2004	4	0	15	11	18.883	0.212
2005	2	3	11	24	19.39	0.103
2006	2	2	7	22	19.263	0.104
2007	0	2	14	12	19.637	0
2008	4	1	8	15	19.098	0.209
2009	2	3	15	10	17.604	0.114
2010	1	0	14	14	17.739	0.056
2011	0	0	19	12	17.756	0

Note. From *Aviation Statistical Reports, 2012*, National Transportation Safety Board

The debate over taxation in the aviation industry is wholly dependent upon how experts interpret the accumulated data to date. Economic indicators can be used to argue the necessity of regulatory reform, but there are far too many variables to directly correlate a failing industry to one factor. Furthermore, the overall value of regulatory

action depends on the definition of success being used by the evaluator. Is the Department of Transportation's (DOT) initiative to reduce passenger fatalities from 7.4 per 100 million travelers to 6.2 per 100 million travelers from 2010-2018 worth millions of dollars in increased taxation (FAA, 2013)? The DOT believes it is, but many analysts disagree. This is an evaluative disparity, and it exists in many areas of aviation regulation.

Government Fines

In 2009, the DOT began to implement vast regulations called Enhancing Airline Passenger Protections (EAPP) (Jenkins, Marks, & Miller, 2011). The EAPPs came into effect due to public pressure for a "Passenger Bill of Rights." This public pressure resulted from many horrendous experiences reported by passengers in 2007-2008 (CAPA Centre for Aviation, 2011). The resulting legislation in 2009, and updated in 2011, proposes a fine of $27,500 per incident for violations of passenger rights (Hunter, 2011). Violations include: failure to provide full fare advertising, failure to provide flight status changes, failure to notify passengers every 30 minutes of delay reasons, failure to provide passengers food and water within 2 hours of pushback, and tarmac delays over 3 hours (Jenkins, Marks, & Miller, 2011). The fine for each violation is $27,500. As displayed by the DOT when it issued a $900,000 penalty to American Eagle in 2011, a violation is issued on a per passenger basis (Hunter, 2011). Overall, the DOT has increased the amount of fines in the aviation industry, and in 2011-2012 issued $6.8 million in simple consumer protection penalties (Elliott, 2013).

Beyond the new fines for EAPP, there have been many large fines issued by the federal government in recent years. In 2012, US Airways received a $395,850 fine for

violating regulations on transportation of dangerous goods (Salac, 2012). The fine cited

12 flights, and included accepting a shipment of 10 disposable lighters, and an

improperly packaged shipment of alkali batteries (Salac, 2012). In 2010, the FAA issued

a $2.475 million fine against American Eagle for the improper calculation of baggage

weight on 39 flights (Brown, 2010). In 2012, the FAA issued $480,000 in fines to airlines

that canceled charter flights for Direct Air (US DOT, 2012). The airlines cited the fact

that Direct Air ceased operations, but the FAA has provisions that no charter may be

canceled within 10 days of departure in order to protect customers (US DOT, 2012). The

largest fine issued to date is the $24 million fine levied against American Airlines (AA)

in 2010 (Mouawad, 2010). The fine was issued in response to safety issues, but AA

argues that no passengers were in danger at any point. Furthermore, to comply with the

regulation they grounded 300 aircraft, which created "one of the largest maintenance

delays in air travel history (Mouawad, 2010)."

Critics point to the fines by the government and say they are harming airlines that

already have financial burdens to face (CAPA Centre for Aviation, 2011). Furthermore,

critics argue that "small fines" of $10,000 or less by the government often make the

affected flight lose money (Jenkins, Marks, & Miller, 2011). Large airlines are able to

handle such fines, but small start-up airlines feel a tremendous burden from such fines.

Such a burden is said to be risking the vitality of the industry the government has been

protecting. The fines and regulations in recent years are estimated to cost $300 million in

direct costs by industry experts, but the DOT says the cost will only be $150,000 due to

the offset of pubic willingness to fly and decreased accidents over time (CAPA Centre for

Aviation, 2011).

The government counters the complaints by analysts, and suggests that fines are necessary to assure compliance from airlines (NTSB, 2012; FAA, 2010). The argument again shows that regulations have progressively led to a safer industry, and part of this has been the strict stance of the government on its penalties for malfeasance (United States Governent Accountability Office, 2011). This is a strong argument that is supported by the statistics showing passengers have not experienced egregious tarmac delays, and have not been susceptible to the careless enforcement of maintenance, environmental, and safety concerns of the past (FAA, 2010). The government is clear on its stance that regulation is necessary, and the issues voiced by analysts result from a lack of understanding regarding the sensitive nature of the industry and the inability of airlines to self-regulate (FAA, 2011).

Chapter 11 Bankruptcies & Bailouts

Many economists suggest that government intervention in the natural life cycle of industry has led to hyper-competition amongst airlines (Zhang, 2010). The primary cause of this competition is government prevention of airline collapse. In efficient industry, organizations that do not maintain a competitive advantage fail. Therefore, if a company has high fixed costs, low profit margins, and is operating in a saturated market, the company will be forced out of the industry (Public Broadcasting Service, 2000). This allows competitors to maintain a profitable market position due to a resulting shift in the supply demand curve. Ergo, the airlines capacity has declined to meet the reduced demand from consumers (Khan, 2002). If this natural industry cycle were allowed to occur, then economists argue the airline industry would maintain profitability and would

cease to operate with the marginal growth seen in the 21st century (CAPA Centre for

Aviaion, 2013).

Additionally, economists argue that Chapter 11 not only sustains companies that

should fail, but also creates an unfair advantage for the ailing company. Under Chapter

11 bankruptcy, airlines are allowed to restructure their debt (McNamara, 1996). In doing

so, the airline emerges from bankruptcy with lower fixed costs. While this is intended to

allow the airline to operate profitably so that it can fully recover from its financial woes,

historically the airline reduces ticket price to gain a greater market share (Public

Broadcasting Service, 2000). This forces competitor airlines to lower their prices to

contend, but since they have not restructured their debt, the airlines struggle to remain

financially viable. This creates an industry that jumps from bankruptcy to bankruptcy, as

restructuring debt is the primary method of attaining a competitive advantage

(McNamara, 1996). Although the economics behind this argument can be readily

supported in many industries, the federal government maintains that the aviation industry

is unique, and assistance must be permitted to assure industry vitality. To exemplify this,

the government publishes many statistics regarding the economic impact of the aviation

industry on the nation. Table 3 depicts the economic impact of aviation, and Table 4

displays the gross domestic product (GDP) attributable to aviation.

Table 3

Economic Impact 2000-2009

Year	Output (Billions of $)	Earnings (Billions of $)	Jobs (Thousands)	Percent of GDP
2009	1,311.20	394.4	10,186	5.2
2008	1,437.10	432.6	11,138	5.5
2007	1,409.70	423.7	10,901	5.6
2006	1,307.80	393.5	10,149	5.4
2005	1,206.30	363.4	9,413	5.3
2004	1,106.20	333.4	8,641	5.2
2003	1,012.90	305.1	7,876	5
2002	1,003.10	301.1	7,740	4.7
2001	1,077.80	323.6	9,383	4.8
2000	1,131.00	339.5	9,891	5.2

Note. From *The Economic Impact of Civil Aviation on the U.S. Economy,* 2011, Federal

Aviation Administration

Table 4

GDP Resulting from Aviation

Impact Type	Value Added (Billions of $)	Percent of GDP
Airline Operations	150.5	1.1
Airport Operations	44.6	0.3
Civilian Aircraft Manufacturing	39.6	0.3
Civilian Aircraft Engine and Engine Parts Manufacturing	10.2	0.1
Civilian Other Aircraft Parts and Equipment	36.9	0.3
Air Couriers	40.8	0.3
Visitor Expenditures	359.3	2.5
Travel Arrangements	7.5	0.1
Subtotal - Commercial	689.3	4.9
General Aviation Operations	19.7	0.1
GA Aircraft Manufacturing	12.1	0.1
GA Visitor Expenditures	7.1	0.1
Subtotal - General Aviation	38.9	0.3
Total Impact	728.2	5.2

Note. From *The Economic Impact of Civil Aviation on the U.S. Economy,* 2011, Federal

Aviation Administration

As demonstrated, the economic impact of aviation is immense in the United

States. Therefore, federal courts readily approve Chapter 11 filings for airlines, as the

economic consequence of not doing so greatly impacts the national economy (Public

Broadcasting Service, 2000). Since 2001, all major airlines (excluding Southwest) have

filed bankruptcy. When this happens, the airlines have been allowed to restructure under

Chapter 11, or they have been allowed to merge, which has mitigated the competitive

pricing benefits desired in the 1978 Deregulation Act (Zhang, 2010). Although the

government will not allow the aviation industry to falter, it is being allowed to

consolidate in an attempt to eliminate the devastating effects of hyper-competition in the economically sensitive industry (Khan, 2002; FAA, 2011).

The debate regarding the government subsidization of the aviation industry is a contentious issue. Many say that the federal courts' allowance of Chapter 11 reorganization and mergers has eliminated the potential for free market economics to operate in the industry. Economists argue that the aviation industry is now a subsidized oligopoly, which has resulted in greater inefficiency and higher ticket prices. Combined, these factors have stagnated growth in airlines, and led to an industry no longer capable of achieving sustained profitability (Bhaskara, 2011; Jenkins, Marks, & Miller, 2011). The government counters that supporting the aviation industry has prevented a greater economic crisis in the United States, and has allowed recovery to take place at a greater pace (FAA, 2011).

Literature Summary

With the debate raging between industry analysts and the government, it is hard to know what path the aviation industry should take for recovery. Economists are arguing on standard principles, but many agree that aviation is not a standard industry. The economic impact of the industry, combined with its inherent risk, has led to the regulatory environment we have today. However, many of the modern regulations are argued to be reactions to public sentiment, and often the regulations offer little benefit for the egregious cost they impose on the industry. The fact that number of major incidents has shown no significant decrease in the past 16 years lends credence to the idea that regulations cost more than they are worth. However, one cannot deny the net positive effect of regulation throughout the history of the industry. Therefore, one could argue the

economic impact is not only justified, but conversely, has been the catalyst for the industry's success.

In order to find the true impact of regulation on airlines, one must look beyond the outside observers, and directly ask professionals in the industry about the overall value of regulation. Is regulation the catalyst that has allowed the industry to flourish, or are government regulations limiting an industry that would otherwise be profitable without intervention? This is the primary question posed in this study.

Purpose

Airlines presently operate on marginal returns. Analysts agree these returns are a factor of hyper-competition coupled with inherently high fixed costs. Due to the present marginal returns for airlines, the perceived insignificance of some government regulations provides a catalyst for debate when compared to the exorbitant costs that are passed on through taxation. Therefore, this study is designed to review the perceived benefit of government regulations by safety and security experts working at 14 CFR Part 121 carriers classified as national airlines, regional airlines, major airlines, and cargo carriers. The expert's perceived benefit of regulation will be measured against the proposed regulations cost, as determined through evaluation of congressional reports. When analyzed, the data collected will display federal regulation's true impact on safety and security in airlines operating within the United States, and it will show the financial impact regulations have on the aviation industry. This information is essential in determining whether regulatory reform is a critical issue in the aviation industry.

Primary Research Questions

1) To what degree, as stated in reports to Congress, do governmental regulations affect the profitable operation of commercial airlines in the United States?

2) As perceived by airline regulatory experts, how effective are comprehensive safety regulations in mitigating perceived risk in the dynamic aviation industry?

3) As perceived by airline regulatory experts, how responsive is the United States government to the aviation industry's insight when widespread legislation is being proposed?

4) As perceived by airline regulatory experts, are government bailouts and Chapter 11 bankruptcies beneficial to the aviation industry?

CHAPTER II: METHODOLOGY

The goal of this study was to discover the perceived benefit of regulations when assessed against their proposed cost to airlines. To achieve this, a qualitative method of research was required. As shown in the literature review, a quantitative approach in determining the impact of government regulation would have been ineffective. The significant number of variables present in the aviation industry would require the use of a complex dynamic evaluation model. This modeling process would help to determine the mutual influences of all factors affecting airline profitability (Coyle, 2000). Once all quantifiable factors affecting airline profitability had been evaluated, a determination could be made regarding the governmental impact on airline profitability. However, this approach cannot account for variables that do not have a numerical value (Coyle, 2000). Political or social anomalies that impact airline profitability would drastically bias the statistical data produced by simple industry analysis over time (Coyle, 2000). Therefore, any conclusion drawn includes a research bias in data interpretation.

Due to the inability of quantitative research to assess the dynamic variables affecting airline profitability, a qualitative research method was used in this study. Qualitative analysis of this subject draws upon the feelings, experiences, and observations of the evaluated population (Xavier University , 2012). This eliminates the need for rigidly defined variables, and allows an in depth analysis of the impact of government regulations through analysis of subjective information rooted in industry expertise. To effectively use qualitative data, the expertise/accreditation approach of evaluation research was utilized. This form of evaluation draws on expert opinions to determine the effectiveness of a policy or program (Preskill & Russ-Eft, 2005, p. 102).

To discern the opinions of the study population, themes were derived from collected data. Once obtained, the themes were analyzed to determine the research population's collective perception regarding the government impact on airline profitability (Xavier University , 2012).

To answer the research questions posed by this study, airlines operating under similar FAA regulations were selected, bias was reduced by selecting airlines with diverse operational capabilities, and surveys were distributed to determine expert opinions regarding the impact of regulation. To assure the study was compliant with ethical standards, research approval was attained from Middle Tennessee State University Institutional Review Board (IRB) before surveys were sent to airline regulatory departments. A copy of the IRB approval certificated is located in Appendix A.

Selection of Research Population

The research population was chosen to be diverse, experienced, and operating under similar regulatory constraints. The first goal in selecting a research population was to avoid the bias of analysts and government employees. Also, a population experienced with the first line consequence of regulation was essential. Therefore, industry experts operating in the safety/regulatory compliance departments of airlines were chosen. These individuals have an intimate knowledge of government regulations, and they understand the effect these regulations can have on the safety and profitability of airlines. Furthermore, safety/regulatory personnel operate to maximize profits while maintaining a strict safety standard that facilitates public confidence in the airline. This mutual appreciation of safety and profitability eliminates business analyst's bias toward pure profit margins, and it eliminates the government's bias toward public safety.

The second goal in determining a research population was to select a group operating under similar regulations. To achieve this, only airlines operating under 14 CFR Part 121 were selected for the study. Part 121 is a form of air carrier certification that "determine(s) whether an applicant is able to conduct business in a manner that complies with all applicable regulations and safety standards and allows (airlines) to manage the hazard-related risks in (their) operating systems and environment." Operating under Part 121 certification means that all carriers are subject to the same regulatory standard. This means encumbrances detailed in 14 CFR Part 121 apply to the airlines under this regulation, regardless of their size or operational objectives.

To assure a bias was not created by airline size or operational objectives, a diverse group of participants were required. To achieve diversity, participant airlines were chosen from four groupings. Three were derived from the DOT "Air Carrier Groupings". These groupings are arranged dependent upon airline operating revenues (Bureau of Transportation Statistics, 2012). The fourth grouping was cargo carriers. Though cargo carriers are not listed in the DOT "Air Carrier Groupings" report, their distinct operational objective was essential to recognize in assessing group diversity. The four grouping criteria used in the study are as follows:

1. Major Air Carrier: Operating revenues greater than $1 billion annually

2. National Air Carriers: Operating revenues between $100 million and $1 billion annually

3. Large Regional Air Carrier: Operating revenues between $20 million and $100 million

4. Cargo Air Carrier: Airline that operated using only freight aircraft.

After grouping the airlines into the four distinct categories, a set number of airlines were chosen from each group. The numbers of airlines chosen were: ten major, ten national, five regional, and five cargo carriers. The selection of specific airlines was based on the specified criteria of operating under 14 CFR Part 121, and final selections were based on the accessibility of contact information for the airlines regulatory departments. Of the airlines indicated on the IRB application, five were found to not have valid e-mail addresses, and the airlines denied requests for updated information when contacted by phone. That brought the participant group down to nine major, nine national, two regional, and five cargo carriers. Although the regional category was small, there were not substitutes that fit the criteria of the study, so it was determined to send the survey to the twenty-five selected airlines. The airlines contacted were:

- Major Airlines: Virgin America, Alaska Air, US Airways, American Airlines, Delta Airlines, Hawaiian Airlines, SkyWest, Spirit Airlines, Southwest Airlines

- National Airlines: Sun Country, Air Wisconsin, North American Airlines, Pinnacle, Go Jet, Pacific Southwest Airlines, Miami Air International, Mesa Airlines, Omni Air International

- Regional Airlines: Tradewinds Airlines, Cape Air

- Cargo Carriers: UPS, FedEx, Centurion Air Cargo, Polar Air Cargo, ABX Air

Research Instrument

A survey was utilized in the collection of data for this study. The survey was created on the web based platform SurveyMonkey.com. The survey was introduced to the research population via e-mail. E-mail addresses were attained through public forums or via phone from airline personnel. The email indicated the goal of the study, the length of

the survey, and the value of participation. Additionally, a link to the survey was provided in the e-mail. Once the respondent clicked the link, a voluntary participation screen appeared (Appendix B). The respondent was informed that participation would be voluntary, the survey could be terminated at any time, no penalty would be assessed for failing to complete the survey, and no identifying information would be used in the study. Additionally, the respondent was informed clicking "next" was a voluntary agreement to participate in the survey. The survey consisted of 21 questions, and can be seen in Appendix C. The questions included multiple choice, Likert scale, and fill in the blank formats. The first three questions were demographic questions. Demographic information was required to assess industry experience, regulatory knowledge, and the airline category. The airline category was a fill in the blank question and was used to verify airline diversity within the study.

Following the demographic questions, five regulations were presented to the respondents. The five regulations had brief conceptual introductions. The description included the estimated cost associated with the regulation, as annotated in government reports. For each of the regulations, the respondent was presented two questions, both using a Likert Scale for responses. The questions assessed if regulations were important for airline operations, and asked if the estimated cost seemed to be in line with the benefits posed by increased regulation. The third section of the survey assessed the overall perception of government regulation of the airlines. Eight questions were presented. All questions used a Likert Scale, and the questions covered general perceptions regarding the effects of regulation on the airline industry. Finally, the survey concluded with a Likert Scale question to better gauge the respondents' perception of

regulation. The question also asked the respondent to rate the perceived burden of regulation on the aviation industry.

In the survey, each question was designed to answer the primary research questions posed in this study. Question five, seven, nine, eleven, thirteen, fourteen, fifteen, and sixteen answered primary research question one by addressing the perceived impact of regulation on airline profitability. Question four, six, twelve, and seventeen answered primary research question two by addressing the ability of regulations to increase airline safety. Question fifteen, sixteen, eighteen, nineteen, and twenty answered primary research question three by determining the government's inclusion of aviation experts in regulatory decisions. Question eight, nine, sixteen, and nineteen answered primary research question four by addressing the benefit of government sponsored bailouts.

The survey was conducted over a three week period. Initially, the survey was sent on 21 August, 2013. The initial transmission of the surveys elicited eight responses. All eight responses occurred during the first three days after the e-mail was sent. Noting a lack of responses to the initial e-mail, a second request for participation was sent on 09 Sep, 2013. This email included a formal suspense date for the survey of 14 Sep, 2013. Following the second transmission of the surveys, three additional responses were received. This resulted in a total of eleven responses, four major airlines, four national airlines, two regional airlines, and one cargo carrier. Based on the diversity of respondents, it was determined that ample data was available to conduct a valid study.

CHAPTER III: ANALYSIS OF RESULTS

The first three questions of the survey were critical to the validity of the study. They established the experience and diversity of the subject population. The collective experience of the study population was assured by question one and two. Question one asked how long the respondents have worked in a regulatory department in the aviation industry, and question two asked for total years experience in the aviation industry.

To determine the average experience of participants, the minimum years of experience for their selected category was multiplied by the number of respondents. The totals for all categories were added together, and the final value was divided by the number of participants. This method produced the minimum average experience of respondents. Question one had a wide breadth of answers, but the average regulatory experience of respondents was over 9.9 years, as seen in Table 5. Additionally, question two showed the average industry experience of respondents to be over 16 years, as seen in Table 6.

Table 5

Aviation Regulation Experience

Years Experience	Frequency of Responses	Minimum Experience	Frequency x Minimum Experience
0-2	1	0	0
3 to 5	2	3	6
6 to 10	3	6	18
11 to 20	2	11	22
Over 20	3	21	63
		Total	109
		Average	9.91

Table 6

Aviation Industry Experience

Years Experience	Frequency of Responses	Minimum Experience	Frequency x Minimum Experience
0-2	1	0	0
3 to 5	0	3	0
6 to 10	0	6	0
11 to 20	3	11	33
Over 20	7	21	147
		Total	180
		Average	16.36

To further mitigate the potential of bias, only 14 CFR Part 121 air carriers were chosen for the study. This assured all participants operated under similar regulatory constraints. Additionally, survey question three classified airlines in four categories, major carriers, national carriers, regional carriers, or cargo carriers. The categories were used to diversify the sample population, which assured a financial or operational bias was not present in the study. The classification of major, national, and regional airlines was

based on the operating revenue of participant airlines, and additionally demonstrated

diversity through the airlines expanse of operation. The classification cargo carrier was

based on a distinct airline operation, and showed diversity through that characteristic. As

seen in Table 7, survey question three demonstrated financial and operational diversity in

the sample population.

Table 7

Airline Participation by Category

Airline Category	Frequency of Responses	% Surveyed
Major	4	36.36
National	4	36.36
Regional	2	18.18
Cargo	1	9.09

Overall, the demographic section indicated that the level of diversity mitigated the

possibility of bias, and the industry experience of the participant group validated the use

of the expert accreditation approach in analyzing the primary thesis questions.

Research Question 1: Government Impact on Airline Profitability

Survey question fourteen was designed to answer whether participants believed

regulations impact the profitability of airlines in the United States. Although the question

was direct, it did not indicate whether this was a positive or negative impact. The

rationale for a non-directional response was to eliminate bias, and simply assess if

participants believed an impact on profitability could be linked to the government. The

question posited that regulation does impact profitability, and it provided a Likert scale

for responses. The Likert scale allowed participants to respond: strongly disagree, disagree, neutral, agree, or strongly agree. Each answer had a numeric rating, from 1 (strongly disagree) to 5 (strongly agree), programmed into the survey for analysis. The average numerical rating for this question was 4.55, indicating a strong agreement that government regulations impact the profitability of airlines, as seen in Table 8.

Table 8

Regulations Impact the Profitability of Airlines

Survey Answers	Likert Answer Value	Frequency of Responses	% Surveyed
Strongly Disagree	1	0	0
Disagree	2	0	0
Neutral	3	0	0
Agree	4	5	45.45
Strongly Agree	5	6	54.55
Average Value	**4.55**		

Once regulatory impact was determined, it was necessary to assess directional questions to understand if regulation has a positive or negative effect on airline profitability. To make this determination, questions five, seven, eleven, and thirteen were analyzed. The questions were designed to assess the cost of several regulatory components in the aviation industry. To achieve this, each question was prefaced with a brief summary of Congressional reports. The preface detailed the cost and benefit of each regulation, as determined by the government. Following the preface, respondents were asked to rate the cost of the regulation on a Likert scale. Likert responses varied to suit the question, but all scales had a numeric value associated with the responses. The

numeric values ranged from 1 (regulations cost was very reasonable) to 5 (regulations cost was very unreasonable).

The average numeric value was derived for each question, and this was used to determine whether regulations had a positive or negative impact on airlines. Question five had a numeric average of 4.00, indicating regulatory cost was perceived to be unreasonable, as seen in Table 9.

Table 9

Cost Posed by Taxation

Survey Answers	Likert Answer Value	Frequency of Responses	% Surveyed
Very Low	1	0	0
Low	2	0	0
Neutral	3	4	36.36
High	4	3	27.27
Very High	5	4	36.36
Average Value	**4.00**		

Question seven had a numeric average of 3.45, indicating the respondents believe regulation increasing rest periods posed a slightly unreasonable cost to airlines, as seen in Table 10.

Table 10

Expense from Increased Rest Periods

Survey Answers	Likert Answer Value	Frequency of Responses	% Surveyed
Very Reasonable	1	1	9.09
Reasonable	2	2	18.18
Neutral	3	0	0
Unreasonable	4	7	63.64
Very Unreasonable	5	1	9.09
Average Value	**3.45**		

Question eleven had a numeric average of 4.45, indicating the cost posed by government

fines is perceived to be between high and excessively high, as seen in Table 11.

Table 11

Government Imposed Fines

Survey Answers	Likert Answer Value	Frequency of Responses	% Surveyed
Excessively Low	1	0	0
Low	2	0	0
Neutral	3	0	0
High	4	6	54.55
Excessively High	5	5	45.45
Average Value	**4.45**		

Question thirteen had a numeric average of 4.73, indicating the cost posed by the 1500

Hour Rule is perceived to be very unreasonable, as seen in Table 12.

Table 12

1500 Hour Rules Associated Cost

Survey Answers	Likert Answer Value	Frequency of Responses	% Surveyed
Very Reasonable	1	0	0
Reasonable	2	0	0
Neutral	3	0	0
Unreasonable	4	3	27.27
Very Unreasonable	5	8	72.73
Average Value	**4.73**		

When all of the values for questions 5, 7, 11, and 13 were averaged, the response to regulatory specific cost had a numeric value of 4.16, indicating that regulatory cost is perceived to be unreasonable. Therefore, a conclusion can be drawn that regulations are perceived to impact profitability, and, that this impact is perceived to be negative in nature. To assure the negative perception of regulatory impact was not limited to the specific examples provided in questions five, seven, eleven, and thirteen, analysis of question fifteen and sixteen is required.

Question fifteen and sixteen were designed to provide a final validation of all data. The questions were designed to broadly assess the nature of regulatory impact, and assure there is consistency when compared with the regulatory specific examples. This assures accuracy of responses, and confirms that no bias resulted from negative perception of a specific regulation. Question fifteen and sixteen both made positive statements regarding the impact of regulation on airline profitability. The affirmative tone assured that if the question created bias, it would lead to a contradiction in the final data. Question fifteen stated that safety regulations are often worth the cost posed to airlines.

Respondents were provided a Likert scale with the responses: strongly disagree, disagree, neutral, agree, and strongly agree. Each response was given a numeric value from 1 (strongly agree) to 5 (strongly disagree). The average value was 3.82; indicating respondents disagreed with the statement, as seen in Table 13.

Table 13

Regulations Are Worth the Cost Posed to Airlines

Survey Answers	Likert Answer Value	Frequency of Responses	% Surveyed
Strongly Agree	1	0	0
Agree	2	1	9.09
Neutral	3	2	18.18
Disagree	4	6	54.55
Strongly Disagree	5	2	18.18
Average Value	**3.82**		

Question sixteen stated that regulations contribute to the financial stability of airlines. Each response was given a numeric value from 1 (strongly agree) to 5 (strongly disagree). The average value was 4.27; indicating respondents disagreed with the statement, as seen in Table 14.

Table 14

Regulations Contribute to the Financial Stability of Airlines

Survey Answers	Likert Answer Value	Frequency of Responses	% Surveyed
Strongly Agree	1	0	0
Agree	2	0	0
Neutral	3	2	18.18
Disagree	4	4	36.36
Strongly Disagree	5	5	45.45
Average Value	**4.27**		

When all of the values were averaged, the response to general regulatory cost had a

numeric value of 4.05, indicating the regulatory impact is believed to be negative to

airline profitability. This confirms the perception gained from the specific regulatory

examples.

The analysis of research question one clearly indicates that survey participants

believe regulations impact the profitability of airlines. Through specific regulatory

evaluation, this was found to be a negative impact. When checked against general

perceptions of the impact on airline profitability, a negative perception was again

indicated. Due to the design of the survey, any question bias, or general confusion, should

have resulted in a contradiction of general and specific perceptions. To assess

inconsistencies or confusion, the average values produced from each section can be

compared. The specific regulatory examples produced an average value of 4.16. The

general perception statements produced an average value of 4.05. This consistency

validates the respondent's perception that government regulation impacts airline

profitability in a negative manner.

Research Question 2: Ability of Regulations to Increase Airline Safety

Survey questions four, six and twelve were designed to assess specific regulatory functions and assess their impact on safety within the airline industry. Each question was prefaced with a brief introduction of federal legislation, and it detailed the proposed legislations effect on the aviation industry. The preface was followed by a question worded in a neutral tone. All questions used a Likert scale with five possible responses. The possible responses were worded in accordance with the specific regulation in question, but they all included the phraseology: extremely insignificant, insignificant, neutral, significant, and extremely significant. The numeric values associated with each response were 1 (extremely significant) through 5 (extremely insignificant).

Question four asked about improvements to the aviation industry through taxation. Although this question is very broad, specific examples of government improvements were provided in the preface. The examples listed were increased security, facility improvements, and funding of the FAA. When responses were analyzed by numerical value, the average was 2.8, as seen in Table 15. This indicated a slightly positive opinion toward the significance of taxation within the aviation industry.

Table 15

Impact of Taxation on the Aviation Industry

Survey Answers	Likert Answer Value	Frequency of Responses	% Surveyed
Extremely Significant	1	0	0
Significant	2	6	54.55
Neutral	3	2	18.18
Insignificant	4	2	18.18
Extremely Insignificant	5	1	9.09
Average Value	**2.82**		

Question six asked if regulation increasing rest periods caused a correlative increase in

safety. When responses were evaluated by numerical value, the average was 3.18, as seen

in Table 16. This indicated a slightly negative opinion toward the effect of increased rest

periods on airline safety.

Table 16

Increased Rest Periods Effect on Airline Safety

Survey Answers	Likert Answer Value	Frequency of Responses	% Surveyed
Extremely Significant	1	0	0
Significant	2	3	27.27
Neutral	3	3	27.27
Insignificant	4	5	45.45
Extremely Insignificant	5	0	0
Average Value	**3.18**		

Question twelve asked if the 1500 hour rule improves safety in the aviation industry.

When responses were evaluated by numerical value, the average was 4.27, as seen in

Table 17. This indicates a very negative opinion regarding the effect of the 1500 hour

rule on airline safety.

Table 17

Impact of the 1500 Hour Rule on Safety

Survey Answers	Likert Answer Value	Frequency of Responses	% Surveyed
Extremely Significant	1	0	0
Significant	2	0	0
Neutral	3	0	0
Insignificant	4	8	72.73
Extremely Insignificant	5	3	27.27
Average Value	**4.27**		

The review of the three regulations leads to an average response value of 3.42.

This indicates that a slightly negative opinion would exist if the respondents were asked

about the impact of regulation on airline safety. To verify this response, question

seventeen stated that government regulations are essential to safety within commercial

aviation. A Likert scale was used to collect responses. The respondents could choose

from the following options: strongly disagree, disagree, neutral, agree, or strongly agree.

Each question had a numerical value from 1 (strongly agree) to 5 (strongly disagree).

Upon evaluation, the average value was found to be 3.36, as seen in Table 18.

Table 18

Regulations are Essential to Safety

Survey Answers	Likert Answer Value	Frequency of Responses	% Surveyed
Strongly Agree	1	0	0
Agree	2	2	18.18
Neutral	3	4	36.36
Disagree	4	4	36.36
Strongly Disagree	5	1	9.09
Average Value	**3.36**		

The respondent's answers regarding specific regulations impact on safety mirrored the response regarding the general question regarding regulatory impact on safety. This is evidenced by the numerical averages of the general and specific question, 3.36 for the general opinion, and 3.42 for opinion based on specific examples. Together, the responses indicate a slightly negative perception of regulations' impact on safety in aviation.

Research Question 3: Government's Inclusion of Experts in Regulatory Decisions

In the previous analysis of question fifteen and sixteen, it was found that regulation adversely impacted profitability in the aviation industry. Safety regulations were found to not have an equitable return given the cost, and regulations were found to adversely impact the financial stability of airlines. Given this opinion, one can derive that perhaps industry experts are not satisfactorily included in regulatory decisions governing airlines. If expert analysis were adequately utilized in the construction of regulations, one would expect them to respond more positively toward the regulation of the aviation industry. To assure this is an accurate theme to derive from the data, question nineteen

asked if the government considers expert opinion before passing regulation. A Likert

scale was used, and respondents could select strongly agree, agree, neutral, disagree, or

strongly disagree. Each answer was assigned a numeric value from 1 (strongly agree) to 5

(strongly disagree) to aid in evaluation. The average rating was 4.00, indicating that the

experts do not believe the government considers expert opinion before making regulatory

decisions, as seen in Table 19.

Table 19

The Government Considers Expert Opinion Before Passing Regulations

Survey Answers	Likert Answer Value	Frequency of Responses	% Surveyed
Strongly Agree	1	0	0
Agree	2	0	0
Neutral	3	3	27.27
Disagree	4	5	45.45
Strongly Disagree	5	3	27.27
Average Value	**4.00**		

To assess government motivation when regulation is proposed, question eighteen

and twenty were evaluated. Question eighteen asked if regulations passed by the

government are reactionary to incidents in the aviation industry. This question should

show whether the government works proactively with industry experts to mitigate the

potential for accidents. This is important because reactionary regulation has traditionally

been impacted by public sentiment. When people are emotionally charged by a

significant event, they pressure the government to react regardless of cost. This forces the

government to overlook the objective cost-benefit analysis supported by industry experts,

and it prompts the government to use a cost-effectiveness analysis based on the value of immeasurable variables, like human life. Additionally, when implemented reactively, regulations focus on comprehensive change based on event outcome, and this "allows few distinctions based upon track record in the face of outcomes (Hudson, 1999, p. 8.10)." This means airlines can be greatly impacted by regulation spawning from an anomalous accident.

Question eighteen states that regulations are reactionary to incidents in the airline industry. A Likert scale was used to collect responses, and respondents could select strongly agree, agree, neutral, disagree, or strongly disagree. To assess the outcome, a numeric value from 1 (strongly disagree) to 5 (strongly agree) was used. The average response was calculated, and a numeric value of 4.91 resulted, as seen in Table 20. This value shows that participants strongly believe that regulations are reactionary to incidents.

Table 20

Regulations are Often Reactionary to Incidents

Survey Answers	Likert Answer Value	Frequency of Responses	% Surveyed
Strongly Agree	5	10	90.91
Agree	4	1	9.09
Neutral	3	0	0
Disagree	2	0	0
Strongly Disagree	1	0	0
Average Value	**4.91**		

Question twenty addressed the possibility that the government is motivated by public

pressure when proposing new legislation. Such motivation would cause the government

to use a cost-effectiveness approach in analyzing the benefit of legislation, which could

explain the participants' opinion that the government does not heed industry input when

initiating regulatory measures. To assess if the government is affected by public

sentiment, question twenty stated that, before developing regulation, the government

looks past public sentiment to assure industry vitality. A Likert scale was used to collect

responses. The responses were assigned a numeric value for 1 (strongly agree) to 5

(strongly disagree). The average numeric value was 4.36, indicating that participants

believe public sentiment does influence the regulatory actions taken by the government,

as seen in Table 21.

Table 21

Government Looks Past Public Sentiment to Assure Industry Vitality

Survey Answers	Likert Answer Value	Frequency of Responses	% Surveyed
Strongly Agree	1	1	9.09
Agree	2	0	0
Neutral	3	0	0
Disagree	4	3	27.27
Strongly Disagree	5	7	63.64
Average Value	**4.36**		

The analysis of questions fifteen, sixteen and nineteen indicates that participants

do not believe industry opinion is fully considered before government regulations are

passed. The analysis of question eighteen and twenty shows a common belief that

regulatory decisions are reactionary to incidents, and influenced by public opinion. The

participant's beliefs would indicate the government is using a cost-effectiveness approach

to regulation, which often leads to a high valuation of quantitative variables. This would

contradict the cost-benefit analysis used by industry experts, and demonstrate why the

participant's feel ample consideration is not given to industry opinion prior to the

enactment of regulation.

Research Question 4: Benefit of Government Bailouts and Chapter 11 Bankruptcies

Research question one demonstrated that government regulations negatively

impact the aviation industry. One aspect not evaluated in that analysis was the impact of

bailouts and Chapter 11 bankruptcies on the aviation industry. This regulation was not

included in this evaluation due to the inherent bias associated with financial subsidization

by the federal government. Many airlines have remained in business though

subsidization, so emotion might lead respondents to favor this legislation regardless of

the impact on the entirety of the aviation industry. Due to the unique impact of this

policy, a determination was made to evaluate it as an individual component of

government impact on airlines in the United States.

Question eight and nine were used to evaluate if bailouts and Chapter 11

bankruptcies pose a benefit to the aviation industry. The two questions were prefaced

with opposing arguments concerning the impact of bailouts and Chapter 11 bankruptcies

on the aviation industry. The government's rationale for industry subsidies and analyst's

argument against these subsidies were presented. Following this preface, the respondents

were presented two statements. Both questions used Likert scale responses, but answer

choices varied to suit the theme of the question. Both answer banks were analyzed

numerically on a scale from 1 to 5 to derive the common opinion. Question eight allowed

respondents to answer that bailouts and Chapter 11 bankruptcies:

- Should be permitted for ALL airlines in financial crisis (value 1)

- Should be permitted for MOST airlines in financial crisis (value 2)

- Neutral (value 3)

- Should not be permitted for MOST airlines in financial crisis (value 4)

- Should not be permitted for ANY airlines in financial crisis (value 5)

The average numeric value was 3.36, which indicates respondents have a slightly

negative opinion regarding bailouts and Chapter 11 bankruptcies. This can be seen in

Table 22.

Table 22

Allowance of Bailouts and Chapter 11 Bankruptcies

Likert Answer Value	Frequency of Responses	% Surveyed
1	1	9.09
2	2	18.18
3	3	27.27
4	2	18.18
5	3	27.27
Average Value	**3.36**	

Question nine allowed respondents to state the impact of bailouts and Chapter 11

bankruptcies. The respondents were allowed to state bailouts and Chapter 11

bankruptcies have:

- Extremely positive impact on competitor airlines (value 1)

- Positive impact on competitor airlines (value 2)

- Neutral (value 3)

- Negative impact on competitor airlines (value 4)

- Extremely negative impact on competitor airlines (value 5)

The average numeric value regarding the impact of bailouts and Chapter 11 bankruptcies

was 3.73, indicating that respondents perceive a slightly negative impact from bailouts

and Chapter 11 bankruptcies. This can be seen in Table 23.

Table 23

Impact of Bailouts and Chapter 11 Bankruptcies

Likert Answer Value	Frequency of Responses	% Surveyed
1	1	9.09
2	1	9.09
3	1	9.09
4	5	45.45
5	3	27.27
Average Value	**3.73**	

Overall, the analysis of bailouts and Chapter 11 bankruptcies showed a slightly

negative opinion from respondents. Although the respondents were fairly neutral on the

allowance of bailouts and Chapter 11 bankruptcies, it must be noted that six respondent

airlines utilized these policies in the past ten years. Of the respondents that answered

neutral to positive, only one had not filed Chapter 11 bankruptcy. This indicates that a

bias was present in respondent answers to question eight. However, question nine forced

respondents to look beyond the impact posed to their specific airlines, and from that perspective, their responses fit with the previous data from research question one. As denoted in research question one, specific regulations evaluated together had a numeric average of 4.16 (negative impact on airlines), and comprehensive regulatory questions derived a numeric average of 4.05 (negative impact on airlines). When question nine's value (3.73) is analyzed with the specific regulatory average (4.16), derived in research question one, the numeric result becomes 3.95. This maintains a strong correlation to the comprehensive regulatory average of 4.05. This correlation indicates that the impact of bailouts and Chapter 11 bankruptcies was an unbiased assessment by respondents, and that the negative opinion is numerically valid.

CHAPTER IV: DISCUSSION AND RECOMMENDATIONS

Research Question 1 Analysis

Research question one showed a common belief among survey participants that airlines are impacted by regulation in the United States, and that this impact has a negative correlation with the profitability of airlines. Through this determination, it can be concluded that regulation has an inherent inefficiency, and this inefficiency has been a factor in the decreased stability of the aviation industry. Regulations' negative impact on profitability suggests that the government is not accurate when conducting cost analyses prior to the implementation of new regulations. This can be more clearly seen when evaluating regulations initiated by Congress, as compared to regulations initiated by the FAA.

Regulations initiated by Congress were shown to have a highly negative impact on airline profitability. This can be accounted for by the fact that Congress most often initiates regulation in response to public criticism. Two regulations studied, the 1500 hour rule and EAPPs, showed a significant impact on airline profitability. Both regulations were initiated by Congress in response to public outcry following several notable events in the 21st century. Due to the inability of Congress to understand every industry, they must implement regulations without understanding the full impact of policy decisions on an industry. Such disconnect with the associated industry, and an emphasis on public opinion, results in cost-effectiveness studies that dramatically favor a high valuation of subjective variables.

Although the impact of FAA regulation was still perceived to be negative for airline profitability, the impact was significantly less then regulations proposed by

Congress. This is a sensible outcome given the FAA's knowledge of the aviation industry. Such knowledge affords the agency the ability to more appropriately gauge the cost-benefit of regulations. However, the predilection of the government to protect the consumer, over industry, most likely accounts for the slightly negative opinion regarding FAA regulations impact on airline profitability.

Research Question 2 Analysis

Interestingly, research question two showed a slightly negative correlation between airline safety and government regulation. In conducting the study, this research question was chosen because it correlates with the justification often used by the government for the implementation of regulation. Although regulation will always pose some cost to an industry, the benefit in safety is supposed to justify the cost. In fact, if implemented correctly, improvements in safety can often offset the cost of regulation through a reduction in accident related cost over time. This is often the rationale used to justify regulation; therefore, initial expectations indicated this research question would result in a positive opinion from experts. This would have contradicted a possible negative theme in research question one, three, and four. However, the theme of negative response persisted in the evaluation of research question two.

The negative tone in research question two was lower than any other research question, but per regulatory rationale, the tone should have been positive. However, industry experts did not see significant safety benefits from government regulation. When evaluating the deviation from expected results, an analysis of the Swiss-Cheese model is appropriate. Often, regulators propose that the more layers you add to regulation, the more difficult it is for an accident to take place. All factors must align perfectly, so the

more "cheese" you have, the more pieces must align for an accident to occur. Although this is common theory in safety, business eventually stops adding layers to the safety model because it becomes cost prohibitive. However, the government often evaluates regulation by its effect on the entirety of the industry, so individual hardship is not recognized. This difference in mentality causes the government to implement policies when the cost outweighs the perceived benefit by airlines. Such a disparity accounts for the expert's negative opinion regarding the impact of safety regulations in aviation.

Research Question 3 Analysis

Research question three showed a common belief that expert opinion is not considered when regulation is implemented in the aviation industry. Experts believe this correlates to the reactionary process of implementing regulation, and the propensity of the government to be influenced by public opinion. Such influence leads the government to react to anomalous incidents of malfeasance by airlines. In reacting to incidents, the government often uses a cost-effectiveness approach, which often results in a high valuation of subjective variables, e.g. the view that any cost is acceptable to save one life. Such ideology does not fit with the normal economic valuation used by airlines when measuring the cost to benefit ratio of regulation.

To reiterate a concept from research question one, experts had a significantly higher objection to policies that were initiated by the Congress rather than the FAA. Although the FAA consists of personnel that intimately understand the aviation industry, Congress does not possess a deep insight into the industry. Policies implemented by the FAA were seen to have a slightly negative impact on airline profitability. Conversely, regulations initiated by Congress were viewed unanimously to have a highly significant

impact on airline profitability. This indicates that expert opinion was abjectly ignored when regulation originated from Congress.

When viewed together, question one and three clearly indicate that regulators do not consider expert opinion when affecting change in the aviation industry. However, the strong opposition to regulations initiated by Congress indicates that these policies have a far greater disconnect with expert opinion. This suggests that regulatory action in the aviation industry should not originate in Congress. Instead, the FAA should originate all regulation due to the industry knowledge possessed by the agency. Although the FAA should initiate regulation within the aviation industry, the agency still needs to improve communication with airline experts to assure an accurate cost-benefit analysis is conducted, and operational variables are not overlooked.

Research Question 4 Analysis

Research question four showed a common opinion that bailouts and Chapter 11 bankruptcies have a negative impact on competitor airlines. This correlates with the view that airlines restructuring under government protection are afforded a competitive advantage over rival airlines. High technology, fuel, and labor costs lead to marginal profits when mixed with significant competition. Competition is held artificially high when capacity is maintained through government intervention. Although this is an economic reality, intervention by the government does offer an advantage to a defunct airline. Therefore, a bias supporting bailouts and Chapter 11 bankruptcies could be seen within airlines that have sustained operations through these policies.

When regulatory experts were allowed to consider the impact of bailouts and Chapter 11 bankruptcies on their airline, a bias could be seen. Airlines surviving as a

result of government intervention often responded neutrally, or favored the utilization of bailouts and Chapter 11 bankruptcies. Conversely, airlines that had not utilized government assistance favored the laissez-faire approach to economics. A laissez-faire approach would prevent government intervention, and would allow defunct airlines to fail. This would allow a natural supply/demand structure to emerge in the aviation industry.

Although a bias could be seen when experts were allowed to consider the impact of government support on their airline, this bias was eliminated when experts were forced to only assess the impact of government intervention on competitor airlines. Themes clearly indicated that bailouts and Chapter 11 bankruptcies had a negative impact on competitor airlines. This impact is a result of sustained capacity, and the allowance of defunct airlines to restructure debt while under government protection; thereby reducing fixed costs. A reduction in fixed costs allows the failing airline to gain an artificial advantage over competitors, and this advantage can be used to decrease ticket prices to increase loads. This would further increase competition, and reduce airline profitability across the aviation system. Due to this, study participants recommend that bailouts and Chapter 11 bankruptcies be denied to most airlines in financial distress.

Limitations of Research

The study was specific to 14 CFR Part 121 carriers. This limits the application of data to airlines operating under this regulation, and does not show the impact of regulation on all airlines operating in the United States. Additionally, the research population was considerably low. A lack of regional and cargo carriers operating under 14 CFR Part 121 significantly limited the size of the research population. To assure

diversity across all respondent operations, the selection of major and national airlines had to be limited to assure an excessive number from this group did not bias the research results. Although analysis could have been conducted based upon airline size, this approach was again not feasible with the low number of regional and cargo carriers. The sample population from these groups would have been too small to have any validity when analyzed on their own.

The complexity of the aviation industry also limited the ability to research this topic. A qualitative approach was selected for data analysis, due to the inability of dynamic matrices to assess all socio-economic variables impacting airline profitability. Although a qualitative approach was determined to be appropriate for analysis, the subjective nature of responses can raise questions about the validity of data. The subjective bias was mitigated through the numeric valuation of general themes against the numeric average of specific regulation. By comparing the two averages, specific regulation was determined to not create a bias regarding the cumulative opinion of regulatory experts. However, the inherent subjectivity of qualitative analysis can lead to a decreased valuation of themes derived from the research.

Recommendations

Fewer than half of the selected airlines participated in the survey. Although this only provided a sample size of eleven airlines, the diversity of the population was great enough to overcome the limited number of participants. In fact, the participant group included airlines that operate full service charters, ACMI (Aircraft, Crew, Maintenance, and Insurance) charters, cargo operations, and scheduled air carrier operations. The diversity of airlines by operation, and the diversity of airlines by revenue indicated that a

bias would not be present in the study. Therefore, it was determined that a valid study could be conducted, and the data could be used to infer if regulatory reform is necessary in the aviation industry.

Participants clearly indicate that they view regulations as having a negative impact on airlines operating under 14 CFR Part 121. This negative impact results from inefficient regulation that often spawns from poor cost to benefit analysis conducted by the government. Evaluation of data indicates that the reactionary method of regulating the industry, the failure of regulators to consider expert opinion, and the propensity for the government to regulate based on a cost-effectiveness, is a large contributor to the inefficiency of the regulations applied to airlines operating under 14 CFR Part 121. To mitigate the reactionary nature of regulation, all regulation should initiate from the FAA. Regulation initiated by Congress showed a significantly higher tendency to be affected by public sentiment. The effect of public sentiment is significantly higher in Congress due to the fact Congress operates for the interests of their constituents, not industry. Therefore, the regulation initiated by Congress has an inherent bias, which dramatically affects its interpretation of the regulatory impact on airlines.

Through analysis of the themes derived from the study, a comprehensive review of regulation should take place in the aviation industry. This review should utilize a cost-benefit analysis that will quantitatively evaluate the effect of regulations. A quantitative analysis would force regulators to place a value on all variables. Through this, a more objective determination could be made regarding the effectiveness of regulations prior to their implementation. Additionally, a quantitative approach to regulation would mitigate implementation based upon anomalous accidents. Airlines would be thoroughly reviewed

if an incident occurs, and this analysis would determine if micro (carrier specific) factors or macro (industry wide) factors must be addressed by regulators.

Recommendations for Future Research

This study would have been more effective if time had been allocated for interviews. The opinion of experts can be more clearly derived through discussion. Discussion allows a more comprehensive understanding of personal experiences that guide respondents in their answer selections. Through interviews, an increased depth could be added to the analysis of results, and this would create a more comprehensive determination as to the regulatory reform required to maximize airline profitability, while maintaining safety in the aviation industry. Future research should include more comprehensive methods of studying the expert's opinions, as this will add more substance to the results produced from the study. Additionally, the inclusion of multiple facets of the aviation industry would aid in discovering the comprehensive impact of regulation on profitability.

To more effectively evaluate the impact of regulation on the aviation industry, a study across all facets of the aviation industry could be conducted. This study focused on airlines operating under 14 CFR Part 121. To better determine the impact of regulations, a correlative study could be conducted on airlines operating under 14 CFR Part 135. This would assess the total impact posed to airlines, and would allow more thorough recommendations to be made about regulatory reform. Furthermore, to determine the net impact of regulation on the aviation industry, the study could be repeated for flight

schools, airports, repair stations, and aircraft manufacturers. Such a comprehensive study

would provide ample data to assess the impact of regulation on profitability across the

entirety of the aviation system.

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APPENDICES

APPENDIX A

IRB Approval

MIDDLE TENNESSEE
STATE UNIVERSITY

April 22, 2013

Joshua Dempsey, Wendy Beckman
Department of Aerospace
jgd2u@mtmail.mtsu.edu, wendy.beckman@mtsu.edu

Protocol Title: "The Impact of Government Policy on Airlines in the United States"

Protocol Number: 13-324

Dear Investigator(s),

The exemption is pursuant to 45 CFR 46.101(b) (2). This is because the research being conducted involves the use of survey materials, interviews or observation of public behavior.

You will need to submit an end-of-project report to the Compliance Office upon completion of your research. Complete research means that you have finished collecting data and you are ready to submit your thesis and/or publish your findings. Should you not finish your research within the three (3) year period, you must submit a Progress Report and request a continuation prior to the expiration date. Please allow time for review and requested revisions. Your study expires on April 22, 2016.

Any change to the protocol must be submitted to the IRB before implementing this change. According to MTSU Policy, a researcher is defined as anyone who works with data or has contact with participants. Anyone meeting this definition needs to be listed on the protocol and needs to provide a certificate of training to the Office of Compliance. **If you add researchers to an approved project, please forward an updated list of researchers and their certificates of training to the Office of Compliance before they begin to work on the project.** Once your research is completed, please send us a copy of the final report questionnaire to the Office of Compliance. This form can be located at www.mtsu.edu/irb on the forms page.

Also, all research materials must be retained by the PI or **faculty advisor (if the PI is a student)** for at least three (3) years after study completion. Should you have any questions or need additional information, please do not hesitate to contact me.

Sincerely,

Andrew W. James

Compliance Office
615-494-8918
Compliance@mtsu.edu

APPENDIX B

Participation Agreement

Aviation Issues: The Impact of Government Policy on Airline Profitability

Thank you for choosing to participate in this survey about the impact of government regulation on the airline industry. The survey consists of 21 questions, and will take 5 to 10 minutes to complete. The purpose of this survey is to assess the effectiveness and the value of several government regulations as perceived by industry experts. Once perceived data is gathered from industry experts, it will be measured against the predicted cost of programs, as reported to Congress in Notices of Proposed Rule-Making. In the end, this data will be evaluated to determine the true cost vs. perceived value of government policies on airlines in the United States.

Participation in this survey is voluntary and failure to participate will not result in any penalty. The responses you provide will also remain confidential and will not be used for any purpose outside of the research being performed. No personally identifiable information, including your computer's IP address, will be collected and you may discontinue the survey at any time without penalty. You may leave any question you do not wish to answer blank, and it will not affect your participation in the survey.

Questions concerning this survey and/or this research can be directed to the researcher, Joshua Dempsey, at Middle Tennessee State University by email at jgd2u@mtmail.mtsu.edu or to Dr. Wendy Beckman at Wendy.Beckman@mtsu.edu. Additional questions regarding this research or the Institutional Review Board (IRB) approval process should be directed to Middle Tennessee State University Compliance Officer Emily Born at eborn@mtsu.edu.

By clicking on the "NEXT" button below, you agree to the above terms and agree to participate in this survey.

APPENDIX C

The Impact of Government Policy Survey

Aviation Issues: The Impact of Government Policy on Airline Profitability

The following section consists of three demographic questions. This establishes airline size and professional experience of the participant. The information will be used for general classification and will not be used to identify airlines or survey participants in the research paper.

1. How many years of experience do you have working in a regulatory department within the aviation industry?

○ 0-2

○ 3-5

○ 6-10

○ 11-20

○ Over 20

2. How many total years experience do you have working in the aviation industry?

○ 0-2

○ 3-5

○ 6-10

○ 11-20

○ over 20

3. Where are you presently employed:

This information is needed to categorize answers by airline size (Major, National, Regional or Cargo Carrier) as recognized by the FAA. No respondents, or respondent airlines, will be identified in the research project. If you know your airlines category, you may answer accordingly; however, for research purposes it is encouraged that you respond with your airlines name for clasification per an FFA document used in the study

APPENDIX C (CONT.)

The Impact of Government Policy Survey

Aviation Issues: The Impact of Government Policy on Airline Profitability

This section will ask perception questions regarding 5 federal regulations/policies. Please read the short introduction to the regulation and draw upon professional experience in your reply. There are 10 questions with 5 answer choices. Each answer group is unique with descriptions provided for clarification as needed. Please read the ranking descriptions carefully before responding.

The U.S. government taxes airlines 9.6 billion dollars per year. This equates to $63 per $300 ticket. These taxes go toward security, facility improvements, funding the FAA, etc.

4. The improvements provided to the aviation industry through this taxation are:

◯ Extremely insignificant

◯ Insignificant

◯ Neutral

◯ Significant

◯ Extremely significant

5. The cost posed to airlines from taxation is:

◯ Too low (far more taxation is needed to implement governement programs)

◯ Low (slightly more taxation is needed to implement governement programs)

◯ Neutral

◯ High (slightly less taxation is needed to maintain government programs)

◯ Too high (far less taxation is needed to maintain government programs)

APPENDIX C (CONT.)

The Impact of Government Policy Survey

Aviation Issues: The Impact of Government Policy on Airline Profitability

New regulations governing pilot rest periods are anticipated to increase the cumulative airline costs across the nation by $338 million per year. The regulation extends the required rest period from 8 hours to 10 hours, and it increases the consecutive time off during a week from 24 hours to 30 hours.

6. The increased rest period for pilots is:

◯ Extremely insignificant for safety improvement

◯ Insignificant to improving safety

◯ Neutral

◯ Significant for safety improvement

◯ Extremely significant for safety improvement

7. The expense of this regulation is:

◯ Very unreasonable (cost far exceeds benefit)

◯ Unreasonable (cost slightly exceeds benefit)

◯ Neutral

◯ Reasonable (benefit slightly exceeds cost)

◯ Extremely reasonable (benefit far exceeds cost)

APPENDIX C (CONT.)

The Impact of Government Policy Survey

Aviation Issues: The Impact of Government Policy on Airline Profitability

Governement policy has often allowed Bailouts and Chapter 11 bankruptcies to provide airlines protection while restructuring. This allows them to lower their costs to increase their competitiveness in the industry. However, some economists argue that bailouts and Chapter 11 bankruptcies eliminate free market principles and offer a competitive advantage to faltering companies.

8. Bailouts and Chapter 11 bankruptcies:

- ◯ Should NOT BE permitted for ANY airlines in financial crisis
- ◯ Should NOT BE permitted for MOST airlines in financial crisis
- ◯ Neutral
- ◯ Should be permitted for MOST airlines in financial crisis
- ◯ Should be permitted for ALL airlines in financial crisis

9. Bailouts and Chapter 11 bankruptcies have:

- ◯ Extremely negative impact on competitor airlines
- ◯ Negative impact on competitor airlines
- ◯ Neutral
- ◯ Positive impact on competitor airlines
- ◯ Extremely positive impact on competitor airlines

APPENDIX C (CONT.)

The Impact of Government Policy Survey

Aviation Issues: The Impact of Government Policy on Airline Profitability

A passenger rights act has been passed by the Department of Transportation. As a result, airlines are: required to refund any fee for carrying a bag if the bag is lost, required to provide bumped passengers compensation equal to double the price of their tickets, up to $650, for short delays and payments of four times the value of their tickets, up to $1,300, for long delays, and are subject to fines up to $27,500 a person for long delays on the tarmac if passengers are not allowed to deplane.

10. The United States Government is:

○ Unjustified in imposing such fines on the airlines

○ Slightly unjustified in imposing such fines on the airlines

○ Neutral

○ Slightly justified in imposing such fines on the airlines

○ Justified in imposing such fines on the airlines

11. The fines imposed by the United States Government are:

○ Excessively low

○ Low

○ Neutral

○ High

○ Excessively high

APPENDIX C (CONT.)

The Impact of Government Policy Survey

Aviation Issues: The Impact of Government Policy on Airline Profitability

The 1500 hour rule is being established to increase the safety of the aviation industry. The rule is founded on the principle that pilots with more hours are better trained. Per government reports, the rule will have a direct cost of $443 million, and a cumulative cost of $1.5 billion.

12. The 1500 hour rule will be:

○ Extremely insignificant to improving safety

○ Insignificant to improving safety

○ Neutral

○ Significant for safety improvement

○ Extremely significant for safety improvement

13. The cost associated with the 1500 hour rule is:

○ Very unreasonable (cost far exceeds benefit)

○ Unreasonable (cost slightly exceeds benefit)

○ Neutral

○ Reasonable (benefit slightly exceed cost)

○ Extremely reasonable (benefit far exceed costs)

APPENDIX C (CONT.)

The Impact of Government Policy Survey

Aviation Issues: The Impact of Government Policy on Airline Profitability

This section consists of 8 questions. The questions will assess the overall perceived value of government regulation in the airline industry. The answer choices include Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree. Please take time to consider every question thoroughly before making a response.

14. Regulations passed by the United States Government impact the profitability of airlines in the U.S.

Strongly Disagree ○ | Disagree ○ | Neutral ○ | Agree ○ | Strongly Agree ○

15. Safety regulations passed by the United States Government are most often worth the cost posed to airlines.

Strongly Disagree ○ | Disagree ○ | Neutral ○ | Agree ○ | Strongly Agree ○

16. Regulations passed by the United States Government contribute to the financial stability of airlines in the U.S.

Strongly Disagree ○ | Disagree ○ | Neutral ○ | Agree ○ | Strongly Agree ○

17. Regulations passed by the United States Government are essential to safety within commercial aviation.

Strongly Disagree ○ | Disagree ○ | Neutral ○ | Agree ○ | Strongly Agree ○

18. Regulations passed by the United States Government are often reactionary to incidents in the airline industry.

Strongly Disagree ○ | Disagree ○ | Neutral ○ | Agree ○ | Strongly Agree ○

19. The United States Government considers aviation experts opinions before passing regulations affecting airlines in the U.S.

Strongly Disagree ○ | Disagree ○ | Neutral ○ | Agree ○ | Strongly Agree ○

20. Before developing regulation, the United States Government looks past public sentiment to assure industry vitality.

Strongly Disagree ○ | Disagree ○ | Neutral ○ | Agree ○ | Strongly Agree ○

APPENDIX C (CONT.)

The Impact of Government Policy Survey

Aviation Issues: The Impact of Government Policy on Airline Profitability

21. The aviation industry in the United States is _____ by the United States Governement:

Highly Underregulated	Underregulated	Perfectly Regulated	Overregulated	Highly Overregulated
○	○	○	○	○