Airlines: Value Destroyers of Past Creating Value for Investors

April 2015

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1978 Deregulation - Bankruptcy is the Way of Life

Though, the airlines industry is in existence for more than 100 years and it has experienced radical positive or negative changes over the years, 1978 deregulation would go down in history of US airlines industry as watershed event. Since its existence in 1938, Civil Aeronautics Board (CAB) used to exercise stringent regulation in the industry with controls over routes, fares and entry/exit. Heavy-handed regulation from CAB was designed to protect airliners from price competition and ensure a reasonable rate of return from operations for existing airlines. Despite receiving nearly 79 applications, CAB had granted approval to only 4 new airlines that too, only for international routes. Of the 23 interstate/international trunk carriers granted approval in 1938, only 11 were in existence through extensive M&A in the industry. Goal of 1978 deregulation was to increase price competition and break the oligopolistic structure with the industry.

As expected, years following 1978 deregulation saw intense competition with nearly 129 new airlines entering into the space over the next 25 years. However, apart from increasing competitions, airlines industry experienced unique problems resulted from global geopolitics and economics. Fuel prices nearly doubled due to second oil price shock (1978-1980). Highly unionized workforce and high inflation rate of 10% leading to sharp rise in employees cost. A majority of airlines, including largest legacy carriers, either went under bankruptcy or opted for termination of services in the years following the deregulations. Pre-1978 leaders in international routes such as TWA and Pan Am disappeared after bankruptcy filings under chapter 11 within 25 years of 1978 deregulation. Except South West, exclusively focused on low-cost business model, every single major US carrier has underwent bankruptcy proceedings in last 20 years.

Table 1: Largest Bankruptcies in Airlines Industry

Company	Filing Date	Assets (US$ Billions)
American Airlines	Nov-11	24.70
UAL Corp.'s United Air Lines	Dec-02	22.80
Delta Air Lines	Sep-05	21.56
Northwest Airlines	Sep-05	14.35
US Airways, Inc.	Sep-04	8.60
US Airways, Inc.	Aug-02	8.03
Continental Airlines Holdings	Dec-90	7.66
Eastern Air Lines, Inc.	Mar-89	4.04
Trans World Airlines, Inc.	Jan-92	2.86
Trans World Airlines, Inc.	Jun-95	2.50
Pan Am Corp.	Jan-91	2.44
Trans World Airlines, Inc.	Jan-01	2.14
America West Airlines	Jun-91	1.17
Resorts International	Nov-89	1.03
Evergreen International Aviation	Sep-93	0.76
Resorts Int'l, Inc.	Mar-94	0.58
Midway Airlines, Inc.	Mar-91	0.47
FLYi Inc's Independence Air	Nov-05	0.38
Tower Air, Inc.	Feb-00	0.35
Midway Airlines Corp.	Aug-01	0.35
Fine Air Services Corp.	Sep-00	0.30
Braniff, Inc.	Sep-89	0.24
Krystal Company, Inc. (The)	Dec-95	0.13
Western Pacific Airlines, Inc.	Oct-97	0.12
Aloha Airgroup, Inc.	Dec-04	0.10
Hawaiian Airlines	Mar-03	0.10

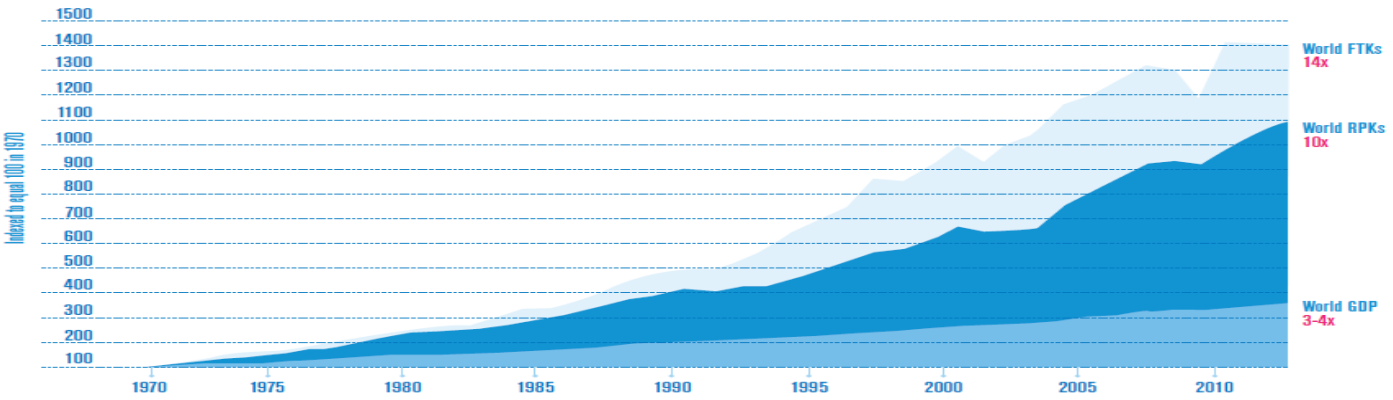
Source: Bankruptcydata.com

Business environment has been difficult which forced carriers to apply for bankruptcy protection in quick interval (Table 1). For example, TWA underwent bankruptcy proceedings three times during period 1992-2001 before being acquired by American Airlines. US Airways underwent bankruptcy proceedings in 2003, recovered in 2003 and then, again went into bankruptcy proceedings in 2004. With such a dismal track record of going bankrupt, it is not surprising that airlines industry has gained the reputation of being serial value destroyers. Nothing can sum up the sentiment of investors better than the famous quote from Warren Buffet; when asked how to become a Millionaire, Warren Buffet replied: First become a Billionaire and then buy an airline.

Everything that Could Go Wrong, Went Wrong

In an ideal scenario, deregulation should lead to sharp rise in competition and expansion of market. Usually, competition reduce the unsustainable profit margins of participants and create a scenario where inefficient businesses shut down and remaining players generate sustainable cash flows in long-tern due to expansion of market. Over the last 40 years, markets have expanded exponentially with Revenue Passenger Kilometers (RPK) growing by 10 times while global GDP expanded by only 3-4 times during same period. As a fast-growing market, airlines industry should have space for competition added as a result of deregulation.

Figure 1: Growth in RPKs over the Years



Source: AITA

Low airfares due to competitive marketplace has contributed to growth of the market. In round figures, and in inflation adjusted dollars, airfares today are almost three times cheaper than they were in the late 1970s. Despite sharp rise in capacity addition following 1978 deregulation, 1oad factor for airlines industry has increased significantly from 55% in 1970 to 75% in 2010.

However, despite this strong growth, airlines remained largely an unprofitable business. Due to oligopolistic suppliers including aircraft manufacturers, jet fuel producers, airport operators and unionized workforce. Till beginning of last decade, labor costs and pension benefit were considered to be the single most important component in the cost structure. However, over the last few years, increasing fuel costs has replaced labor costs as the single most important component of cost structure. Considering that unlike workforce contracts which can be negotiated by the management, spiraling fuel costs was a unique challenge for airlines.

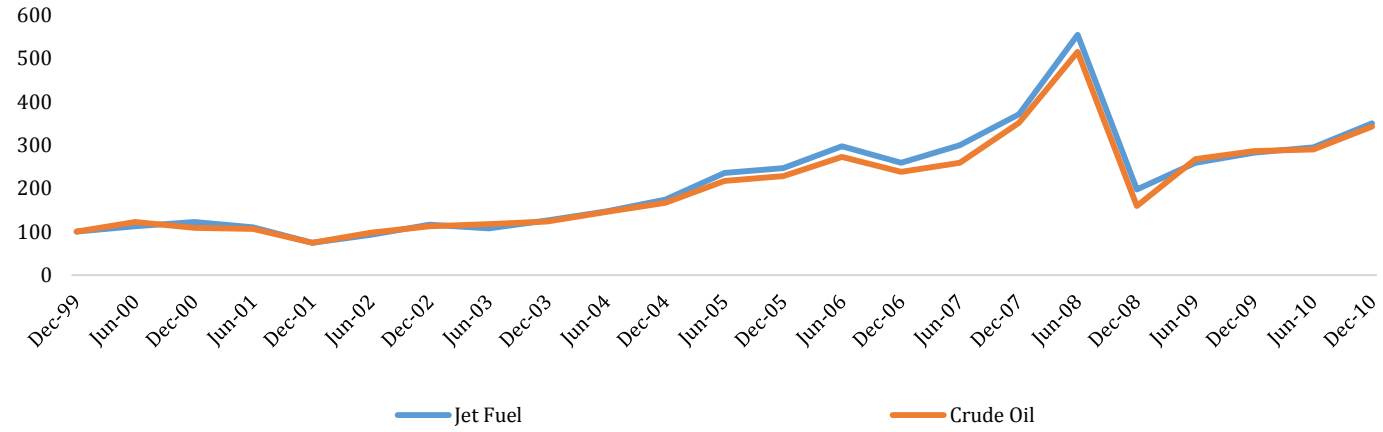
Table 2: Operating Cost Breakdown for Airlines

	North America		Europe		Asia-Pacific		All Major Airlines	
	2001	2008	2001	2008	2001	2008	2001	2008
Fuel	13.40%	34.20%	12.20%	25.30%	15.70%	36.70%	13.60%	32.30%
Labor	36.20%	21.50%	27.20%	24.80%	17.20%	14.70%	28.30%	20.10%
Aircraft Rentals	5.50%	3.00%	2.90%	2.50%	6.30%	4.50%	5.00%	3.50%

Depreciation & Amortization	6.00%	4.50%	7.10%	5.70%	7.40%	7.80%	6.70%	5.90%
Other Costs	38.90%	36.90%	50.70%	41.80%	53.40%	36.30%	46.40%	38.20%

Source: AITA

Figure 2: Jet Fuel and Crude Prices (Rebased to 100)

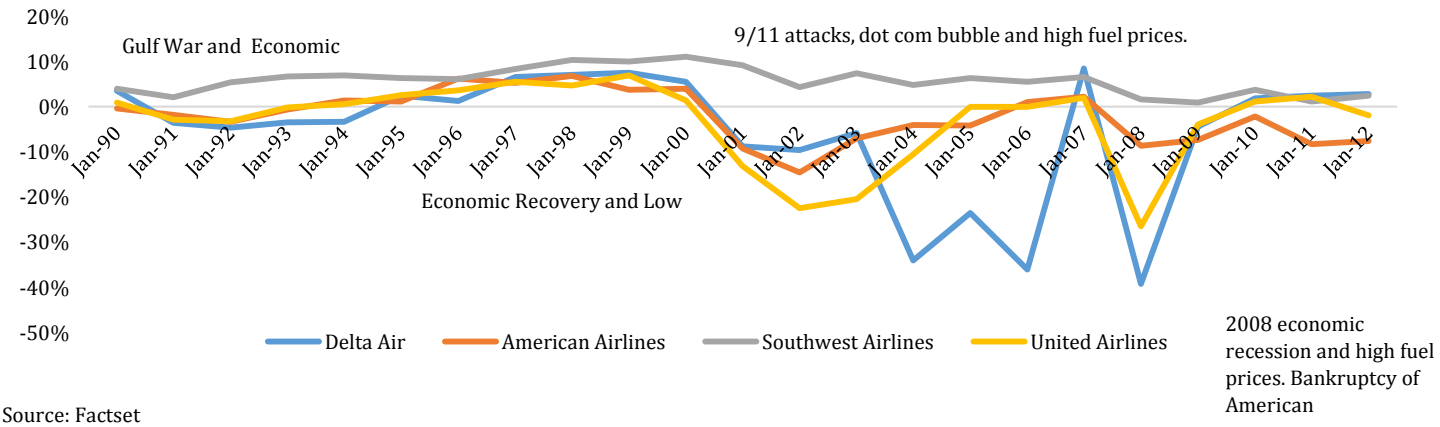


Source: Indexmundi

Share of fuel component in operating cost has risen over the last decade from nearly 12%-15% in 2001 to well-above 32% in 2008. According to some estimates, share of fuel component in cost structure risen up to 40% for many North American airlines. Considering that average fuel cost required for a jet has come down by nearly 50% due to technological advancement over last 20 years, it is highly significant that share of fuel component has increased over the period. Intense competition to gain market share ensured that airlines would not be able to pass on increasing fuel costs. As can be observed from Figure 3, price of jet fuel correlate strongly with crude prices. On an average, fuel costs for airlines increased by more than 300% over the period 2000-2010.

Moreover, over the time, airlines have become more sensitive to economic cycle and global geopolitics. Terrorist activities such as Lockerbie bombing in 1988 and 9/11 attack on WTC created a fear psychosis regarding air travel that put strain on financial and operational performance of already strained airlines on short-to-mid term basis. For example, US airlines revenue decreased by more than US$ 22 Billion and it took nearly 3 years to recover that revenue. Airlines industry responded by cutting capacity in 2001 and 2002. It was the first time that US airlines capacity shrunk for two consecutive years since World War 2. According to Barclays Capital, 9/11 created a permanent decline in US airlines demand with domestic operating revenue per $100 of nominal US GDP declined from around US$0.823 in 2000 to US$0.687 in 2010, representing a shortfall of $18 billion for 2010 and $142 billion for the 2001-2010 period. Adding to that, being a cyclical industry, economic slowdown such as seen in early 1990s, dot com bubble and global recession 2008 can easily put entire industry into red. Key problem with airlines industry is the wafer-thin margins in operations which leave it without any cushion in tackling any short-term constraints and induce significant amount of volatility in financial performance not experienced in any industry.

Figure 3: Net Profit margins for Top 4 US Airlines (1990-2012)



Source: Factset

As can be observed from Figure 1, with the exception of period 1995-2000, there is not a single 5-years period in which all top airlines have generated profits. In fact, in the few years, airlines have remained profitable, profit margins have remained in low single digits. In a nutshell, a cycle started since 9/11 attacks combined with 2008 recession and rising fuel prices ensured that US airlines industry register profits in only 3 years during 2001-2010 period. Readers would notice that Southwest airlines has remained an exception in industry with a track record of consistently maintaining profits in last 20 years. Better profitability of Southwest airlines can be attributed to the fact that it is pioneer of Low-cost model while other three airlines are legacy airlines. However, industry problems have also caught with Southwest as its margins have come down significantly over the time from nearly 10% in 2000 to 2.46% in 2012.

Considering that airlines is a capital-intensive industry, airlines usually have debt on their books. With high volatility in profitability and low profit margins, even short-term changes in business environment create losses which ultimately lead to erosion in equity which create problems in refinancing and servicing of debt, thus triggering bankruptcy.

Table 3: Debt to Equity Ratio* (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Delta	112	249	1217	NA	NA	NA	NA	92	1896	7020	1700
American	87	197	1377	30283	NA	NA	NA	419	NA	NA	NA
Southwest	25	46	38	30	33	30	26	30	74	64	54
United	134	335	NA	NA	NA	NA	493	349	NA	NA	876

Source: Factset *NA symbolize negative equity value

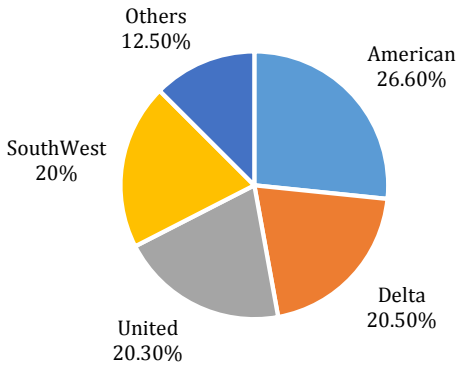
Debt to equity ratio for 3 out of top 4 airlines in the US has remained at high level by cross-industry standards during period 2000-2010 (Table 3). American, United and Delta have seen negative equity value in multiple years marked by bankruptcy filings.

Based on our analysis, it can be concluded that overall, airlines industry has been operating in highly adverse business environment over the last decade. Combination of high leverage, high competition, high fuel prices, economic slowdowns and geopolitical tensions has managed to give airlines a reputation of value destroyers.

Change in the Wings

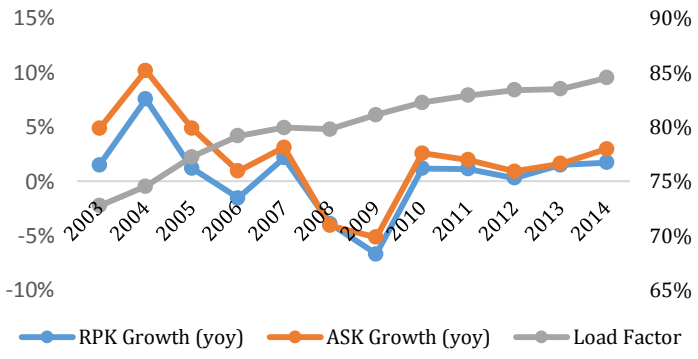
After nearly 35 years of deregulation, airlines industry is again emerging as an oligopoly in US. With merging of American Airlines and US Airways, top 4 airlines now account for 87.4% of market share. It is considerable that no. of airlines operating scheduled flights remained at 26 in FY 2014 which is not significantly higher than number of 23 in 1978.

Figure 4: Market share in US Aviation Market



Source: Bureau of Transportation statistics

Figure 5: Trends in US Domestic Market*

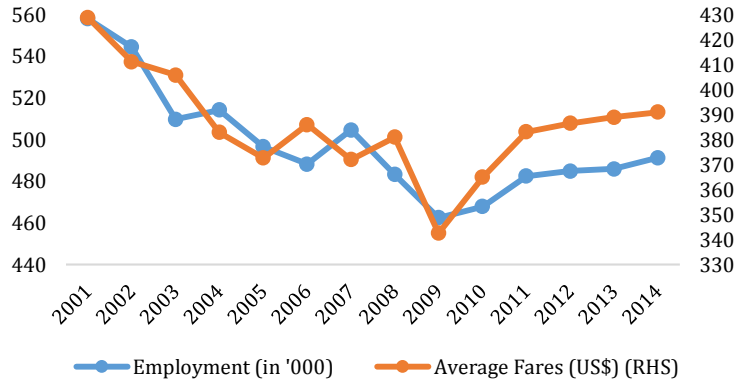


Source: Bureau of Transportation statistics *ASK - Available Seat Kms.

It seems that with more than a decade in in restructuring and consolidation, airlines industry has become lean and efficient in operations. Demand has outpaced supply in airlines industry during years 2009-2014 (Figure 5). ASK in airlines industry on domestic routes stood at 704 Billion in 2014 as compared to 741 Billion in 2007, reflecting a decline of more than 5% in the

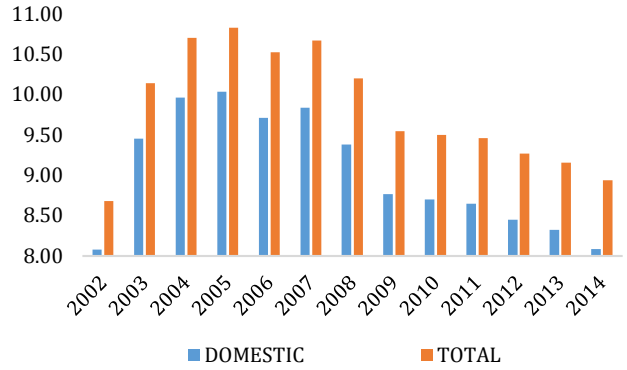
capacity. On the other hand, buoyed by recovery in US economy, RPK crossed the pre-recession levels in 2014, also reflected in sharp rise in load factor from near 72% in 2003 to 84.50% in 2014. Industry leaders maintained discipline in capacity addition. For example, American Airlines has cut down on domestic capacity by 30% during period 2001-2014 while cut was 10% on international capacity during same period. Southwest airlines remains only major exception in the industry with nearly 100% addition in capacity during same period which is explained by the fact that Southwest did not underwent any financial structuring like its peers and it generated profits across last decade. However, despite strong capacity addition by LCCs over the last decade, it is noteworthy that legacy carriers still account for 74% of the traffic.

Figure 6: Employment and Average Fares



Source: Bureau of Transportation Statistics

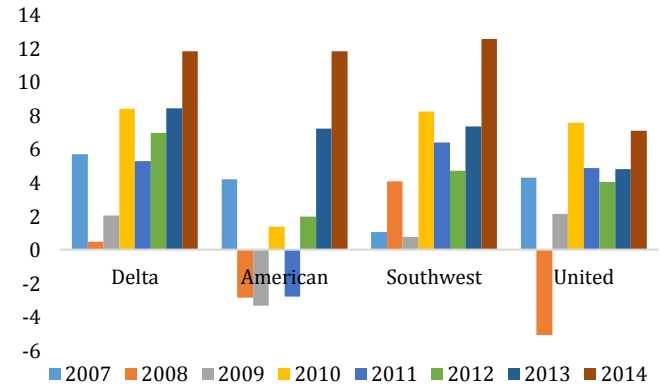
Figure 7: No. of Scheduled Flights (Millions)



Source: Bureau of Transportation Statistics

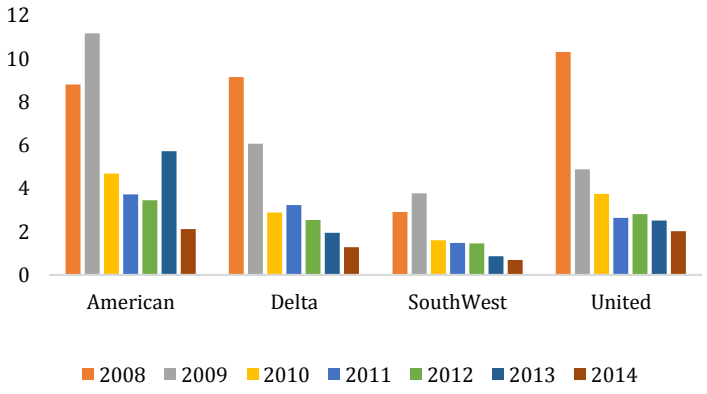
Employment in airlines industry has come down significantly from nearly 560,000 in 2001 to 490,000 in 2014. Full-time employees in airlines industry still remains 3% lower than pre-recession level. However, there has been a trend is rise in average fare since 2008 recession. In the last 5 years, average real fares for air travel in US have risen by nearly 15% touching 10-year high in US domestic market. With consolidation in industry and focus on improving efficiency, no. of scheduled flights offered by US airlines industry has come down significantly. Cutting down on unprofitable and redundant routes has always been key component in restructuring plan for airlines as it leads to significant cost savings in terms of lower headcount, lower fuel cost and efficient capacity utilization. Since, 2007, number of scheduled domestic and overall flights have reduced every year, 2014 being the lowest in 12 years.

Figure 8: Operating Margins (%) for Top 4 Airlines



Source: Factset

Figure 9: Debt to EBITDAR for Top 4 airlines

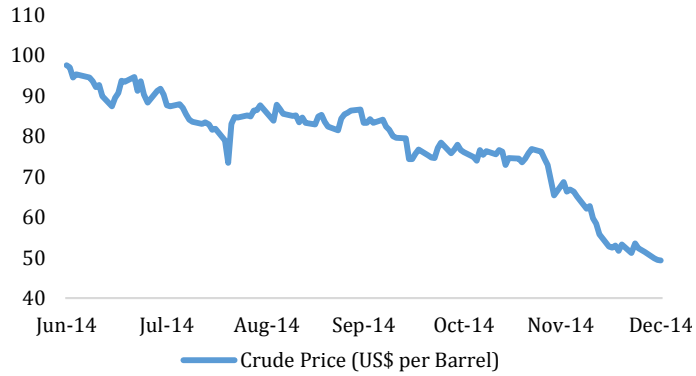


Source: Factset

Top 4 players in the industry have improved upon their operating margins over the last 4 years. With legacy airlines such as American and Delta generating double-digit operating margins comparable to LCC peers like Southwest. These margins are near the highs achieved by airlines industry during period 1995-2000. Moreover, increasing profitability has significantly improved

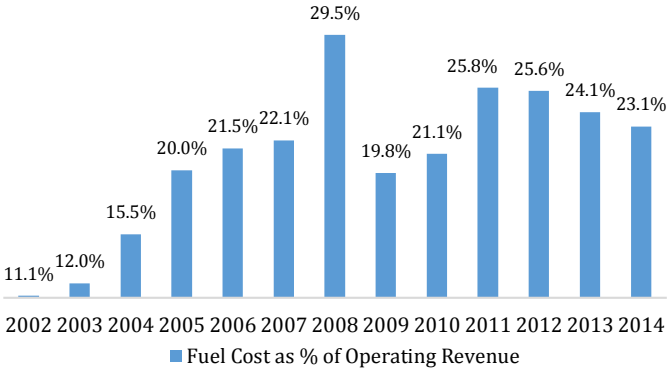
financial fundamentals of the company which is indicated in sharp decline of debt to EBITDAR ratio for top players in the industry.

Figure 10: Crude Price (Jun 2014 - Dec 2014)



Source: Indexmundi

Figure 11: Fuel Cost as % of Operating Revenue



Source: Bureau of Transportation Statistics

Moreover, with oil prices touching 5-years lows, operating margins for airlines industry are expected to improve significantly over next 2 years. Rising fuel costs have suppressed the profitability of airlines over the last decade (Figure 11). According to IATA estimates, low crude prices would lead to reduction of fuel cost by nearly 25% for airlines. According to Bureau of Transportation Statistics, fuel cost for US airliners have come down by nearly 35% on YTD basis for quarter ending March, 2015. In addition, unlike 2009, when oil prices came down as a result of short-term reaction to global recession, recent slide in oil prices is more of a result of a permanent change in oil supply dynamics. After nearly 40 years, 2 out of top 3 crude producers (US and Russia) are non-OPEC nations. It is considerable that operating profit ex-fuel per ASM (Available Seat Miles) for nearly all the airlines has improved over the last 5 years. For example, operating cost per ASM for American Airlines has improved from US$ 1.98 for FY 2012 to US$ 4.26 for FY 2014.

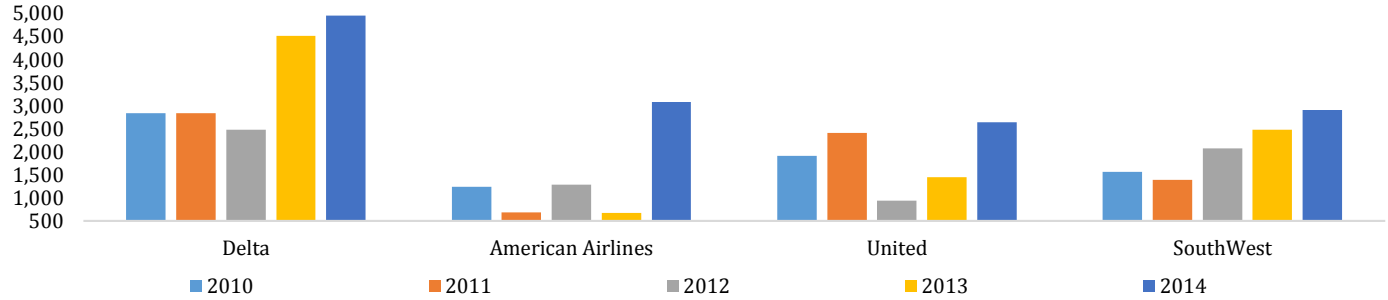
More importantly, all major airlines have refrained from reckless market behavior exhibited in the past. Despite sharp fall in oil prices, industry has not witnessed any significant downward revisions in passenger fares. Drawing a parallel from history, during period 1995-1999 (the previous profitable phase for US airlines), all major airlines experience improvement in their balance sheet consistent decline in debt to equity ratio.

Table 4: Debt to Equity Ratio (%)

	1993	1994	1995	1996	1997	1998	1999
Delta	197	236	182	89	70	48	60
American	246	260	203	90	71	66	91
Southwest	62	48	47	40	37	26	31
United	672	NA	NA	219	148	146	97

Source: Factset

Figure 12: Operating Cash Flows (US$ Million)



Source: Factset

Table 5: Cash flow Analysis on Cumulative 3-Year Numbers (2012-2014)*

	Cash Flow from Operations	Capital Expenditure	Free Cash Flow	Debt Repayment	Share Repurchases
Delta	11,927	6,785	5,142	4,000	1,350
American	5,040	10,029	-4,989	-1,358	1,052
United	5,013	5,756	-743	2,490	213
Southwest	7,443	4,543	2,900	1,452	1,662

Source: Factset * All numbers are in US$ Millions.

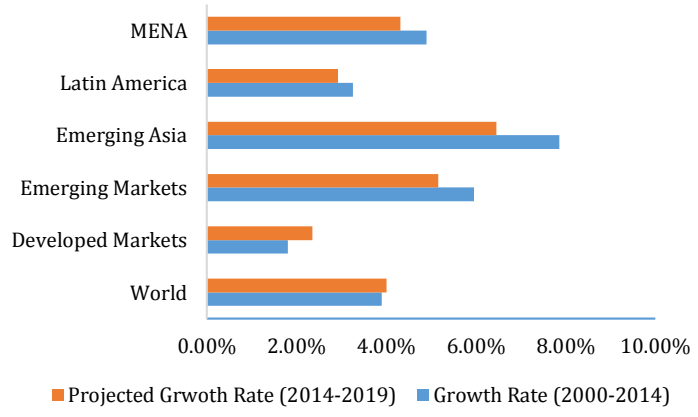
US carriers have ended 2014 at 5-year high in terms of cash flows from operations (Figure 12). Delta and Southwest are generated cash flow of US$ 5 Billion and US$ 3 Billion, respectively on cumulative 3-year basis. Also, Delta and Southwest have made debt repayments of US$ 4 Billion and US$ 1.5 Billion over last 3 years. Though, United has generated small negative cash flow, it has made debt repayment of nearly US$ 2.5 Billion in last 3 years. Apart from improving cash position and debt levels, airlines have increased cash payouts to shareholders over the last 2 years. American, Southwest and Delta have announced buyback of their shares from investors in 2014 with each buying nearly shares worth US$ 1 Billion from the investors. Apart from Southwest which has been paying dividends since 1980s, Delta has resumed its regular dividend payment in 2013 while American announced its first dividend in 2014.

United is the only large carrier that has initiated a regular dividend policy. It has used its cash flows in debt reduction and capital expenditure. It has successfully negotiated its contracts and pension liabilities with workforce which has reduced pension liabilities for the carrier. Market is expecting United to announce a dividend in 2015. Having said that, it has already joined its peers in returning money to shareholders with announcement of share buyback program worth US$ 1 Billion in July 2014.

Secular Growth Cycle

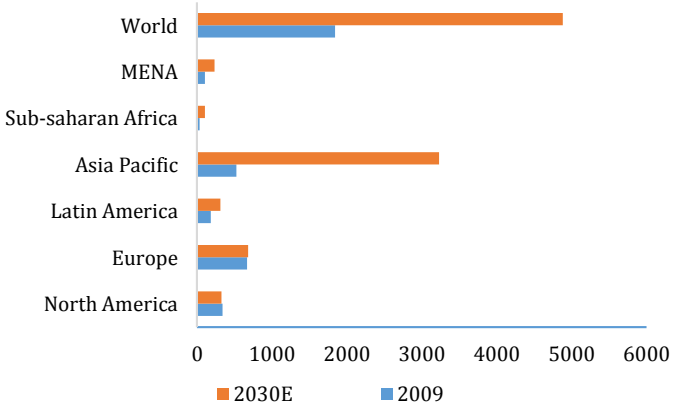
Despite all its troubles, airlines industry has experienced secular growth over decades with RPK doubling after every 15 years. Even with crippling economic crisis during 2003-2013, airlines industry has registered growth of 73%. Over the last 15 years, global growth pivot has decisively shifted to emerging markets, predominantly Asia with countries accounting for nearly 50% of global population such as India, China and Indonesia expected to significantly outpace the global growth. China and India are expected to become world's largest and 3rd largest economy with emerging markets collectively expected to contribute more than half of global output by 2030.

Figure 13: GDP Growth by Geographic/Economic Grouping



Source: IMF

Figure 14: Size of Global Middle Class



Source: Brookings Institution

Share of Asia-Pacific in the middle class segment is expected to increase sharply over the period 2009-2030 from 28% in 2009 to mammoth 66% by 2030. While global middle class is expected increase by nearly 3 Billion by 2013, more than 90% would be contributed by Asia-Pacific region with India and China together contributing more than 2 Billion in new middle class.

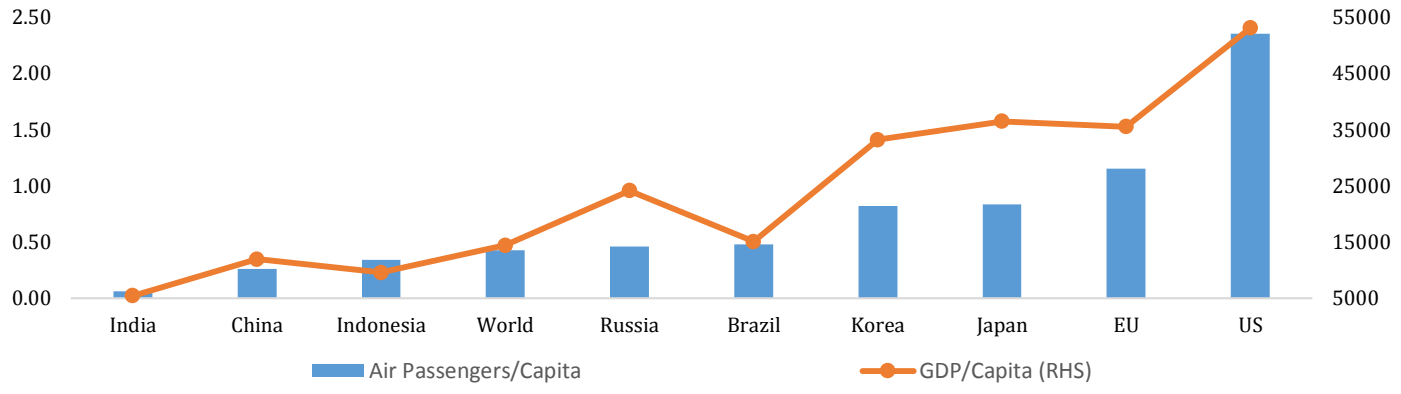
Table 6: Historical and Projected Revenue Passenger Miles (RPM) by Region

	2005	2006	2007	2008	2009	2010	2011	2012	2032	CAGR (2005-2012)	CAGR (2012-2032)
Africa	36.0	35.6	37.3	41.6	43.9	48.7	51.1	55.8	190.7	6.50%	6.30%
Central America	26.7	28.2	29.7	32.3	29.8	31.3	32.2	35.9	88.2	4.30%	4.60%
China	164.2	189.8	223.1	236.5	287.4	335.4	380.1	403.3	1523.2	13.70%	6.90%
CIS	58.1	63.6	81.6	77.7	83.6	101.6	124.1	133.1	349.1	12.60%	4.90%
Europe	561.9	593.3	634.2	660.6	624.9	640.2	659.5	710	1448.0	3.40%	3.60%
Middle East	48.7	53.7	60.3	63.4	68.6	77.9	82.4	78.3	235.2	7.00%	5.70%
North America	972.3	977.4	1022.4	974.1	915.1	946.3	976.4	978.2	1538.7	0.10%	2.30%
Northeast Asia	82.8	87.4	88.8	84.9	81.9	84.7	81.9	97.3	160.8	2.30%	2.50%
Oceania	65.3	70.8	74.4	72.0	73.3	78.4	83.8	95.5	231.7	5.60%	4.50%
South America	64.1	74.3	83.1	81.6	86.9	115.9	134.4	136.4	566.5	11.40%	7.40%
Southeast Asia	79.1	78.8	93.4	93.2	96	113.2	130.7	152	644.7	9.80%	7.50%
South Asia	25.2	31.3	36.3	40.1	43.8	49.5	58.6	60.1	374.5	13.20%	9.60%
World	2184.4	2284.2	2464.6	2458.0	2435.2	2623.1	2795.2	2935.9	7351.3	4.31%	4.70%

Source: Boeing

Global cumulative average growth rate for air traffic stands at 4.31% during period 2005-2012 while regions dominated by large emerging markets such as China, CIS, South Asia, South America and Southeast Asia have registered CAGR of 13.70%, 12.60%, 13.20%, 11.40% and 9.80% during the same period which stand in sharp contrast to anemic growth rates 0%-4% for developed markets (Table 6). Emerging markets have accounted for nearly 80% of air traffic growth during period 2005-2012. Over the next 20 years, RPMs are expected to increase at cumulative annualized growth rate of 4.7% to reach a level of more than 7 trillion by 2032 as compared to nearly 3 trillion in 2013. China alone would contribute nearly 25% of increase in global traffic while emerging markets together would contribute to 70% of incremental air traffic.

Figure 15: Air Passengers/Capita and GDP/Capita for Key Markets



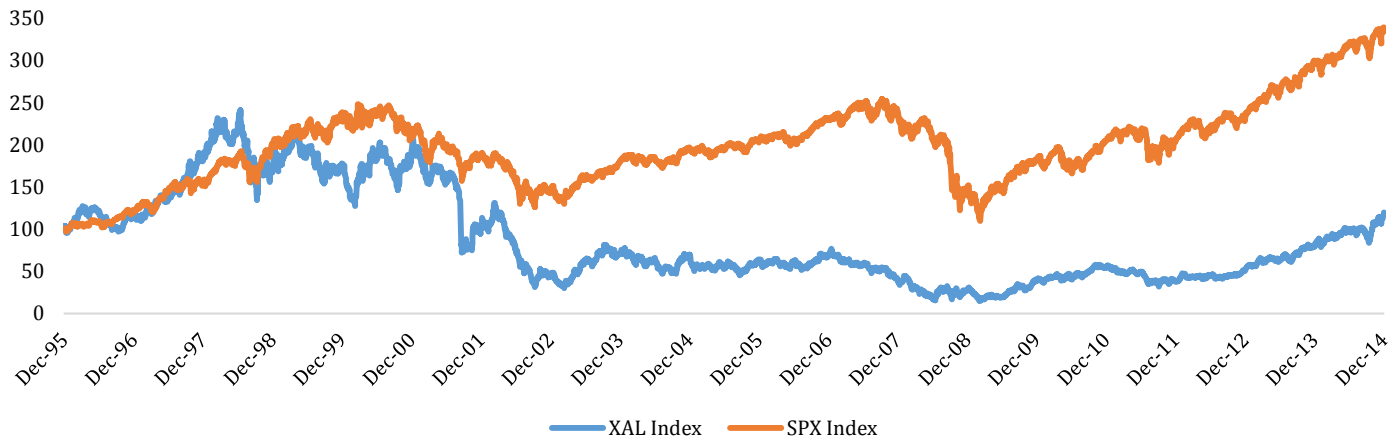
Source: World B

Air travel penetration is for emerging markets is significantly lower than developed markets (Figure 15). For example, Indi and China has PAX/Capita of 0.06 and 0.25, respectively as compared to number of 0.85 for Japan, 1.15 for EU and 2.35 for US. There is a clear linking of airline penetration and disposable income which is validated by the fact that countries with higher GDP/capita have maintained higher airlines penetration.

Geographic Diversification - Improving Risk/Return Proposition

Detailed earlier in the sections, airlines have been historically operating at wafer-thin margins and even short-term economic or business disturbances have been sufficient to put them into financial distress.

Figure 16: Price Performance - NYSE Airlines Index vs S&P 500



Source: Bloomberg

US$ 100 invested in NYSE Airlines index in 1995 would have become US$ 119 at end of end of 2014 while on the other hand, a US$ 100 invested in S&P 500 benchmark would have become US$ 334 during same period (Figure 16). What makes it even more considerable is the fact that NYSE airlines index earned annualized returns of 0.95% (vs. 6.45% for S&P 500) over a period of 19 years for investors at the volatility of more than 41% (vs. 20% for S&P 500). Based on these data points, one can easily conclude that in the past, high risk associated with airlines industry has not translated to high returns which is in clear contradiction to capital markets theory.

Table 7: Return Analysis

Period	NYSE Arca Airlines Index	NYSE Arca Global Airlines Index	MSCI EM Airlines Index
Feb 2001 - Dec 2004	-60.44%	-29.81%	54.08%
Dec 2004 - Sep 2007	-27.00%	37.32%	83.74%
Sep 2007 - Dec 2012	0.89%	-23.51%	-47.03%
Dec 2012 - Dec 2014	135.42%	158.25%	-19.02%
Feb 2001 - Dec 2014	-31.40%	90.40%	21.45%

Source: Bloomberg

As mentioned earlier in the paper, economic trends and geopolitical activities can have significant impact on airlines industry. Magnitude of the impact for individual airlines can be highly localized. For example, in the years after 9/11, there was sharp decline in revenues for US airlines which was recovered by 2004 but it was sufficient to put entire industry into bankruptcy which is indicated by poor performance of NYSE Arca Airlines Index till 2007. However, NYSE Arca Global Airlines Index, having limited exposure to US significantly outperformed US-focused index. However, period marked by global recession and mild recovery (Sep 2007 – Dec 2012) saw US airlines benchmark providing static returns of 0.89% while global and EM indices saw sharp decline of -23% and -47% which can be explained by Eurozone crisis and sharp downward revision in growth rates of emerging markets following 2008 recession. Over the last years, with industry coming out of bankruptcy and developed markets taking the lead in global recovery, both US and global index have recorded returns of more than 150% while MSCI EM Airlines index has provided a return of -19%.

There is divergence in performance of global airlines industry on basis of geography and economic association. With NYSE Arca Global Airlines Index provided nearly 90% returns over the period Feb 2001-Dec 2014 (vs -31% for NYSE Arca Airlines Index) at relatively lower volatility of 33% (vs 40% for NYSE Arca Airlines Index). Geographic diversification has improved the risk/return proposition for investors in the past. Investors can use geographic diversification to hedge their risk against adverse economic/geopolitical events and improve risk/return proposition.

Investing Across Value Chain - Hedge against Industry Volatility

Among value chain partners of airlines industry, airports and aircraft manufacturers stand out as sectors with solitary focus on servicing the airlines industry. Aircraft manufacturing is a highly oligopolistic sector with high entry barriers. For example, Boeing and Airbus together have market share of more than 80% in aircraft manufacturing market. On the other hand, airport operating companies have a stable business model like utilities with monopolistic control on arrival and departure terminals in their respective cities. Airports change service free from airlines which is mainly dependent on traffic from the airport. As with the airlines, airports also suffers from sharp decline in revenues due to economic slowdowns, epidemic scares and terrorist attacks but they have an option of increasing servicing fee for airlines to prop-up their profitability.

Table 8: Net Profit Margins for Top Aircraft Manufacturers and Airports

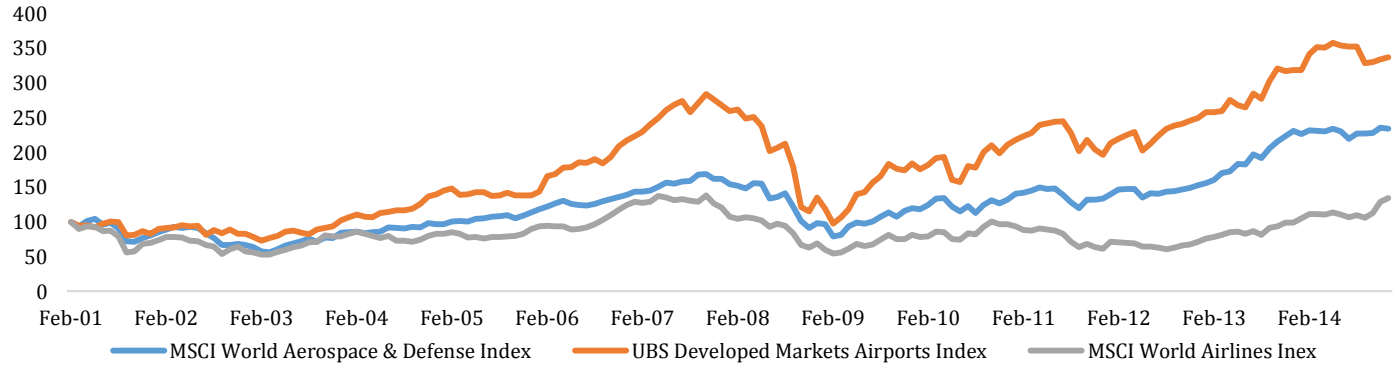
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
The Boeing Co.	Aircraft Manufacturer	3.47%	4.78%	3.59%	6.11%	4.36%	1.96%	5.15%	5.84%	4.77%	5.29%
Airbus Group NV	Aircraft Manufacturer	3.79%	4.90%	0.25%	-1.14%	3.63%	-1.78%	1.21%	2.10%	2.12%	2.56%
Embraer SA	Aircraft Manufacturer	12.52%	7.76%	7.45%	11.86%	3.65%	8.39%	6.11%	1.59%	5.73%	5.70%
Bombardier, Inc.	Aircraft Manufacturer	-0.91%	-0.78%	0.92%	1.64%	1.81%	5.11%	3.65%	4.26%	2.80%	3.11%
Airports of Thailand	Airport Services	34.13%	49.74%	63.82%	5.62%	33.26%	3.33%	8.49%	7.73%	21.33%	44.41%
Aéroports de Paris	Airport Services	7.95%	9.40%	7.35%	14.07%	10.79%	10.23%	12.46%	14.44%	13.01%	11.06%
Japan Airport	Airport Services	4.87%	3.49%	2.04%	1.87%	2.98%	3.01%	2.14%	0.69%	-2.02%	1.19%
Shanghai Airport	Airport Services	57.10%	53.84%	53.20%	55.84%	26.61%	21.92%	32.47%	33.78%	34.16%	36.65%

Source: Factset

Aircraft manufacturing is a typical industrial sector which follow economic trends (Table 8). Though margins for industry have remained in single digits throughout the period, they have remained more or less profitable throughout the period which stands in sharp contrast to volatile margin profile of airlines. Similarly, margin profile for airports have remained stable with all top airports remaining profitable across 10 years.

In order to compare return performance, MSCI World Aerospace & Defense Index has been taken as a representative of aircraft manufacturing sector. Index also include manufacturers of planes, shuttles and helicopters that are used for defense and space missions. Due to lack of data and maintain coherency in comparison, developed market indices for airlines, airports and aerospace & defence sectors have been used for analysis.

Figure 17: Price Performance



Source: Bloomberg

Investment of US$ 100 in aerospace & defense sector in Feb 2001 would have amounted to US$ 234 by end of 2014 as compared to US$ 337 in airport sector and US$ 134 for airlines industry. Apart from providing better return in the past, aerospace and airports sector indices have achieved outperformance over airlines index while maintaining lower volatility at 18% and 22%, respectively (vs 24% for airlines index). Though, airports and aircraft manufacturing are looking like much more stable than airlines and these businesses exist to service airlines, an investment portfolio dominated by airports and aircraft manufacturing can dilute the exposure to airline industry significantly. A better option would be to protect against volatility of airlines industry by allocating 20%-25% of portfolio to these sectors.