Introduction

On December 17th 1903, the Wright brothers performed the first successful flight that was engine powered and piloted. Over the next 100 years, the aircraft evolved from a simple biplane to jumbo jets that hold hundreds of passengers and supersonic jets which can break the sound barrier.

The birth of the aircraft changed the way people traveled and connected the world in timespans that were previously inconceivable. People could now travel across continents in a matter of hours rather than days or weeks. The evolution of the aircraft also opened the door to a new, potential lucrative, airline industry where billions of dollars could be gained or lost.

The airline industry is very volatile and can be affected by federal regulations, customer demand, fuel prices, union demands, pension liabilities, airport fees, weather delays, expensive fleets and repairs and many other factors. While airlines often generate tens of billons of dollars in revenues, they often post low or negative incomes. Table 1 displays 2012 revenues and expenses for United Continental Holdings Inc.

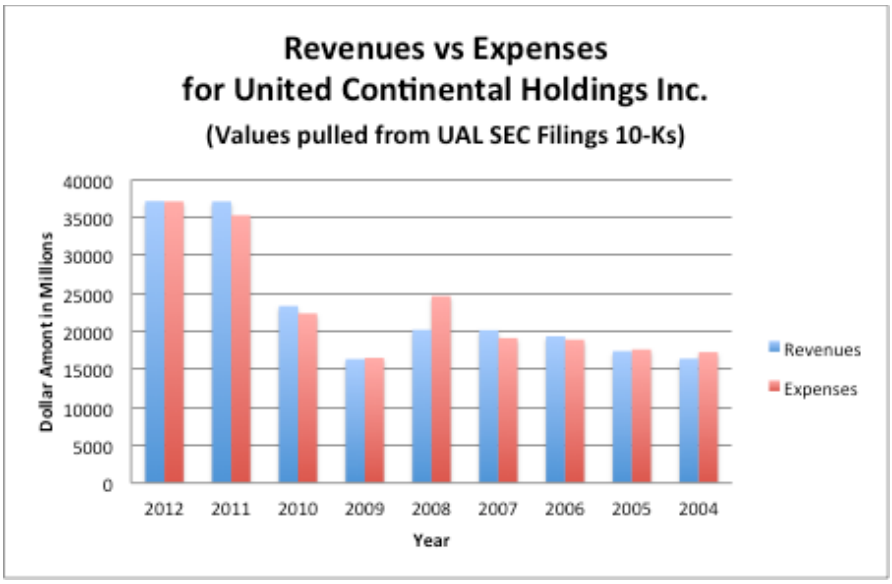

Table 1 Source: 2012 UAL Annual 10-k filings www.SEC.gov

The purpose of this study is to investigate some of the factors that affect the profit margins of major domestic airlines . Although the profitability of airlines depends on many factors, this paper examines two:

1. **Federal Regulations**: Federal Airline Administration and Department of Transportation regulations/requirements and inherent costs.
2. **Unfunded Liabilities**: The growing pension liabilities that many airlines have accumulated over the last couple decades.

This thesis will investigate how federal regulations and unfunded liabilities prove to be major expenses for airlines and limit profitability.

Background

This study begins by looking at the airline industry after the monumental *Airline Deregulation Act* that was signed by Congress on October 24, 1978. Before deregulation, the Civil Aeronautics Board (predecessor of the Federal Aviation

Administration) would regulate which routes airlines flew, the prices of tickets, entry/exits into the market and agreements and mergers between airlines.

In the modern airline industry after deregulation, market demands and competition dictate prices, routes and the entry and mergers of airlines. The deregulation of the airline industry has opened the door to the entry of low cost carriers (Southwest Airlines, JetBlue, AirTran, etc.) to challenge the traditionally dominant airlines (Delta, United-Continental, US Airways, American, etc.). The entry of new carriers and the rise of demand during the late part of the 20th Century lowered fares and better connected cities lowering the need to as many layovers.

The "golden ages" of the airlines would not last long as fuel and labor costs began to rise during the first decade of the 21st Century and competition continued to force the average ticket fare down. . Table 2 displays the cost of a gallon of jet fuel over a ten-year span. Fuel prices are very volatile and some airlines began to hedge fuel costs to try to stabilize cost.

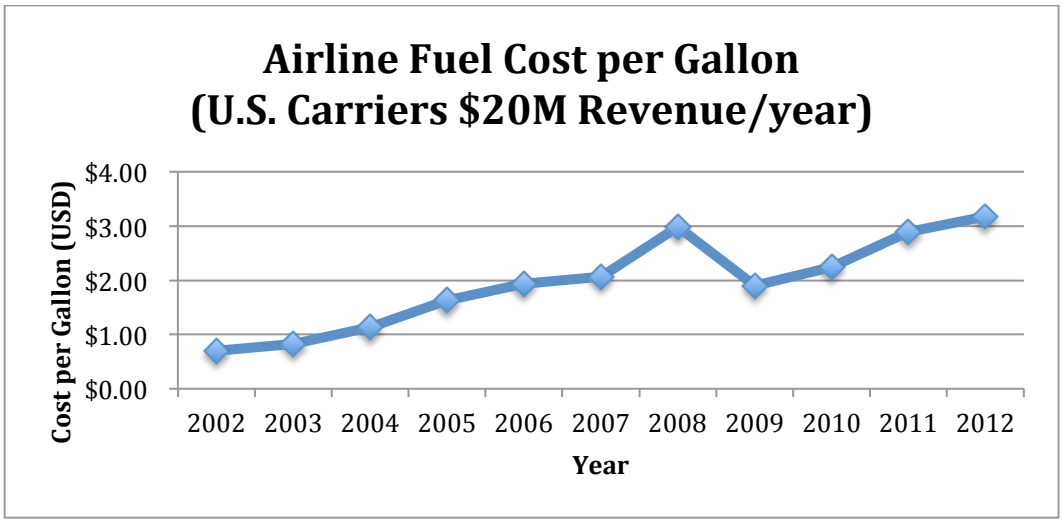

Table 2. Source Bureau of Transportation Statistics F41 Schedule P12A

Table 3 displays the average ticket fare for US Domestic flights over the past ten years in 2013-dollar value. As mentioned before, the entry of new carriers and the constant competition with other carriers has led to extremely competitive ticket pricing. This is obviously great for the consumer but puts the airline in a tough position to compete and be sustainable with higher expenses.

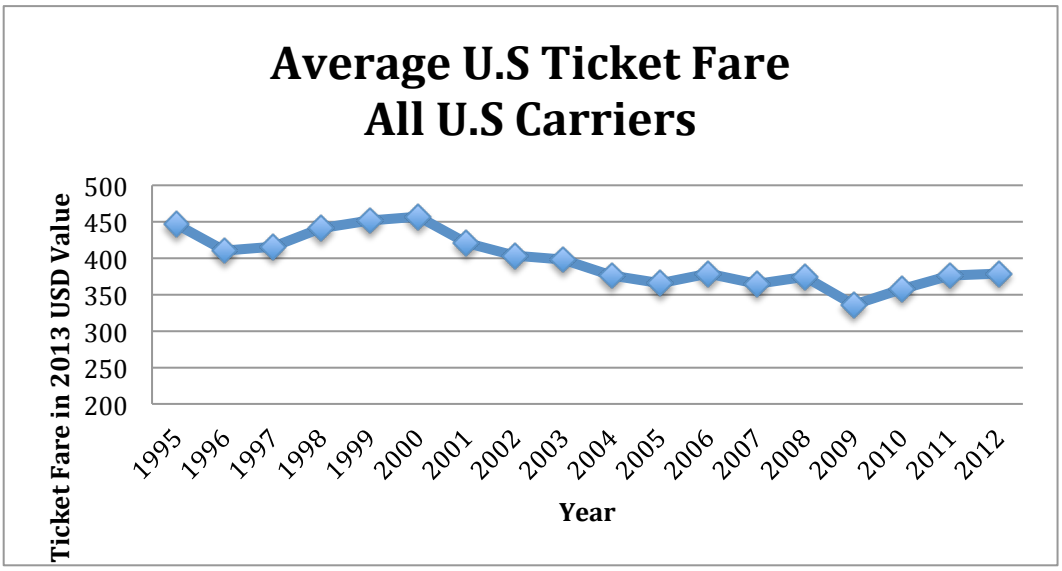

Table 3 Sources: Bureau of Transportation Statistics. Rate calculated using Bureau of Labor Statistics Consumer Price Index

With the growing expenses and lower ticket prices, one would expect at least the number of travelers and flights to increase. On the contrary, the number of passengers has remained constant for the most part over the past 10 years. This can be attributed to various factors including economic downturn (2007-2009 US Recession) and the terrorist attacks of September 11th, 2001. Table 4 displays the number of domestic passengers of U.S Carriers over the past ten years.

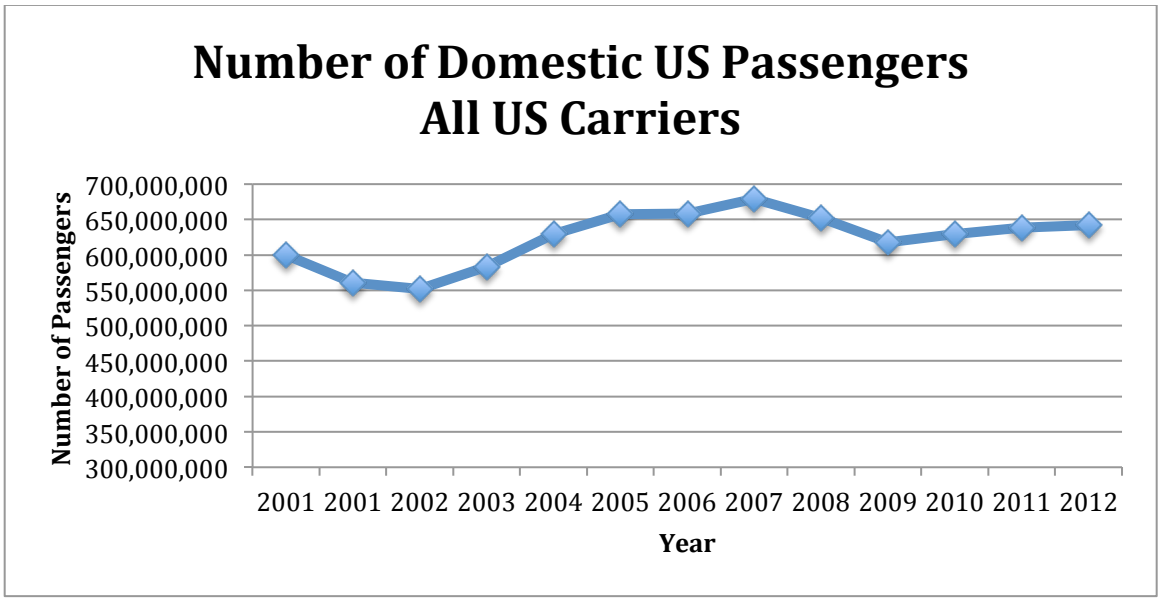

Table 4 Source: Bureau of Transportation Statistics T-100 Market data

Table 5 displays the total net incomes for all U.S Carriers in terms of domestic flights.

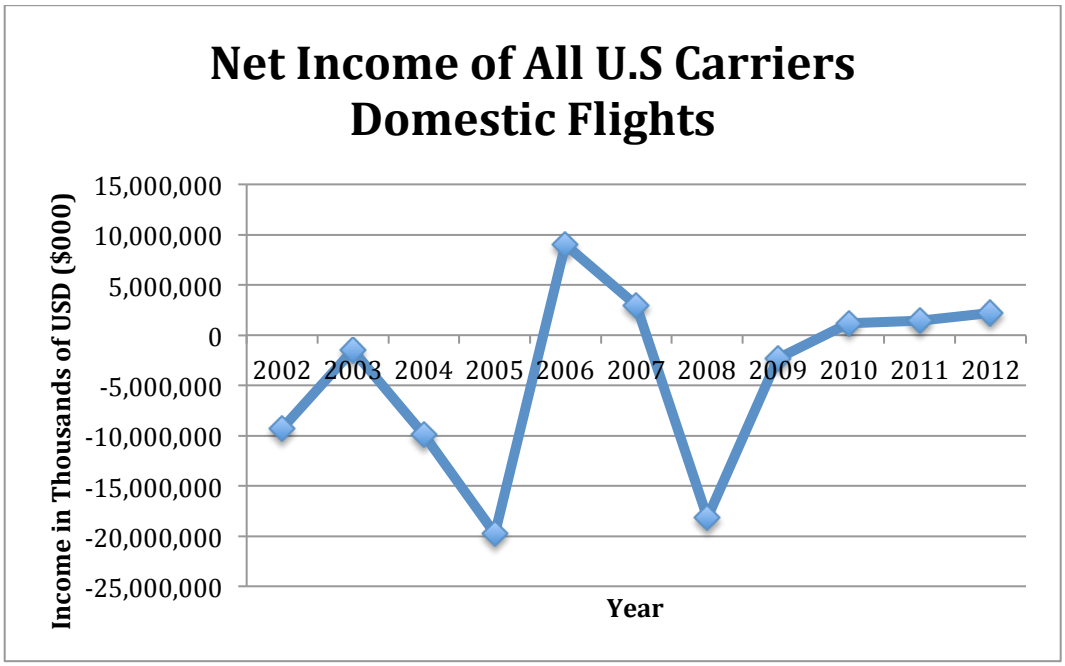

Table 5 SOURCE: Bureau of Transportation Statistics F41 Schedule P12 data

In summary, the airline industry has been struggling in terms of profitability due to the increase cost and the decrease in ticket fares and the number of passengers. We will begin by investigating regulatory expenses and hurdles.

Federal Regulations

United Continental Holdings: "Airlines are subject to extensive regulatory and legal oversight. Compliance with U.S. and international regulations imposes significant costs and may have adverse effects on the Company Laws, regulations, taxes and airport rates and charges, both domestically and internationally, have been proposed from time to time that could significantly increase the cost of airline operations or reduce airline revenue. The Company cannot provide any assurance that current laws and regulations, or laws or regulations enacted in the future, will not adversely affect its financial condition or results of operations" (United Continental Holding).

The above exert was taken directly out of United Airline's 2012 10K regarding the ongoing concern of the company. The fact that government regulations are a major risk factor for airline companies and something that must be disclosed to investors speaks volumes. Airlines are subject to various taxes/fees relating to the Federal Aviation Administration, Environmental Protection Agency, Department of Homeland Security, airport fees, etc. Table 6 below breaks down the various government imposed taxes and fees:

Federal Aviation Administration Taxes		
Aviation Taxes	Description	Tax Rate
Domestic Passenger Ticket Tax	Applies only to domestic transport or to journeys to Canada or Mexico within 225 miles of the U.S. border	7.5% of ticket price
Domestic Flight Segment Tax	"Domestic Segment"= a flight leg consists of one takeoff and one landing by a flight	$3.90 per passenger per segment during 2013
Passenger Ticket Tax for Rural Airports	Assessed on tickets on flights that begin/end at a rural airport. Flight segment fee does not apply. Rural airport: <100K enplanements during 2nd preceding CY, and either 1) not located within 75 miles of another airport with 100K+ enplanements, 2) is receiving essential air service subsides, or 3) is not connected by paved roads to another airport	7.5% of ticket price (same as passenger ticket tax)
International Arrival & Departure Tax	Head tax assessed on pax arriving from or departing for foreign destinations (& U.S. territories) that are not subject to pax ticket tax.	Rate during 2013 = $17.20
Flights between continental U.S. and Alaska or Hawaii		$8.60 international facilities tax + applicable domestic tax rate (during CY13)
Frequent Flyer Tax	Applies to the sale, to third parties, of the right to award frequent flyer miles	7.5% of value of miles
Domestic Cargo/Mail		6.25% of amount paid for the transportation of property by air.
General Aviation Fuel Tax		Aviation gasoline: $0.193/gallon Jet fuel: $0.218/gallon
Commercial Fuel Tax		$0.043/gallon
Other Taxes		
Lust Fuel Tax (EPA)	Congress created the Leaking Underground Storage Tank (LUST)	0.1¢

	Trust Fund in 1986 to 1) provide money for overseeing and enforcing corrective action taken by a responsible party, who is the owner or operator of the leaking UST and 2) provide money for cleanups at LUST sites where the owner or operator is unknown, unwilling, or unable to respond, or which require emergency action.	
Passenger Facility Charges (PFC)	PFCs can fund only federally approved capital-improvement projects that enhance safety, security, or capacity; reduce noise; or increase air carrier competition.	Up to $4.50
Department of Homeland Security		
September 11th Security Fee	Funds TSA at up to $5 per one-way trip and $10 per round trip since 2/1/02	$2.50
Aviation Security Infrastructure Fee	Aviation Security Infrastructure Fee; funds TSA since 2/18/02	Varies
APHIS Passenger Fee	Since 5/13/91 (passenger fee) and 2/9/92 (aircraft fee), funds agricultural quarantine and inspection services conducted by CBP (previously by the U.S. Animal and Plant Health Inspection Service) per 7 CFR 354; APHIS continues to perform certain Agricultural Quarantine Inspection (AQI)-related functions that are funded by user fee collections	$5.00
APHIS Aircraft Fee		$70.75
Customs User Fee	Since 7/7/86, funds inspections by U.S.	$5.50

	Customs and Border Protection; passengers arriving from U.S. territories and possessions are exempt; also see CBP cargo security site	
Immigration User Fee	Since 12/1/86, the majority of the collections fund inspections by U.S. Customs and Border Protection and a smaller portion of the collections fund certain activities performed by U.S. Immigration and Customs Enforcement that are related to air and sea passenger inspections	$7.00

Table 6 Source: Taxpayer Relief Act of 1997, Public Law 105-35 updated 1/13/2013 and from Airlines of America.

Airlines for America, the main lobbying group for US airlines, provided an illustrative example breaking down a sample ticket fare between airline fees and government taxes. Table 7 illustrates a breakdown of a round trip from Peoria to Raleigh/Durham with a connection in Chicago O'Hare. Keep in mind the taxes in this example only includes FAA fees/taxes and don't include taxes such as income, property, franchise, payroll, fuel, etc.

Sample Round-Trip Itinerary: Peoria (PIA)- Raliegh/Durham (RDU) via Chicago O'Hare (ORD)	
Base Airline Fee	**$238.14**
Federal Ticket Tax (7.5%)	17.86
PIA-ORD-RDU	
Passenger Facility Charge (PIA)	4.50
Federal Flight Segment Tax (PIA-ORD)	4.00
Federal Security Surcharge (PIA-ORD)	2.50
Passenger Facility Charge (ORD)	4.50
Federal Flight Segment Tax (ORD-RDU)	4.00
Federal Security Surcharge (ORD-RDU)	2.50
RDU-ORD-PIA	
Passenger Facility Charge (RDU)	4.50
Federal Flight Segment Tax (RDU-ORD)	4.00
Federal Security Surcharge (RDU-ORD)	2.50
Passenger Facility Charge (ORD)	4.50
Federal Flight Segment Tax (ORD-PIA)	4.00
Federal Security Surcharge (ORD-PIA)	2.50
Total Taxes	**61.86**
Total Ticket Price	$300.00
Taxes as % of Ticket	**20.6%**

Table 7 Source: Airlines for America

Table 7 illustrates that taxes represent 20% of the $300 total ticket price . The airline industry continues to be one of the highest taxed industries in the country. In 2012, airlines and their customers contributed $12.532 billion to the FAA's AATF fund. Table 8 breaks down the fees that make up the $12 billion. They also pay $3.4-$3.8 billion to the Department of Homeland Security taxes and fees (A4A).

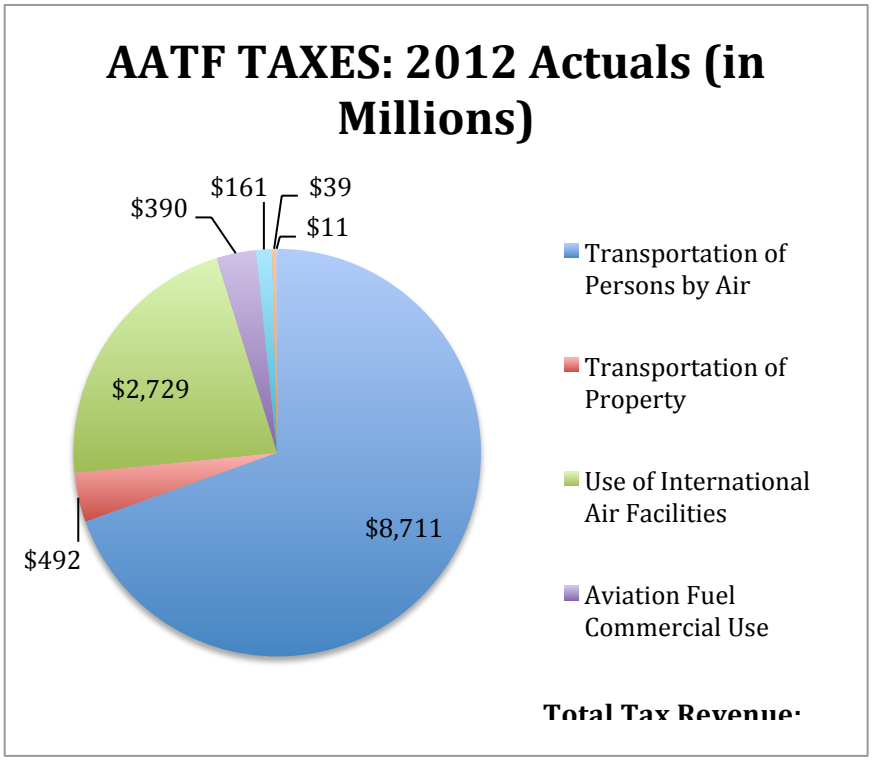

Table 8 Source: Airport and Airway Trust Fund June 2013

The airline industry has very little control of these taxes. Take a second to realize that you will be taxed at a higher rate flying on an airline flight than you will be buying alcohol or tobacco, both which are highly taxed to discourage use. There is also the concept of incentives that needs to be considered. With the debate of global warming becoming a "hot" topic, lawmakers use taxes to try to reduce the use of fuel in the US. Until there is prospect of battery-powered airplanes, the airline industry will continue to dependent on fuel. The major factors that cause these taxes are *safety* and *infrastructure*.

The Federal Aviation Administration, an agency of the United States Department of Transportation, is vital to airline safety and its goal is to provide the

"safest, most efficient aerospace system in the world" (Federal Aviation Administration). Understandably, safety is an important factor to every stakeholder whether it's the airline, airplane manufacturer, regulator or customer The FAA's objective is to ensure that airlines are practicing proper safety procedures.

The major taxes the FAA collected are through the Airport and Airway Trust Fund. According to the FAA, the AATF provided funding for:

1. Facilities and Equipment (F&E) account, which funds technological improvements to the air traffic control system;
2. Research, Engineering, and Development (RE&D) account, which funds research on issues related to aviation safety, mobility, and the environment, and
3. Airport Improvement Program (AIP), which provides grants for construction and safety, projects at airports.

It's important to remember that the airline industry is expensive. A typical Boeing aircraft costs anywhere from $70-$288 million (Boeing), airports have investments in the billions in terms of infrastructure and hundreds of lives are at risk. While it's necessary to protect all of these assets the ultimate question is how much are airlines and consumers ready to pay? Fees/taxes have already reached upwards of 20% of ticket prices, the industry has been posting losses for the last decade and competition is pushing fares lower and lower.

In addition to FAA safety policies, the Department of Homeland Security created the "Transportation Security Administration (TSA) to strengthen the security of the nation's transportation systems and ensure the freedom of

movement for people and commerce" (Transportation Security Admisistration). This agency was created after the tragic terrorist attacks of September 11th, 2001. While the TSA keeps travelers safe they do present obstacles for airlines as there is yet another tax which funds TSA operations. That is the September 11th Security Fee that is $2.50 per take off and landing for a maximum of $5 for a one-way trip and $10 for a round trip. While security and safety are crucial they continue to drive up the cost of flying.

Infrastructure is another major factor that contributes to more taxes. As mentioned before, creating and running an airport is very expensive. The FAA has allowed airports to charge a Passenger Facility Charge (PFC) to "fund FAA-approved projects that enhance safety, security, or capacity; reduce noise; or increase air carrier competition" (Federal Aviation Administration). The FAA has approved 387 (includes 98/100 top airports) locations for collection of PFCs and the total approved collections since inception in 1992 have been $87.3 billion (FAA). Table 9 breaks down the allocation of funds collected through PFCs.

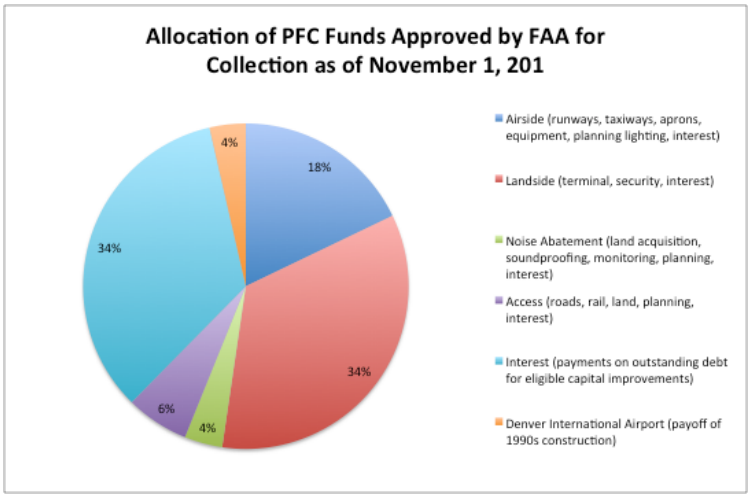

Table 9 A4A & FAA (PFC Branch)

Reflected by the pie chart in Table 9, 34% of PFC funds ($30 billion) have been allocated to landside expenditures to maintain and renovate terminals, security and pay interests on landside loan activity. Interest and airside expenses made up 42% of costs or $45 billion. Airport infrastructure is expensive due to the sheer square footage airports take up with runways and terminals and the volume to travelers and airplanes passing through. Reflected by PFC fee, the cost has been pushed to airlines and travelers.

Airlines also have Air Traffic Controller (ATC) fees that they incur. According to the FAA: The primary purpose of the ATC system is to prevent a collision between aircraft operating in the system and to organize and expedite the flow of traffic, and to provide support for National Security and Homeland Defense. While ATC's are vital to pilots and keeping airport traffic moving, they also represent additional costs to airlines. Currently there is a proposal that is being considered that will cost airlines hundreds of millions of dollars in the next couple years, the Next Generation Air Transportation System. Currently the whole ATC system is an outdated ground based system. The NextGen System, will transition over to GPS technology that will be used to shorten routes, save time and fuel, reduce traffic delays, increase capacity, and permit controllers to monitor and manage aircraft with greater safety margins. While this upgrade is important and key to the future of air traffic control, the costs are expected to be north of $10 billion. The FAA can lean on money from Congress and PFC fees collected from travelers. The airlines, however, will have to use their own finances to update airplanes to support the NextGen system.

Extensive regulations from various government agencies (FAA, EPA, DHS) to fund programs that ensure safety, security and the maintenance of infrastructure has lead to the airline industry having one of the highest tax rates. These taxes/fees present a major cost to the industry and a major contributor to limited margins.

Unfunded Liabilities

Since the deregulation of the airline industry, almost every major airline has filed for bankruptcy. Some major US airlines who filed for protection under bankruptcy or have dissolved altogether are:

Nov. 29, 2011	American Airlines
April 11, 2008	Frontier Airlines
Sept. 14, 2005	**Delta Air Lines,** Northwest Airlines, Comair
Sept. 12, 2004	**US Airways**
Dec. 9, 2002	**United Airlines**
Aug. 11, 2002	**US Airways**
Jan. 10, 2001	**Trans World Airlines (TWA)**
Feb. 26, 1998	Pan American World Airways (Pan Am)
June 30, 1995	Trans World Airlines
Sept. 21, 1993	Hawaiian Airlines
Jan. 31, 1992	Trans World Airlines
Jan. 8 1991	**Pan Am World Airways**
Dec. 3, 1990	Continental Airlines

Table 10 Source: AP

Table 10 demonstrates that all of the "legacy" airlines that used to control the industry have filed for bankruptcy: American Airlines, Delta Airlines, NWA, US Airways, United Airlines, TWA, Pan Am and Continental Airlines.

There are a variety of factors that can force companies into bankruptcy. One of the benefits of filing for Chapter 11 bankruptcy is that it allows the company to

restructure its debt and renegotiate its pension liabilities. Many airlines have filed for Chapter 11 bankruptcy in hopes that they can terminate old pension plans and dump them onto their insurer, the Pension Benefit Guaranty Corporation (PBGC). The PBGC published their top firms that have terminated old pensions as of the end of 2011. Table 11 presents the PBGCs top firms:

	Top 10 Firms	Claims (by firm)	Vested Participants	Average Claim Per Vested Participant	Percent of Total claims (1975-2011)
1.	**United Airlines**	$7,347,077,849	123,957	$59,271	16.1%
2.	Delphi	6,387,323,184	69,042	92,514	14.0%
3.	Bethlehem Steel	3,702,771,655	91,312	40,551	8.1%
4.	**US Airways**	2,751,534,173	55,770	49,337	6.0%
5.	LTV Steel*	2,134,985,884	83,094	25,694	4.7%
6.	**Delta Air Lines**	1,720,156,504	13,291	129,423	3.8%
7.	National Steel	1,275,628,286	33,737	37,811	2.8%
8.	**Pan American Air**	841,082,434	31,999	26,285	1.8%
9.	**Trans World Airlines**	668,377,106	32,263	20,717	1.5%
10.	Weirton Steel	640,480,970	9,410	68,064	1.4%
	Top 10 Total	$27,469,418,046	543,875	$50,507	60.1%
	All Other Total	18,202,055,547	1,408,291	12,925	39.9%
	TOTAL	$45,671,473,593	1,952,166	$23,395	100.0%

Table 11 Source: PBGC Fiscal Year Closing File (2011), PBGC Case Management System, and PBGC Participant System (PRISM).

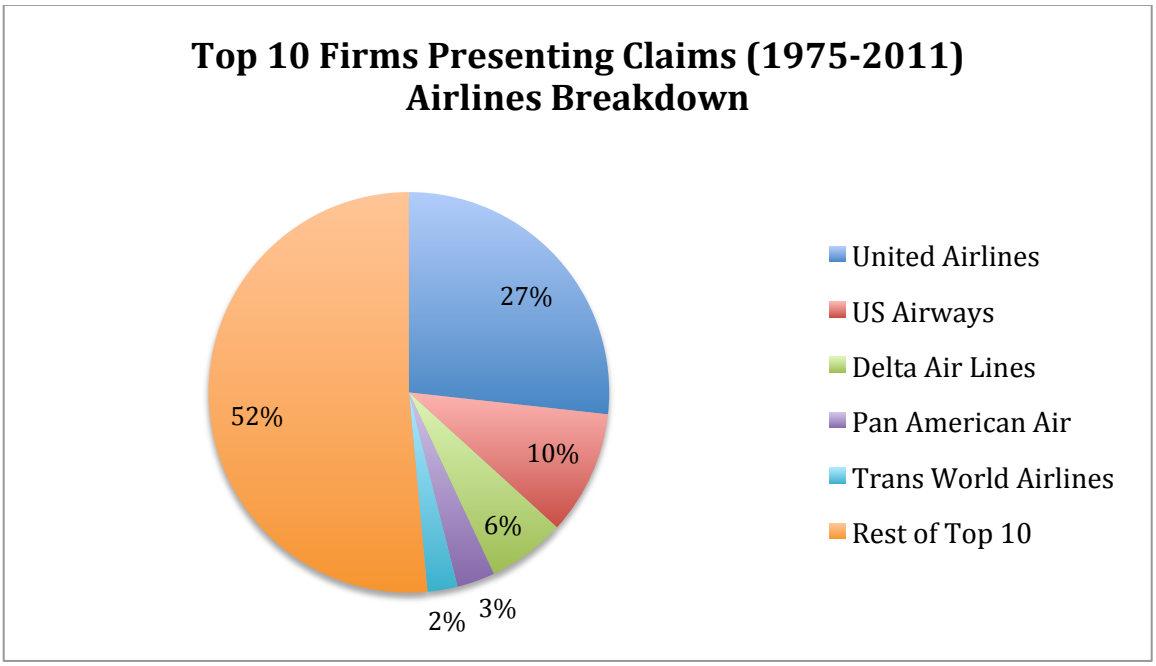

Table 12 PBGC

Notice that half of firms on Table 11 are airline companies and they represent 60.1% of claims. It's also important to note that all the top airlines that have filed for bankruptcy (Table 10) have huge pensions liabilities that have been dumped onto the PBCG (Table 11).

Before we go any further, lets talk briefly about what pensions are and why they can be dangerous to in any industry. The US Department of Labor defines a pension plan as "an employee benefit plan established or maintained by an employer or by an employee organization (such as a union), or both, that provides retirement income or defers income until termination of covered employment or beyond" (Department Of Labor). Pension payouts depend on how long you worked with the company, what your salary was and if you decide to take out a lump sum or annuity.

Many companies that have large unionized work forces have to deal with pensions liabilities. Companies usually take out part of worker's salaries while they are working to help fund pensions once they retire. This system works fine when the industry is booming and the work force is large. The issues began to arise when the industry started struggling and layoffs began. Layoffs lead to a smaller workforce and lower contributions from current employees to pay off current pension beneficiaries. In a well-managed plan, current employee contributions don't fund current beneficiaries of pension plans but companies generally have to use current contributions to cover the deficit. The unfunded liabilities scheme dictates that a company has eternal growth.

That is why pensions are unfunded liabilities because they present a debt that has no present funding available. Companies have got caught in this cycle of paying for labor that was completed years ago and having no current benefit to these expenses.

As mentioned before, airlines already have limited margins with high government taxes/fees, airport fees, fuel expenses, labor costs and maintenance costs. Add billions of dollars in unfunded liabilities to the equation and it's easy to understand why the industry has posted losses for the last decade.

The question becomes, why do airlines still offer pension plans to employees? That also is something that they have little control over, as much of the workforce is unionized. The Transporter Worker Union (TWU) represents much of the work force for many airlines. Much of the TWUs work is not dealing with wages but rather the negotiation and protection of pension rights of the work force. Large

unions like TWU have some control over airlines as they represent much of the work force. This allows them to organize strikes that can have devastating impacts on airlines. If the pilots, flight attendants or the ground crew decide to go on strike, then the airline cannot operate and it can shut down operations in a matter of days. Similar to federal regulations, the airline industry really has limited control over pension liabilities.

At the end of the day, the cost of these unfunded liabilities will find its way back to the customer one way or the other. Airlines might try to pass costs directly to customers in terms of ticket prices, but, as mentioned earlier, fares are already extremely competitive. Competitive fares forces airlines to keep these liabilities on their books and, historically, it has lead to bankruptcy (Table 10 and 11) and for pensions to be dumped onto the PBGC.

The Pension Benefit Guaranty Corporation is an independent government agency that was created by Employee Retirement Income Security Act of 1974. As illustrated in Table 11, most of the major airlines that have gone bankrupt have terminated pension plans and left the PBCG to assume most of the debt. “As of September 30, 2013, the single-employer and multiemployer programs reported deficits of $27,381 billion and $8,258 billion, respectively” (Pension Benefit Guarnanty Corporation). Table 13 breaks down the yearly surplus/deficit of the PBGC.

PBCG Yearly Surplus/Deficit

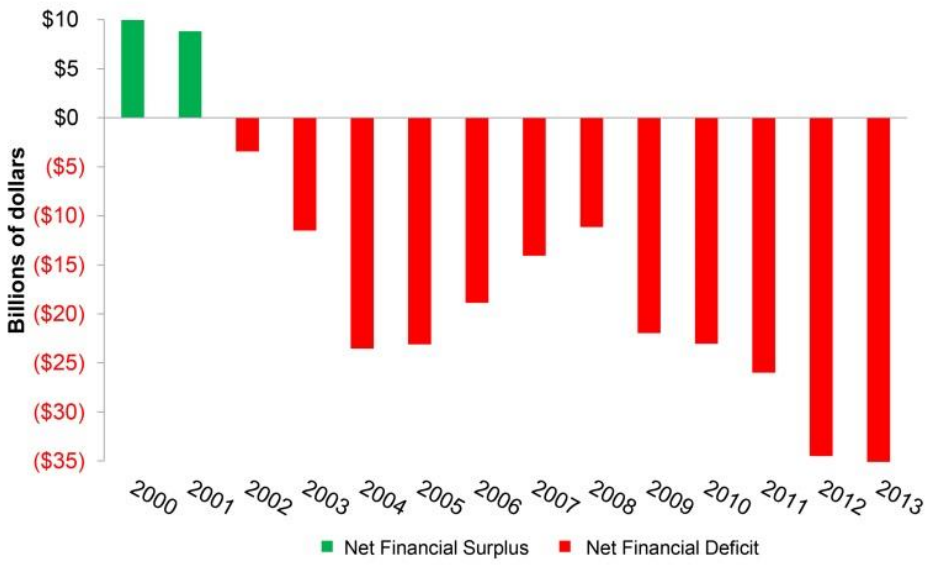

Table 13 Source: PBCG

This $35 billion deficit is alarming as the future of the PBCG and the pensions they insure are at risk. To add to that deficit, American Airlines, which filed for bankruptcy in 2011, just reached a deal with the PBGC to freeze four of their pension plans. American Airline's four defined benefit plans have assets of $8.3 billion and liabilities of $18.5 billion (Pension Benefit Guarnanty Corporation). The PBGC, being an independent government agency, will soon need support as this deficit increases and, ultimately, it will be taxpayer dollars that will keep these pensions and companies afloat.

Unfunded liabilities continue to prove challenging for not only the airline industries but also most other industries from local governments to General Motors. Unfunded Liabilities are often overlooked as they don't immediately affect the

company but as these liabilities began to build up, they can pose a major threat to companies.

Conclusion

The purpose of this paper is to investigate and examine cost factors that limit profit margins. The two major cost factors that this paper analyzes are costs over which the industry has little control. Outside of lobbying, airlines can't avoid paying federal taxes or fees because, even though the industry was deregulated in 1978. Government regulation goes back to the cost/benefit analysis that we have towards safety and security. How much will the customer be willing to pay to ensure his/her safety?

The other major cost factor that has already contributed to the bankruptcies of many airlines is the issue of unfunded liabilities. Unions continue to demand favorable pension plans which leaves massive amounts of liabilities and pressure on companies. Airlines only have so much control on pensions as they must negotiate with large unions that represent their work force.

While many industries deal with taxes and pension issues, the airlines industry deals with the extremes of both. Airlines are taxed at one of highest rates in any industry even though commercial aviation is ultimately responsible for 4.9 to 5.2 percent of U.S. GDP, helping generate $1.2-$1.3 trillion in annual economic activity, and 9.7 to 10.5 million job (FAA Air Traffic Organization). Even with this impact, airlines continue to post losses as fares remain stagnant and expenses

continue to climb. In terms of pensions, half of the PBGC's largest pension clients belong to airlines. Airlines have multiple pension plans they must maintain: pilots, flight attendants and grounds crew.

On top of all these costs, we can't forget that airlines must also invest billions of dollars in their fleet inventories; individual aircraft can cost anywhere from $70-$288 million. On top of that, they must pay millions of dollars a year to maintain and upkeep their fleets as regulated by the FAA.

Herb Kelleher, the former CEO of Southwest Airlines, was quoted as saying, "If the Wright brother were alive today, Wilbur would have to fire Orville to reduce costs." While this is just a comical comment, with growing costs, airlines have turned to other sources to generate income. In 2012, they US airline industry generated $3.5 billion in baggage fees and $2.6 billion in reservation/cancellation fees (Research and Innovative Technology Administration). Some airlines, like RyanAir, have even resorted to selling advertisement within the airplane on overhead bins. While these numbers are promising they still are minimal compared to the growing costs of doing business in the airline industry.

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