



Costs are rising

Professor David Yu, CFA, ISTAT Certified Aviation Appraiser, Contributing Editor, assesses the impact of the expansion of cost drivers and their affect on aviation.

Since the end of the Great Financial Crisis, the aviation sector has been on a tear going only one way, upward. This has been generally great for all industry participants, the airlines, lessors, financiers and end consumers. According to IATA, global demand in terms of RPKs have increased from 6,190bn in 2014 to 8,255bn in 2018 or 33% over the 4 year span while during the same period, global airline profits also increased from \$17.3bn to \$32.3bn or a 87% increase. Even with the higher absolute figures in 2018, this current figure represents a 14% fall from the all time record high global airline profits achieved in 2017 at \$37.7bn which is an indication of how challenging these past twelve months has been. Sentiment has changed downward.

In past articles, I have written about the different drivers for airlines and leasing companies. One of the main drivers for airlines is fuel cost which can make up, near its peak, close to 50% of an airline's total cost. Not only is it high proportion but fuel prices are exogenous to the airlines themselves as it is outside the airline's control. Traditionally, airlines to varying degrees have used hedging products (collars, swaps, oil options, future contracts, forwards, etc.) to stabilize the volatility of one of the main cost elements. This has been a lukewarm success. One of the main poster child of fuel hedging success is Southwest who during the last major oil spike above \$100/barrel but even this was only for a defined period of time before turning negative. Unfortunately, there are many more

examples of negative consequences in fuel hedges such as Delta losing more than \$4bn over 8 year span in 2016 and Cathay Pacific losing \$6.45bn in 2017. Others such as American Airlines (and predecessor US Airways) have sworn off these hedges. Some airline have a no fuel hedge policy such as Chinese airlines are more a result of a large loss \$550m from an aviation fuel hedging gone bad scandal. Because of this, it inadvertently helped airlines lower their costs along lower oil prices in beginning of 2016 while the rest of the industry still had high priced hedges in place.

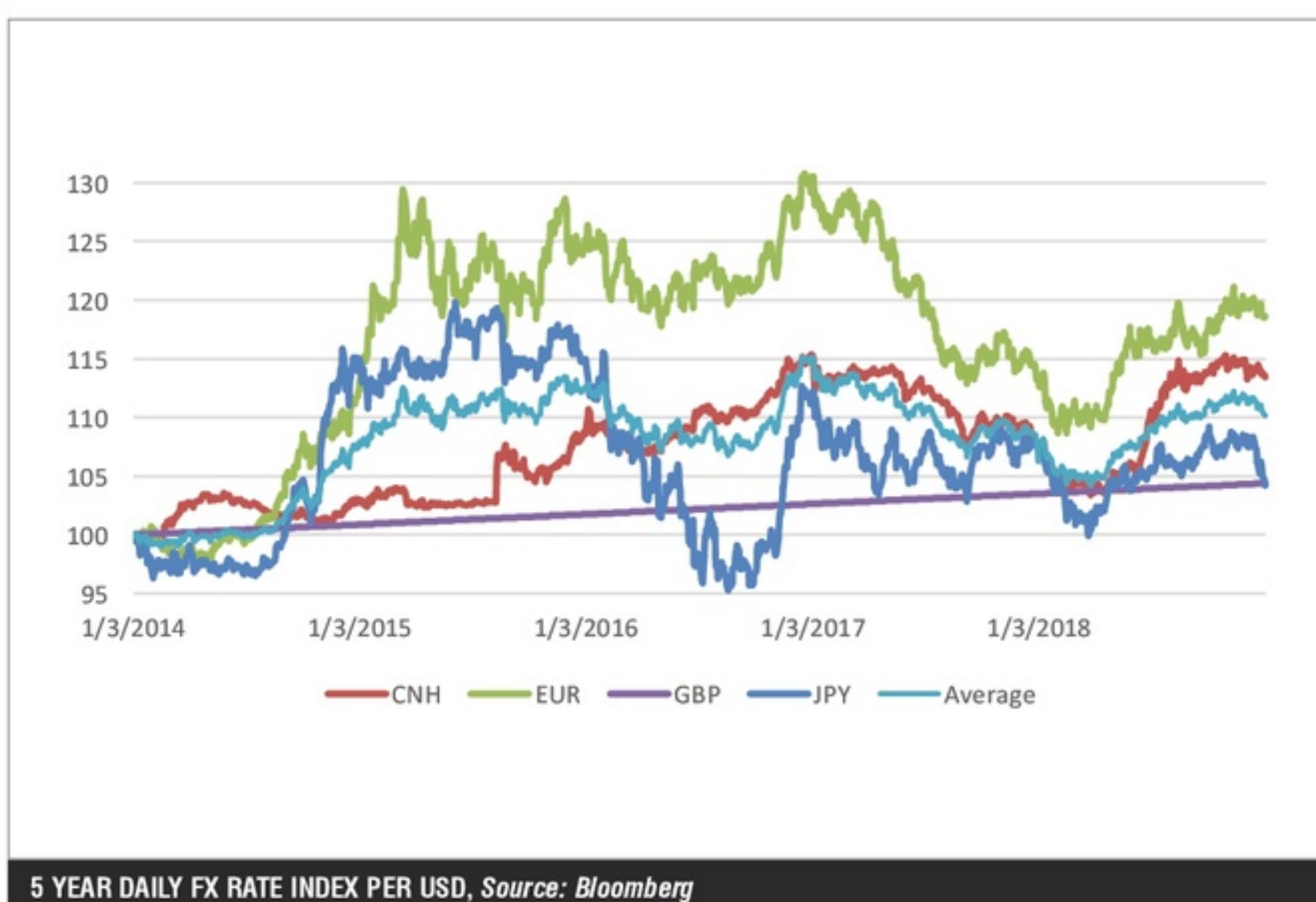
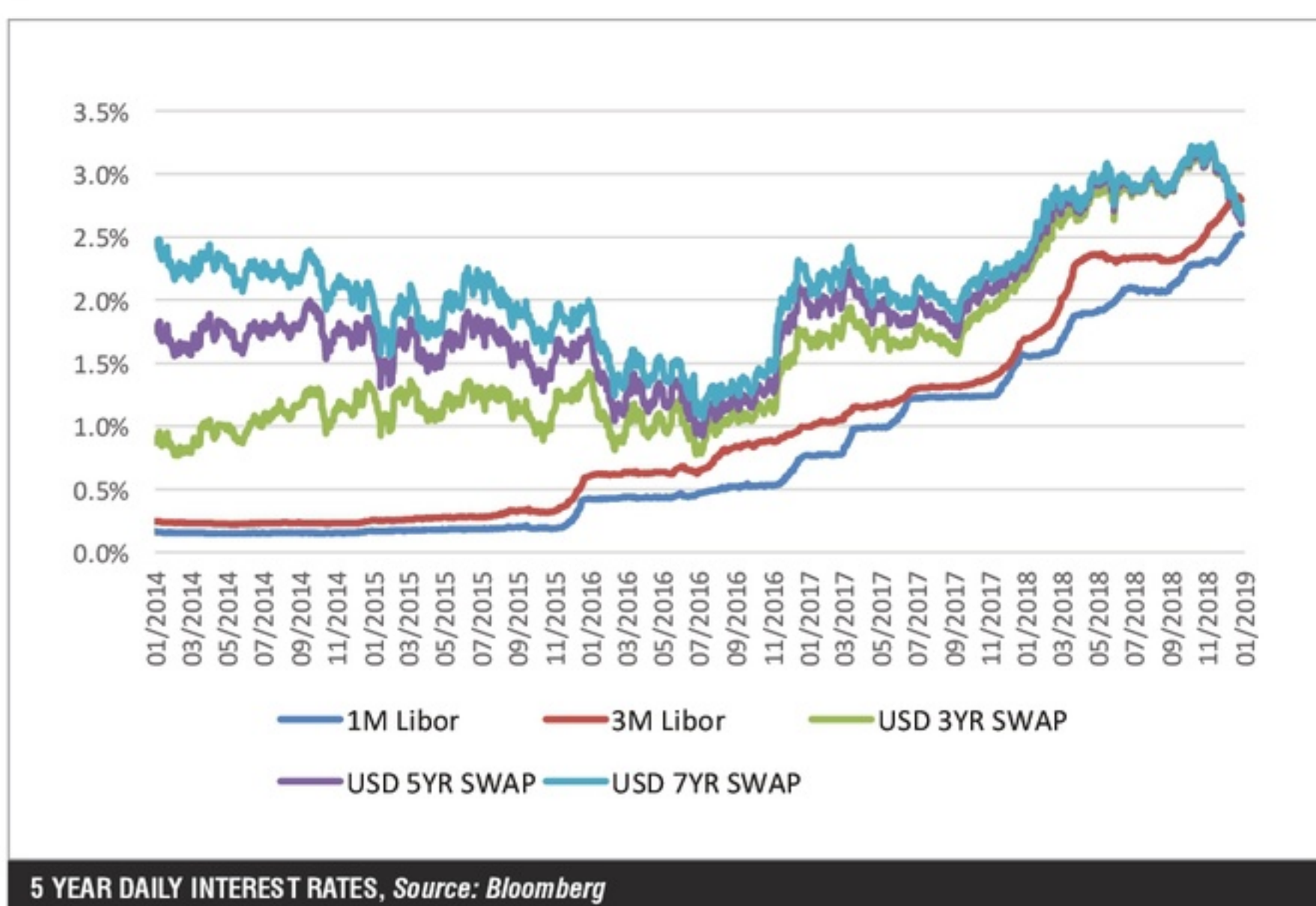
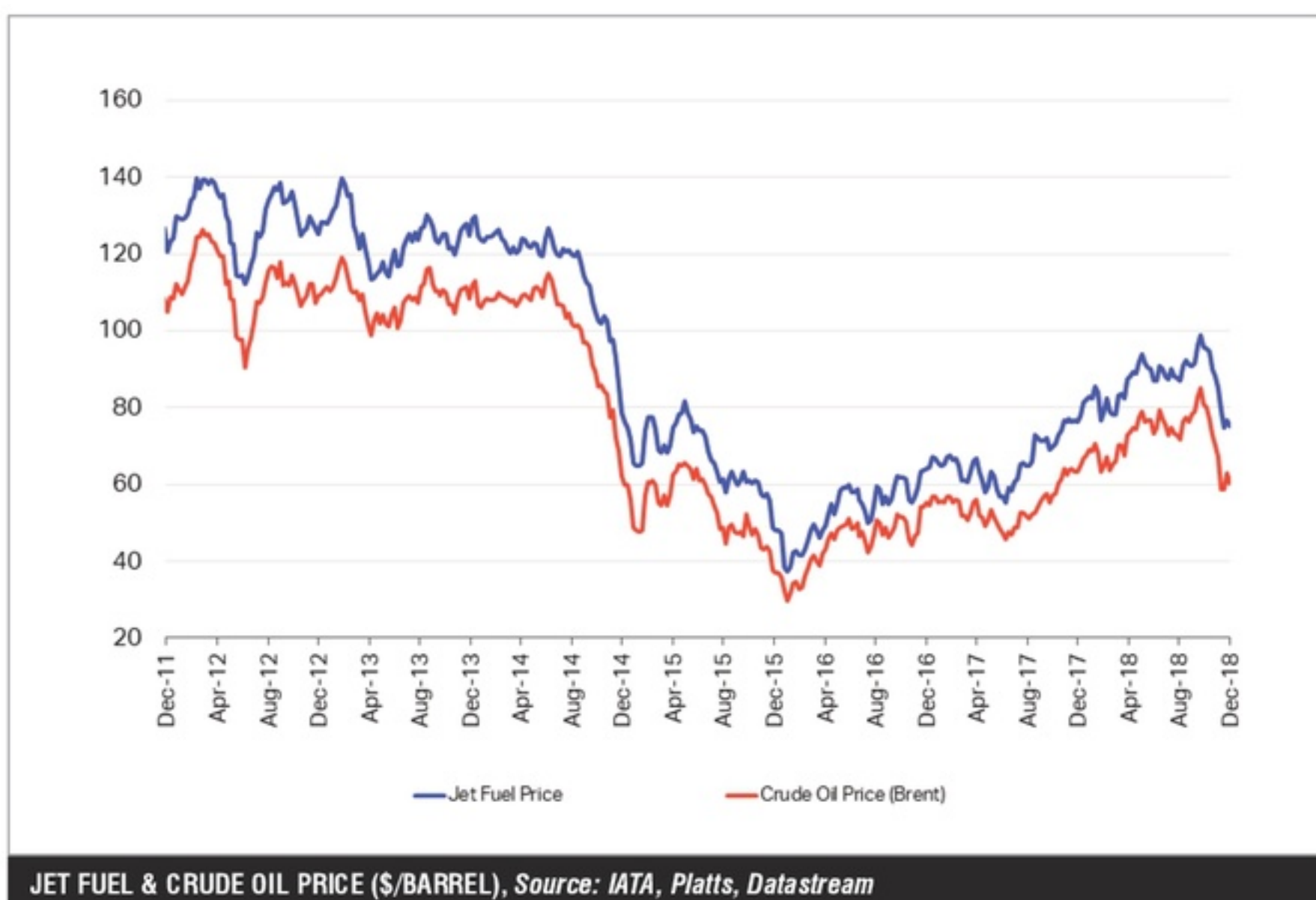
The indicators of the amount of engineering going on are the large financial ramifications of \$1 change in oil that are disclosed in airline financial reports. These large potential movement has resulted in more innovative

solutions to tackle this issue such as Delta's acquisition of an oil refinery in 2012 and recent decision to search for a new joint venture partner in 2018 due to cost and risk mitigations. As airlines have become more complex derivative trading companies rather than transport companies, the main lesson here is basic economic theory for sticking to your companies' core mission and competencies and not to venture into an area where they are less competitive.

According to Bloomberg, the ratio of fuel cost to sales has increased significantly as well. Fuel cost is now 25.3% of sales for a basket of global airlines for 2018Q3 compared with the 5 year low of 18.8% in 2016Q1 and a 5 year high of 34.4% in 2014Q1. These fuel cost ratio figures for a basket of global full service airlines is 24.1% for 2018Q3 vs. 5 year low of 18.4% in 2016Q1 and 5 year high of 31.5% in 2014Q4. Fuel cost is 27.7% of sales for a basket of global airlines for 2018Q3 vs. 5 year low of 21.1% in 2016Q3 and 5 year high of 39.8% in 2014Q1. Oil per barrel costs has increased more than 1.9x since the recent record lows in the end of 2015 to the recent high. There has recently been a significant pullback in the last several months and jet fuel has moved in similar fashion. While this pull back of prices and lagged fuel surcharges has helped financially but it may not be enough for some carriers that are teetering.

Another main driver for airlines and leasing companies is interest rates. From my research, the 5 year swap rate is the most correlated with the values of aircraft and this has risen 177% since its low in July 2016 and 147% since 2014. See the below graph of the various short term LIBOR and USD swap rates. 3, 5, and 7 year swap rates as an equal basket have on average increased 185% since 2014. These increases have resulted in increased borrowing financing costs and lease rates for aircraft. Not only that, but with all other factors equal have increased the hurdle rates for doing new deals.

Lessors have enjoyed a 10 year run up in the market since the end of the financial crisis in 2009 and some even argue that the financial crisis only caused a pause in the run up which really started back after 9/11 in 2001.



This period has seen a growth in volume but also increased asset costs but a compression of rental yields through the maturity curve of aircraft. Aircraft lessors who have more recently built up large portfolios of aircraft on long term fixed leases of lower levels of rental yield will be at a disadvantage in a rising rate environment. These increases will cause headaches in terms of trading as they lease yields will be lower than what is currently available with “on the run” aircraft. Not only that, like a long dated zero coupon bond, the long duration nature of higher interest rates will have an inverse affect on the principal driving it down. The saving grace will be to hold the aircraft through the longer term lease for better times.

Another main concern and driver is the currency exposure. This is most acute for international airlines as the cost of fuel and aircraft and some financings are in US dollars while other costs are in home or other currencies. In the past 5 years, the dollar has strengthened 10.2% compared to the basket of currencies and since the recent lows in March 2018, some currencies have appreciated close to 10%. As there has been global turmoil, a flight to safety has seen strengthening of the dollar. Chinese airlines in the most recent reports while making positive earnings were hit with quite large currency charges in the billions of dollars magnitude in 2016.

Labor cost is now 16.9% of sales for a basket of global airlines³ for 2018Q3 vs. a 5 year high of 20% in 2016Q1 and low of 16% in 2013Q3. For basket of global full service airlines⁴, labor cost is now 17.1% of sales for 2018Q3 vs. a 5 year high of 21.2% in 2016Q4 and a low of 16.5% in 2014Q3. Labor cost for low cost carriers⁵ is now 15.7% (2018Q3) of sales vs. a 5 year high 18% (2018Q1) and low of 12.7% (2014Q3). The labor run up is more profound in LCCs where they are lower compared with full service carriers were labor costs are elevated levels given the labor union presence. This is acutely being played out in Europe recently as there have been more industrial actions in the past few months with Ryanair, easyJet, IAG, among others while US carriers are currently undergoing another round of pilot negotiations. The shortage of pilots globally will continue

SELECTED AIRLINE CLOSURE LIST				
Name	Country	Aircraft Fleet #	Month of Closure	Year of Closure
Alitalia	Italy	98	May	2017
Air Berlin	Germany	385	August	2017
Monarch Airlines	UK	35	October	2017
Mega Maldives	Maldives	3	May	2017
VIM Airlines	Russia	28	October	2017
Island Air	US	3	November	2017
Eastern Air Lines	US	4	September	2017
Niki	Austria	30	December	2017
Cobalt Air	Cyprus	6	October	2018
Primera Air	Denmark	7	October	2018
Azur Air	Germany	2	September	2018
Seaborne Airlines	Puerto Rico	10	January	2018
SkyWorks Airlines	Switzerland	6	August	2018
Avianca Brazil	Brazil	54	December	2018
Small Planet Airlines Germany	Germany	7	October	2018
Small Planet Airlines Cambodia	Cambodia	2	November	2018
Small Planet Airlines Poland	Poland	1	November	2018
Orient Thai Airlines	Thailand	13	July	2018

Source: Company info, fleet numbers from IBA.iQ and Prof. Yu's research

to exacerbate this issue as there is a wave of retirements in more mature markets and newer high growth markets in Asia and China have attracted experienced pilots through very attractive financial offers.

All of these increased cost drivers have result in weeding out of some of the airlines in the crowded marketplace. Last year was the start of the problems starting with some sizable airlines in Alitalia, Air Berlin, and Monarch Airlines all ceasing operations. There are always some smaller airlines that run into trouble every year and in 2017 was no exception with Mega Maldives, VIM Airlines, Island Air, Eastern Air Lines, Niki, etc. In 2018, this trend has continued with more all listed in the table below, among others.

While this is not an exhaustive list, it includes most of the notables but does not include any acquisitions or nationalizations of airlines due to political effects such as foreign exchange restrictions forcing restructurings of airlines in Nigeria. Most of these come in the end of summer to the winter months which does not bode well as end of the summer traditionally should be the highest in terms of cash reserves while the winter is the low. With continued geopolitical and economic instability,

this will be a continued area to watch in 2019. Some other more sizable airlines that have been on the watch list are Jet Airways (India, 124 aircraft), Norwegian Air Shuttle (Norway, 163), Wow Air (Iceland, 16) and Flybe (UK, 78) putting itself up for sale. All of these cost drivers and other competitive factors contribute to the continued lower yielding environment for airlines in the five years.

So far, the good news is that the lessors have been able to replace these aircraft post these events to other airlines for the most part especially the main stream aircraft types but given the competitive market for leased aircraft, the lease rates and other concessions (reconfiguration, etc) have not been favorable towards the lessors. One of the helping factors is that newer aircraft are more fuel efficient and will continued to be high demand especially as prices rise. All of these build up for an interesting and exciting 2019 in aviation!

*All opinions expressed are the authors' own. The author is an Adjunct Professor of Finance at New York University Shanghai where he teaches and focuses on crossborder investing, financing and real assets. He is also Managing Director of Inception Aviation and can be reached for comments or suggestions at david.yu@nyu.edu