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How Covid-19 Impacts Chinese Airline Companies

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This paper aims to provide an illustrative case of Covid-19 impact on Chinese airline companies. Along with recent coronavirus outbreaks around the world, there are a series of major events adding to the market turmoil, such as the crude oil crash and several major markets index movements. These shocks have significantly affected the equities of the corresponding publicly traded companies and, in turn, the market-implied credit default probabilities. Considering the focus on many frontline industries, we are examining the insights provided by S&P Global Market Intelligence ("Market Intelligence") Credit Analytics scores for Chinese airlines. We seek to assess the severity of the impact of the pandemic through market-driven credit indicators and the airline industry's resilience by performing a simple financial statement-based stress analysis.

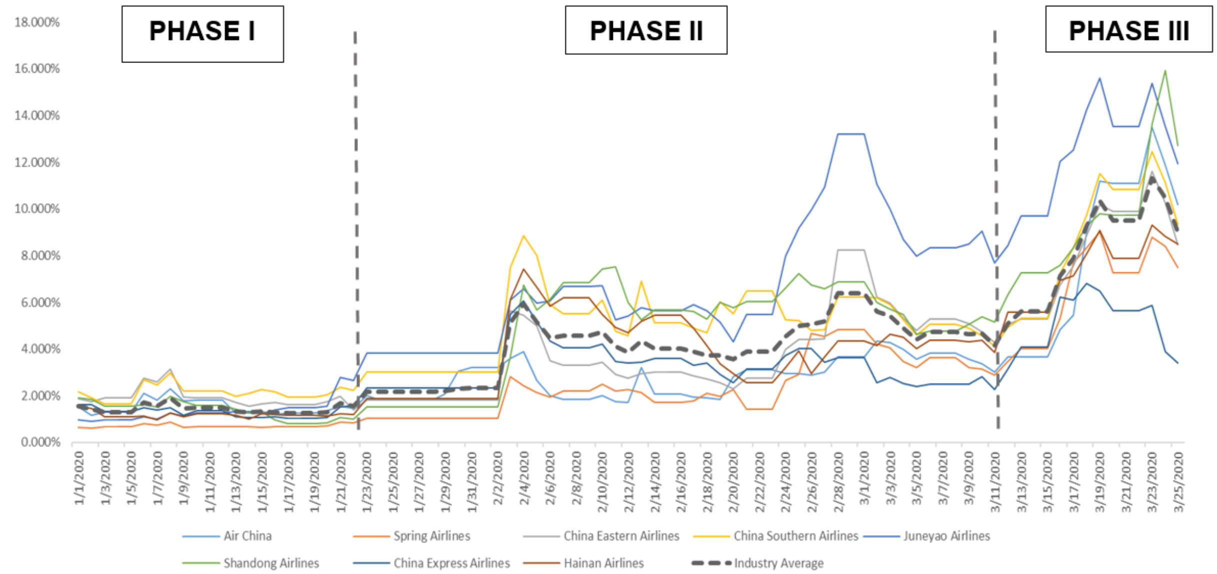
Overview

As part of Market Intelligence's Credit Analytics suite of tools, our Market Signal Probability of Default (PD)[1] model offers insight into market implied credit risk profiles by linking equity price changes to a conceptual corporate distance to default. As a result, we are able to take signals from equity market movements and infer credit insights into a specific publicly listed corporate entity but also aggregate industry movements.

[1]Market Signal Probability of Default is a structural model that produces PD values over a one- to five-year horizon for all public corporates and financial institutions, globally. Lowercase nomenclature is used to differentiate S&P Global Market Intelligence PD market signals [or credit model scores] from the credit ratings issued by S&P Global Ratings. For more information, please see: www.capitaliq.com/media/199252-PD%20Model%20Market%20Signals%20Whitepaper%20-%20August2016.pdf.

Chart 1 is an example of the movement of the Chinese airline industry's credit profile during the outbreak of Covid-19.

Chart 1: Market Signal PD during Covid-19 outbreak in China



Source: S&P Global Market Intelligence as of March 27, 2020. For illustrative purposes only.

Phase I represents the "calm" period prior to the wider Covid-19 outbreak and the subsequent understanding of the highly infectious characteristics of the virus. It is right before the traditional Chinese New Year, providing enough time for the pandemic to foment while markets are closed. After the reopening of the market, represented as phase II[2], all airlines showed a sharp increase in their market implied PD as the market digested the news released during the festive period. However, this spike in credit stress for Chinese airline companies retreated somewhat over the following week indicating the market reacted well to the efforts of the Chinese government to contain the situation. Despite this, over the course of Phase II of the outbreak, Chinese airline default probabilities inferred from the market registered substantial stress versus pre-outbreak levels.

[2] Chinese New Year begun on Jan 23, 2020, and the market reopened on Feb 3, 2020. This left a quiet period for the market signal model which stayed flat.

1. Was it a serious shock?

Table 1: CreditModel[3] Score and Market Signal PD for Chinese Airlines

Company Name	CM Score	Market Signal Mean-2019	Market Signal Std-2019	Market Signal Mean-2020	Market Signal Std-2020
Air China	bbb+	2.269%	1.082%	3.335%	2.731%
Spring Airlines	bb+	2.203%	1.083%	2.636%	2.232%
China Eastern Airlines	bb+	4.155%	3.114%	3.946%	2.542%
China Southern Airlines	bb+	1.868%	0.711%	4.903%	2.610%
Juneyao Airlines	bb-	3.691%	1.396%	6.189%	4.112%
Shandong Airlines	bb	2.636%	1.502%	4.772%	3.231%
China Express Airlines	b	5.629%	1.708%	3.016%	1.486%
Hainan Airlines	b	2.031%	0.736%	3.815%	2.371%
Average		3.060%		4.076%	
ANA Holdings	a	0.503%	0.345%	2.448%	3.576%
Singapore Airlines	a	0.446%	0.212%	2.401%	3.867%
Korean Air Lines	b	2.057%	0.867%	5.397%	3.118%
Japan Airlines	a	0.457%	0.207%	3.022%	3.982%
Asiana Airlines	b-	3.424%	1.634%	17.039%	5.976%
Regional Average		1.377%		6.062%	

Source: S&P Global Market Intelligence as of March 27, 2020. For illustrative purposes only.

In order to exclude the seasonal movements in market indicators, which are a common feature for equity trading and the airline industry metrics as a whole, we compare the period January 1, 2019 to March 25, 2019 versus the period January 1, 2020 to March 25, 2020 to check the market implied PDs. As can be seen from Table 1 above, all entities, except for China Eastern Airlines, show a more volatile and deteriorated credit status with regard to its PD average as well as PD volatility. The whole industry's average market signal PD is 4.076% during 2020 period compared to 3.06% in 2019. Numerically, it's almost a 33% increase in percentage, so it's definitely a serious shock in the context of historical data. However, when we extend the analysis to several regional competitors, including ANA, Singapore Airlines and some other airlines, the market implied PD shows a more dramatic increase for regional entities versus Chinese airlines. The same period for the last year, the average market signal PD in the Asia-Pacific region is 1.377% while this year is 6.062%. An almost 400% increase on other Asian airlines reflects that the serious shock may not be as severe for Chinese airlines as for its regional peers.

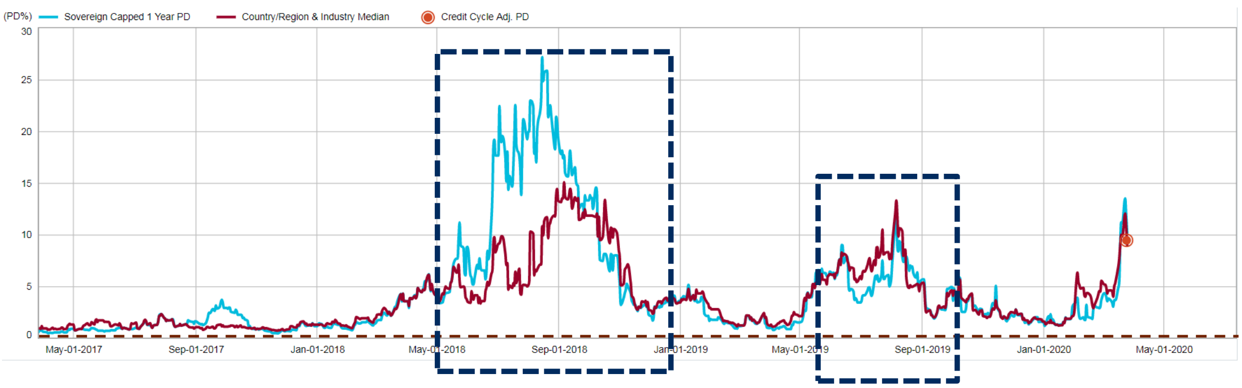
Such a shock seems to be asymmetric when viewed from the perspective of different fundamental credit qualities. Using our fundamentals-based model, CreditModel™, to understand the intrinsic credit quality of Chinese airlines versus their market implied default probabilities, we begin to see some alignment between market perceived credit risk and fundamental credit quality. For entities with credit scores above 'bb', they exhibit a mean market signal PD of 3.7%. While for those scored below 'bb', the mean is 4.48%. So clearly fundamental credit quality is beneficial to corporates to defend against extraordinary risk events such as coronavirus and this is also reflected in market implied credit perspectives.

[3] Our model utilizes both financial data from corporates and the most relevant macroeconomic data, to generate a quantitative credit score that statistically matches a credit rating by S&P Global Ratings.

It would seem that the market perspectives around credit risk with respect to Chinese airline companies during this stressful period incorporated fundamental views of credit in addition to existential market shocks. Whilst this period was certainly a significant shock to the industry, market reactions appear to have been aligned to fundamental credit profiles of the individual companies in question.

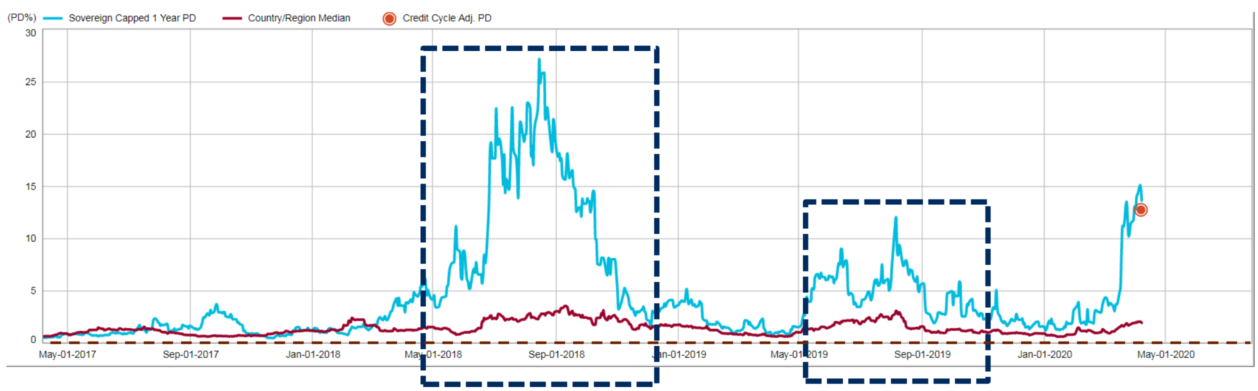
Another approach to understand the resilience of Chinese airlines to extreme events would be to examine the historical movements of the industry versus the Covid-19 outbreak. We take a look back over a horizon of three years to check whether as sharp an increase in PD has ever happened and to compare the current event to historical data.

Chart 2: Juneyao Airlines Market Signal PD during the past three years



Source: S&P Global Market Intelligence as of March 27, 2020. For illustrative purposes only.

Chart 3: Air China Market Signal PD during the past three years



Source: S&P Global Market Intelligence as of March 27, 2020. For illustrative purposes only.

Let us take Juneyao Airlines and Air China as examples. The red dashed line which is medium-to-long term PD indicates that, when the entity suffered from credit shocks, the entity always reverted to its medium-to-long term PD, implied from its credit score. Another interesting finding is, when evaluating the peak of these extreme periods, the impact from Covid-19 for Chinese airlines may be less of an impact than market movements during the second half 2018. It is most probable that, after the outbreak, Chinese airlines will likely return to their longer-horizon PD.

2. How will the long term credit score change?

The outlook for the airlines industry globally from the perspective of many industry practitioners may trend towards the negative with regard to significant reduction of business travel and tourism as well as several ongoing cross-border travel restrictions. We look at how these longer term industry trends might impact the Chinese airline industry through some simple stress testing of financial statements and the use of our fundamental-based credit scoring tool, CreditModel.

In Table 2, we create four revenue and operating cash flow stress scenarios ranging from a deduction of 20%, 30%, 50% and 70%. Then run CreditModel to get an updated scenario-based credit score.

Table 2: Chinese and regional airlines CreditModel scores under different scenarios

Company Name	Base	Revenue&Cash-20%	Revenue&Cash-30%	Revenue&Cash-50%	Revenue&Cash-70%
Air China	bbb+	bbb+	bbb+	bbb+	bbb
Spring Airlines	bb+	bb+	bb+	bb+	bb
China Eastern Airlines	bb+	bb	bb	bb	bb
China Southern Airlines	bb+	bb	bb	bb-	b+
Juneyao Airlines	bb-	b+	b	b	b
Shandong Airlines	bb-	bb-	b+	b	b
China Express Airlines	b	b	b	b	b-
Hainan Airlines	b	b	b	b	b
ANA Holdings	a	a	a	a	a
Singapore Airlines	a	a	a	a	a
Korean Air Lines	b	b	b	b	b
Japan Airlines	a	a	a	a	a
Asiana Airlines	b-	b-	b-	b-	ccc+

Source: S&P Global Market Intelligence as of March 27, 2020. For illustrative purposes only.

For the Chinese airline industry, the positive news is that the long term score seems to be quite resilient even after some aggressive shocks for revenues and cash flow. All entities in the sample set manage to maintain a negative score movement within three notches, whereas most of them are within one notch. This stress-testing like matrix shows us the longer-term good resilience for Chinese airlines. The resilience also exists for other major players in the region. Except for Asiana Airlines, other Asian airlines show a strong ability to defend the revenue and cash flow shock caused by Covid-19 under the same assumptions as other Chinese airlines.

3. Is it still worthwhile reconciling fundamental and market-based credit indicators in extreme events?

As described above, during extreme events, the short-term market based PD is inclined to return to its long-term level despite the extraordinary shock. However, peer comparison on a fundamental basis is an essential tool for daily risk management to identify those that are more or less resilient within the industry.

For example, Juneyao Airlines is one of two airlines which have been downgraded consecutively from 2017 to 2019. The CreditModel score shows a consecutive score downgrade from 'bb+' to 'bb-'. So, it's definitely worthwhile to look into the underlying factors or financial ratios behind the score. Table 3 provides an overview of Chinese airlines CreditModel scores for the past five years.

Table 3: Chinese airlines' CreditModel scores over the past five years

Company Name	3/25/2016	3/25/2017	3/25/2018	3/25/2019	3/25/2020
Air China	a	a	a	a	bbb+
Spring Airlines	bb+	bb-	bb	bb+	bb+
China Eastern Airlines	bb+	bb+	bb+	bb+	bb+
China Southern Airlines	bbb-	bbb-	bb+	bb+	bb+
Juneyao Airlines	bb	bb+	bb	bb	bb-
Shandong Airlines	bb	bb	bb	bb-	bb-
China Express Airlines	b+	bb-	b	b	b
Hainan Airlines	bb	bb+	bb	b	b

Source: S&P Global Market Intelligence as of March 27, 2020. For illustrative purposes only.

Credit Analytics does not only provide a single score but also provides insight into the credit drivers for the convenience of analysis. Taking an in-depth look at Juneyao Airlines modeling factors provides a view into its financial vulnerability compared to its peers.

Table 4: CreditModel Deep dive for Juneyao Airlines

Financial Input Ratios	Ratio Value	Median	Contribution		Sensitivity	
			Relative	Absolute	Value	Rank
Asset Turnover	0.56x	0.48x	(0.0146%)	0.2261%	0.0001	
Cash from Operations Interest Co...	4.70x	5.37x	(10.7655%)	16.2528%	0.0286	
Debt / (Debt + Equity)	42.49%	58.52%	(6.0919%)	10.0476%	0.0105	
EBIT Interest Coverage	3.84x	2.16x	(5.2978%)	4.3812%	0.0065	
Free Operating Cash Flow / Debt	(56.82%)	(1.76%)	0.0921%	0.4930%	0.0000	
Operating Income (after D&A) / R...	9.73%	6.91%	(4.4477%)	5.5666%	0.0057	
Return on Capital	8.07%	4.56%	(0.0114%)	0.0557%	0.0000	
Total Assets	28,705.4*	50,117.5*	4.2820%	62.9766%	0.0074	

Source: S&P Global Market Intelligence as of March 27, 2020. For illustrative purposes only.

As we can see in Table 4 above, several financial factors such as free operating cash flow to debt are substantially weaker versus the median for other industry participants. Free cash flow to debt, as a major factor to enable the company to maintain its daily operations as well as its debt repayment ability, is a major focus for investors during a period of stress. The ability to clearly identify this metric provides early warning signal that this company could be especially vulnerable in periods of extreme market stress.

Conclusions

- During the Covid-19 pandemic, all eight Chinese airlines have exhibited a sharp increase for their market implied PD. The relative PD movements within the Chinese airline industry are not historically rare when we compare this to a three year time horizon and very likely revert to their longer term PD level.

- Whilst short-term market signal implied scores revert to long term CreditModel scores, in extreme times these credit scores may not fully account for future industry developments in a way that market based indicators of credit risk may factor in. The use of both is therefore prudent in a comprehensive risk management process.

- Even during severe economic shocks, S&P Global Market Intelligence's Credit Analytics provides deep insight into companies and facilitates peer comparison within an industry to enhance risk analysis.