Impact of Optimal Capital Structure in QANTAS Airways Limited from 2015 - 2019

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Abstract: This paper aims to present Qantas Airways Limited (hence force Qantas) optimal capital structure and discuss further if it has operated at its optimum level by analyzing the company's historical capital structures over the past five years and make a keen comparison with four other firms in the same industry. Findings of this historical analysis from 2015 to 2019 helps to identify the appropriate method of how Qantas finances its overall operation and how the company raises funds to support its potential growth. According to Global Industry Classification (GICS), Virgin Australia Limited (VAH), Alliance Aviation Services Limited (AQZ), Regional Express Holdings Limited (REX) and Air New Zealand (AIZ) operates in the same sector as Qantas within the same transportation industry group. Therefore, the capital structure of these four industry-representative companies and Modigliani-Miller theory, trade-off theory, and free cash flow hypothesis can be used as an important criterion for comparison and to measure the optimal structure of Qantas. Finally, this paper will determine whether Qantas Airways Limited has reached its optimal capital structure within the above-mentioned years or not.

Keywords: Optimal Capital Structure, Interest Tax Shield, Financial Distress Costs

1 Introduction

Qantas Airways Limited is one of the oldest and world's leading long-distance airline brands in Australia. It was founded in November 1920 and formerly known as Queensland and Northern Territory Aerial Services Limited (QANTAS). Over the years, it has made a name for itself as one of the strongest Australian brands in the Aviation Industry. Qantas' main business is to provide domestic and international passenger transportation services; and air cargo, courier, baggage and forwarding, and express- freight services. This report will analyze changes in the capital structure of Qantas in the past a few years and the way to optimize its capital structure that increases the firm value.

1.1 Qantas's Capital Structure in the Past Five Years

There are two main ways companies usually adopted to raise capital, issuing debt which might increase the firm's debt obligation or selling equity which might lose part of the company's ownership. Typically, a firm's capital structure is made up by its debt and equity. And the

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structure generally refers to debt-to-equity ratio (D/E ratio) which equals to debt divided by equity. This ratio is a measurement of the company's financial leverage and its financial stability that reflects the firm's ability to repay its overall debt by using shareholder equity in a business downturn [6]. Equity comprises common and preferred stock plus retained earnings. Debt consists of long-term notes payable and short-term debt [5]. Hence, the D/E ratio can be calculated using the formula below.

$$Debt\ to\ Equity\ \text{Ratio} = \frac{\text{Short term debt+Long term debt}}{\text{Total shareholder's equity}} \tag{1}$$

According to the consolidated balance sheet from annual reports of Qantas during 2015 to 2019, short term debts of Qantas are the current interest-bearing liabilities, long term debts are the non-current interest-bearing liabilities and shareholders' equity equals to the total equity obtained by the firm. Table_1 demonstrates Qantas' debt and equity level over the past five years. Subsequently, debt-to-equity ratios for each year have been calculated to discuss the movements of its capital structures (Qantas 2015-2019).

Table 1: Qantas' debt and equity level for the past five years

Qantas's capital structure from June,2015 to June 2019					
	15-Jun	16-Jun	17-Jun	18-Jun	19-Jun
Short-Term Debt	771.00	441.00	433.00	404.00	635.00
Long-Term Debt	4,791.00	4,421.00	4,405.00	4,344.00	4,589.00
Total Debt	5562.00	4862.00	4838.00	4748.00	5224.00
Total shareholders Equity	3,447.00	3,260.00	3,540.00	3,959.00	3,436.00
D/E Ratio (%)	161.36%	149.14%	136.67%	119.93%	152.04%

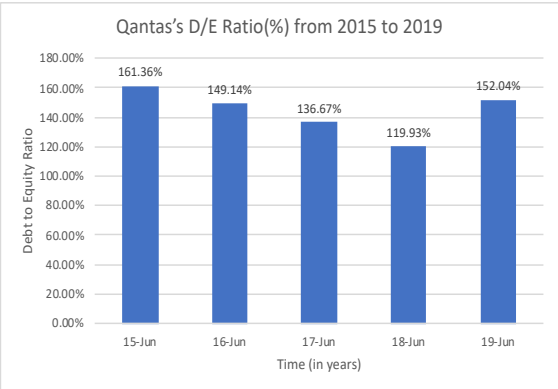

Figure 1: Qantas' D/E Ratio from 2015 to 2019

From the bar chart shown above, it is obvious to find Qantas generally has more total liabilities than equity since its D/E ratio is always greater than 1 that indicates more than 50% of the firm's assets is financed by debt. Figure 1 also reflects that Qantas was highly leveraged by debt in 2015. Then, the firm's leverage continuously declines in three consecutive years, and the D/E ratio gradually drops from 161.36% in 2015 to 119.93% in 2018. It means in the past consecutive years from 2015 to 2018, Qantas put lesser reliance on using debt to fund its assets. Finally, as shown in the graph significant growth occurs in debt finance which increases the D/E ratio by 32.11% to 152.04% in 2019.

1.2 Comparison with other firms in the same industry

According to GICS, Qantas is a company which lies in the transportation group, and which belongs to the industrial sector and specializes in airlines. VAH, AQZ, REX and AIZ are the four companies operating in the same field of airlines which belongs to the same transportation industrial sector with Qantas. The first three are Australian-based companies principally providing air transportation of passengers and cargo. Among the three companies, AIZ has the most similar capital structure with Qantas, and they are both a renowned national airline. In addition, the AIZ's principal activities are basically the same as Qantas and New Zealand companies calculated the fiscal year in the same way as Australia which ends in June each year. Thus, AIZ can be selected for comparison due to the high relevance.

Since these four companies are highly representative of the industry, we can assume that the four companies and Qantas stand for the whole industry which Qantas operates in, and the average capital structure of those five companies over the past five years as the average industry capital structure. VAH and AIZ's debt to equity ratio can be calculated in the same method as Qantas, while the D/E ratio of AQZ and REX should be modeled as total borrowing divide by total equity because the interest-bearing liabilities of these two firms refer to borrowings as stated in their balance sheet. The following Table_2 shows the D/E ratio calculated based upon the data collected from the annual reports of five firms and the D/E ratio for the assumed industry average.

Table 2: Calculated D/E Ratio from five firm's annual reports and assumed industry average.

	Time				
D/E Ratio (%)	15-Jun	16-Jun	17-Jun	18-Jun	19-Jun
QAN	161.36	149.14	136.67	119.93	152.04
VAH	270.59	333.78	154.61	234.53	489.38
AQZ	80.36	62.87	51.95	41.19	35.56
REX	18.18	16.26	12.03	8.3	3.93
AIZ	118.17	121.77	126.59	125.64	124.32
Industry Average	129.73	136.76	96.37	105.92	161.05

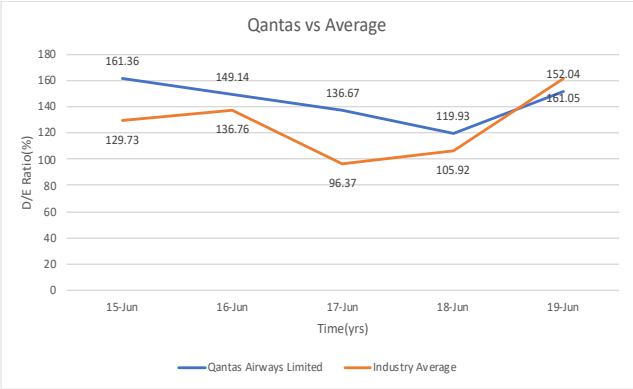

Figure 2: Graph presentation of Qantas D/E and industry average

According to Figure 2, it is observed that Qantas has a higher D/E ratio than industry average from 2015 to 2018. The difference is that the ratio of Qantas continues to decline, but the industry's averages has been fluctuating during that period. The industry average D/E ratio drops sharply to 96.37% in 2017 and it keeps increasing afterwards. In 2019, the D/E ratio of industry average takes a rapid increase to 152.04% which is greater than Qantas's ratio. The reasons for these differences and fluctuations will be discussed in depth in the third part.

1.3 Optimal Capital Structure

Understanding a company's capital structure helps to determine the current financial health, risk profile and compatibility with specific investment or acquisition strategies.

Define Optimal Capital Structure

Modigliani-Miller Theorem (M&M): This irrelevance preposition theorem is assumed that a firm's capital structure has no influence on its firm value under perfect capital market where investors trade at the same competitive prices and there is no information asymmetry as well as the tax and transaction-related cost [1]. Furthermore, implications of this theorems on capital structuring have underpinning for modern corporate finance.

Trade-off theory: A firm constructs its capital structure by balancing off the tax shield benefits and other transaction-related costs. The total value of a levered firm can be calculated below, where interest tax shield is the deduction in tax payment from using debt and financial distress costs and is determined by three factors including the probability of financial distress, the magnitude of the costs after a firm suffer distress and the appropriate discount rate for the distress costs. The latter two factors vary from industries and usually depend on the firm's market risk [2]. In general, this theory provides an adequate reason in determining the company's structure.

$$V^L = V^U + PV(Interest\ Tax\ Shield) - PV(Financial\ Distress\ Costs) \qquad (2)$$

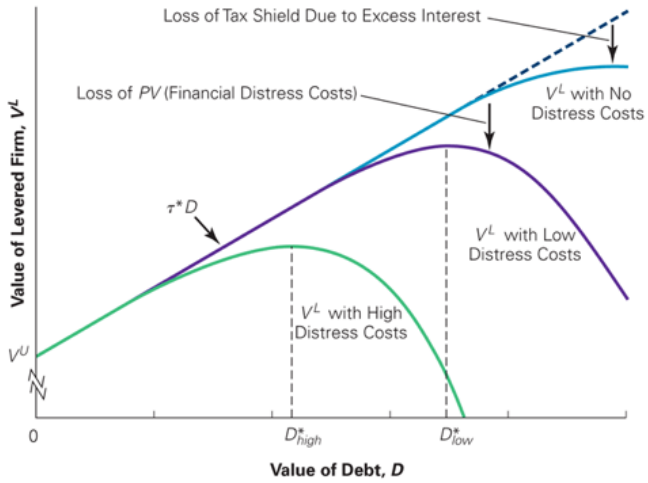

Figure 3: Optimal Leverage, Berk & DeMarzo, 2016

In Figure 3, it can conclude that a company can take advantage of the tax deductibility of interests to increase the firm value by using debt finance. Theoretically, the more debt a firm uses, the more tax shield benefit will it get. However, with the increase in a firm's liability, it will add up to the probability of financial distress and sequentially increased the financial distress costs. When the firm overuse debt and lead to financial distress costs exceed the tax benefits, it will have a negative effect on the total firm value. Hence, the optimal capital structure for a firm is to find out a debt level at which the incurring costs of financial distress can be perfectly offset by the tax savings [7].

Agency Costs: Agency costs appear due to the misalignment of interests among the company's stakeholders [9]. The first conflict arises between the manager and equity holders due to information asymmetry. Managers always get relatively more comprehensive information about the company's operations, and the equity holders cannot assure the managers' decision is to maximize the shareholders' interest instead of maximizing the interests and reputation of themselves. Another conflict occurs between debt holders and equity holders. Since the equity holders only have the right of residual claim, they prefer to invest in the high return project with extremely high risk when the firm is already in distress. Factors like capital structures and good corporate governance can be of aid and help the company to accomplish the desired organizational goals however it doesn't guarantee the reduction of agency cost [3].

Free Cash Flow Hypothesis: According to Jensen's assumption, it defined free cash flow as the cash flow left after a company repay total debts and made all possible investments with positive net present value. The more substantial the free cash flow is, the greater the possibility of wasteful spending might occur that exacerbates the conflict between managers and shareholders [4]. Thus, using leverage could be a way to solve conflicts and bring benefits to the firm. Because it will increase the amount of interest payable and attract the debt holder's attention to monitoring the firm's operation that ensures the managers work at the best interests of the company and increased the concentration of ownership.

Combination of agency costs and the trade-off theory: Based on the factors discussed above, the value of a levered firm can be modelled as follow.

$$V^L = V^U + PV(Interest\ Tax\ Shield) - PV(Financial\ Distress\ Costs) \\ - PV(Agency\ Costs\ of\ Debts) \\ + PV(Agency\ Benefits\ of\ Debts) \tag{3}$$

In conclusion, to find the optimal capital structure of a company, it should first find a balance point between the interest tax shield and the financial distress cost. Then, it should weight agency costs against agency benefits.

2 Results and discussion

QAN, VAH, AQZ, REX, and AIZ are five representative airline companies that operates in the transportation group sector. Companies in this industry sector have three main characteristics. Firstly, they generally have a large amount of cash and account receivables due to the daily sales of flight tickets. Hence, they might obtain a relatively stable cash flow than other industries. Secondly, there have a certain amount of tangible assets such as the flights which support the day-to-day operations. And these kinds of assets as physical capitals can be liquated easily when the firm is in bankruptcy. Thirdly, as the transportation industry, it provides service with less elasticity which means the firm is less likely to be bankrupt in an economic downturn. Thus, the present value of distress costs will be lowered for firms with low market risk. In the second part, we assumed that the five companies represent the average of the industry and conclude that companies in the airline industry generally have a capital structure characteristic of debt greater than equity. Qantas has a higher ratio than the industry average because it is a mature company with a long history, a complete operating strategy, and sufficient cash flow. However, the industry average contains the new-established companies with growth opportunities such as AQZ and REX which need to maintain a low level of debt to ensure its potential growth and future high profitable investment. In addition, the fluctuation of the capital structure is also influenced by the external environment. For instance, the D/E ratio has grown significantly in 2019 because fuel shortages during this period caused a rapid increase in fuel prices [8]. In response, companies used more debt to finance assets and maintain operations.

According to agency cost, although Qantas is a mature company with complete strategies to regulate the behavior of managers, there still have debts overhang and under-investment problems between debt holders and equity holders if the firm faces financial distress. Based on the free cash flow hypothesis, Qantas' high debt levels contribute to concentrating ownership and reducing wasteful investment. Since there is no perfect standard to quantify the agency cost and benefit of the company until now, the calculation of the optimal capital structure will not take them into account in this report.

Referring to the analysis of industry background and company features, an optimal capital structure for Qantas could be calculated through trade-off theory where the present value of interest tax shield could be totally offset by the present value of bankruptcy costs. Qantas is

large enough to assume that it maintains a fixed dollar amount of riskless debt on the balance sheet permanently. Thus

$$PV(\text{Interest Tax Shield}) = \mathrm{t_c} * \mathrm{D} \tag{4}$$

where t_c is the marginal tax rate for the firm. Since Qantas has a high level of liability with stable cash flow and low beta value for the firm associated with market risk, it supposes the present value of financial distress costs is 10% of the market value of total assets before bankruptcy according to Enron case. Then, the optimal capital structure can be calculated when:

$$PV(\text{Interest Tax Shield}) = PV(\text{Financial Distress Costs }) \tag{5}$$

Table 3: Qantas Year 2019 Results

QANTAS	
Year	2019
Current D/E Ratio (%)	152.04%
tc (Marginal Tax Rate)	35.00%
Total Debt	5224.00
PV (Interest Tax Shield)	1828.40
Total Asset Value	19377.00
PV (Interest Distress Costs)	1937.70
Total Shareholders' Equity	3436.00
Optimal D/E Ratio (%)	161.13%
Industry Average D/E Ratio (%)	161.05%

As shown in Table 3, It indicates that Qantas has not been operating at its optimal capital structure due to the difference between $PV(\text{Interest Tax Shield})$ and $PV(\text{Financial Distress Costs })$. Furthermore, based on the series of assumptions used, the calculated optimal D/E ratio for Qantas in 2019 is 161.13%. And its optimal capital structure is closer to the industry average D/E ratio.

3 Conclusions

From the results of this paper, it can be concluded that Qantas was not able to reach its desired capital optimal structure over the past five years. Therefore, it is recommended for Qantas to go over their Distress Cost pay more attention to it.

Based on the results and assumptions of certain limitations, the optimal capital structure for a firm is worthy of further exploration.

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