

EFFECTS OF APPLYING THE NEW ASBE 21 LEASES ON THE FINANCIAL STATEMENTS: EVIDENCE FROM CHINA

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Abstract

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The Ministry of Finance of China has proposed a new lease accounting model to the existing lease accounting standard that requires the capitalization of all operating leases as assets and liabilities. In this case study, the key effects of the application of a new accounting standard — Accounting Standard for Business Enterprises 21 (ASBE 21), on financial statements and financial ratios of listed companies in the Chinese air transport industry have been analyzed and investigated. Significant relative differences were found within the airline industry in China. Results indicated that the total assets and liabilities would increase due to the capitalization of operating leases, whereas the profitability of firms was expected to decrease. Furthermore, the coverage of firms would decline, but the leverage of these firms would be improved. Rather than China, prior studies have analyzed the firms in other countries, where different accounting principles are applied. Hence, this study can provide useful information for the investors, as well as other stakeholders that are interested in Chinese airline corporations, and help to complete the studies about different lease accounting standards applied in different countries.

Keywords: Finance Lease, Operating Lease, Financial Ratios

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1. INTRODUCTION

In February 2006, the Ministry of Finance of the People's Republic of China (MOF) promulgated the Accounting Standards for Business Enterprises 21 Lease (ASBE 21 Lease), which will be called the old ASBE 21 Lease in this study (Deloitte, 2006). The ASBE 21 Lease mainly regulates the confirmation, measurement, and presentation of the leasing activities in the corporation. The promulgation of the ASBE 21 Lease also laid a foundation for the development of the leasing industry in China (He, 2019). With the development of society, the leasing business in China is becoming highly complicated (Liu, 2019). The concerned accounting treatment issues and disputes were exposed for transparency, and the most notable is the problem

of lessees and the identification of lease (He, 2019). The Ministry of Finance of China renewed the ASBE 21 Lease for a new lease model to adopt the change of economic activities and converge with International Financial Reporting Standards (IFRS). This model requires almost all leases to be recognized on the balance sheet by lessees (Liu, 2019). After translation, the classification of financial and operating leases has been canceled, and the operating lease should also be capitalized into a balance sheet.

The capitalization of the operating lease has been proposed long before (e.g., Lorensen, 1992; McGregor, 1996; Beattie, Edwards, & Goodacre, 1998). In addition, the effects, on leases' financial ratios or financial statements, have been analyzed and investigated by several researchers from

different countries in decade years. Numerous studies have examined the effects of operating lease capitalization on the balance sheet and key financial ratios from the samples of companies of all sectors in one country (Durocher, 2008; Wong & Joshi, 2015; Bohušová, 2015; Morales-Díaz & Zamora-Ramírez, 2018). Moreover, some research investigates the influence of operating lease capitalization on specific sectors (Mulford & Gram, 2007; Singh, 2012). However, similar to the globalization integration and the development of China's economy, further studies on Chinese companies, which involve a certain number of operating leases, are needed. Furthermore, with the new accounting standard, its effect on financial statements and financial ratios of concerned companies should be determined for the stakeholders of Chinese companies.

Since the inception of finance lease in the early 1970s, airline companies may possess the right to use aircraft in two ways (Boeing Capital Corporation, 2014). One is purchasing their aircraft, and another is to rely on third-party equity and debt to finance aircraft, namely, capital-intensive assets. Compared with purchasing, airline companies find multiple benefits in operating leases, which are generally offered for durations between 6 and 14 years and shorter terms for older aircraft (Scholnick, 2018). Leasing allows lessees to access the right to use equipment or property without a large capital outlay. In addition, airlines have no residual value risk. At the end of the lease, an airline can choose to return the leased aircraft or renew its lease. Moreover, renewing its lease every several years provides airlines the opportunity to change the type of aircraft they used every contract period to adapt to the changing market. After translation, airlines have more flexibility in their fleet (Boeing Capital Corporation, 2014). Therefore, considering these financial benefits, airline companies gradually prefer to lease aircraft rather than owning their aircraft. Scholnick (2018) noted that over 27,000 commercial aircraft at a value of \$696 billion are being operated by airlines worldwide (including parked and active aircraft). However, at the end of 2018, operating lessors own more than 13,300 commercial aircraft which are valued at approximately \$331 billion, accounting for over 49% of the total value of global aircraft (Scholnick, 2018). In addition, Boeing Capital Corporation (2014) stated that the proportion of leasing aircraft will increase to more than 50% of the global fleet in 2020.

The major research question of this study is to find out the influence of implementing the new accounting standard on airline firms. More specifically, this study aims to analyze and investigate the key effects of the application of the new accounting standard — ASBE 21, on the financial statements of companies in the Chinese air transport industry. All of the listed airline firms in the Chinese air transport industry have been selected. Five companies were analyzed to determine the effects of the implementation of ASBE 21 on the financial statements and financial ratios of companies in the Chinese air transport industry. Such companies are Air China Corporation, China Eastern Airlines Corporation, China Southern Air Holding Company Limited, Shandong Airlines Corporation, and Hainan Airlines Corporation. Considering the limited number of firms, this

research has been decided to be a case study. When adjusting firms' financial statements, the constructive method developed by Imhoff, Lipe, and Wright (1991, 1997) was employed as the lease capitalization methodology. In addition, the present value (PV) of the disclosed minimum future lease payments for operating leases (PVOL) was estimated using the discount cash flow (DCF) method. Significant relative differences were found within the airline industry in China. The total assets and liabilities would increase due to the capitalization of operating leases, whereas the profitability of firms was expected to decrease. In addition, the coverage of firms would decline, but the leverage of these firms would be improved.

This study has contributed to the existing literature by investigating the influence of the new lease accounting model on Chinese firms' financial performance, considering that rather than China, prior studies have analyzed the firms in other countries, where different accounting principles are applied. Therefore, this study is useful for investors that are interested in Chinese firms.

The new accounting standard in China requires domestic- and foreign-listed companies to apply the new lease model since January 1, 2019, whereas other companies should start to apply by January 1, 2021 (RsA Asia, n.d.). Hence, the existence of the new accounting standard must bring high variations into companies' financial ratios of different fiscal years. For instance, when banks evaluate their clients' credit, they need to consider this variation, which is not completely caused by their customers' operating performance. Thus, this study provides the stakeholders with the information they need when they evaluate a firm after applying the new accounting standard.

This paper is further structured as follows. Section 2 presents the literature review, which involves a review of previous studies and the comparison of the old and new accounting models. Section 3 discusses the methodology of this study. Then, Sections 4 and 5 provide the results and the empirical findings, respectively. Finally, Section 6 concludes this study.

2. LITERATURE REVIEW

2.1. Review of previous studies on lease capitalization

Several studies investigated the key effects of changes in lease accounting on lessees' financial statements and their financial ratios. All these studies found significant effects on financial statements and financial ratios. Durocher (2008) examined the 100 largest Canadian-listed companies from 2002 to 2003. The author found a significant profitability influence only on companies from several sectors, such as oil and gas, lodging, financial services, and retails. Profitability influence is shown by the variation of return on assets (ROA), return on equity (ROE), and earning per share. Sectors with a high ROA difference would be industrial products with a decrease of 2.3%. Wong and Joshi (2015) studied 107 companies from several sectors quoted on the Australian Stock Exchange in 2010. They found that the operating lease capitalization has a significant influence on the balance sheet. In addition, under lease

capitalization, several financial ratios, such as ROA, debt to equity (D/E), and debt to assets (D/A), have been influenced significantly, whereas the effect on ROE is insignificant. Bohušová (2015) analyzed the non-financial companies quoted on the Prague Stock Exchange based on IAS 17, which is the lease accounting of IFRS. The study indicated the negative effects on financial analysis from operating lease capitalization based on the increase of D/E and indebtedness and the decrease of ROA. Morales-Díaz and Zamora-Ramírez (2018) examined 646 listed companies in Europe and found a significant influence on the balance sheet (total assets and total liabilities will increase), leverage (leverage will increase), and the solvency ratios. Moreover, they found that such influence relies on the type of sector where concerned companies do their business. The most influenced sectors are transportation, software, retail, hotels, and services.

Furthermore, several studies have examined the influence of operating lease capitalization on certain sectors (Mulford & Gram, 2007; Singh, 2012). Mulford and Gram (2007) investigated 19 companies from the retail industry in America. They concluded that excluding operating leases from the balance sheet causes significant distortion of the financial position of the company, thereby increasing the total assets by 14.6% and total liabilities by 26.4%. They also indicated that D/E and earnings before interest, taxes, depreciation and amortization (EBITDA) will increase, whereas income from continuing operations will decrease by 5.3%. Furthermore, ROA and ROE will decrease. Singh (2012) selected 234 restaurants and retail firms from 2006 to 2008. The author found that the new model of leasing had a material influence on the financial analysis of companies. Furthermore, the retail sector will be affected stronger than the restaurant.

The knowledge gap can be determined on the basis of the analysis of previous studies. Future studies can investigate the influence caused by different accounting standards about the lease, namely, the lease accounting model applied by different countries. Moreover, further studies should focus on companies from other countries that have not been investigated. Considering that different sectors may be affected to different extents, priority should be given to the sectors that may have greater effects based on previous studies.

2.2. Lease accounting model before and after renewal

In the old ASBE 21 Lease, the lease has been classified into financial and operating leases according to whether the ownership has changed or not. The transfer of ownership is determined based on the five provisions in the old ASBE 21 Lease. The financial lease should be recognized as assets and liabilities in the balance sheet, whereas the operating lease is not required to be recognized as assets and liabilities. Therefore, if a lease transaction involving a block sum exists, then under the old ASBE 21 Lease, companies can easily cover unfavorable information and not truly present their economic businesses (He, 2019). The problem with the identification of a lease is that the definition of a lease is unclear. The lease is a kind of service. If the elements of a lease transaction are not clearly confirmed in the contract, such as recognize

the leased assets, then the company will calculate and record this transaction under other accounting standards rather than ASBE 21 Lease. Hence, the financial statements may not fairly and truly present the economic businesses of the company. In consequence, the Ministry of Finance of China renewed ASBE 21 Lease for a new lease model to adopt the change of economic activities and converge with IFRS. This renewed ASBE 21 Lease requires almost all leases to be recognized on the balance sheet by lessees (Liu, 2019).

From the lessees' perspective, compared with the old ASBE 21 Lease, the new ASBE 21 Lease cancels the difference between a financial lease and an operating lease and is regarded both as a lease. Furthermore, not only the financial lease but also the operating lease should be recognized in the balance sheet. Based on the new ASBE 21 Lease, the lessee is required to create two new accounts to measure the lease into the balance sheet, namely, right-of-use assets and lease liabilities. The interest accrued from the lease liabilities should be calculated based on proper discount factors and be a record in the income statement as the expense. Moreover, the depreciation of right-of-use assets should also be recognized as an expense in the income statement. The details are as follows:

1. *The new ASBE 21 Lease clearly identifies the lease and the service.* According to the old ASBE 21 Lease, nearly no difference exists between the lease and the service in terms of accounting treatment, which both are recognized as an expense when they accrued income statement. This notion indicates that financial accountants believe that the results of financial analysis have no material influence (He, 2019). Therefore, instead of identifying the lease and the service, the financial accountants chose to confuse the lease with the service. However, if no clear classification exists between the lease and the service, the company may calculate and record the lease under other accounting standards rather than ASBE 21 Lease. Therefore, the amendment of ASBE 21 Lease should stake out a clear line between the lease and the service (He, 2019). To solve this problem, the new ASBE 21 Lease introduces some new concepts to distinguish between the lease and the service. For example, the new ASBE 21 Lease introduces the concepts of "control" and "identified assets" to judge whether the contract contains the leasing business to prevent the abuse of other accounting standards.

2. *The lessee changes to the use of the unified model.* The old ASBE 21 Lease determines whether the ownership has been transferred or not based on five provisions. For operating leasing, only the accrued expense in the concerned leasing period should be recognized. On the contrary, for the financial lease, related assets and liabilities should be recognized in the balance sheet and accrued interest expense. Thus, the liabilities should also be recorded in the income statement. As a result, the underfunded company can whitewash its financial statements by recognizing the financial lease as an operating lease (He, 2019). Thus, the new ASBE 21 Lease includes the financial lease and the operating lease. Both should be recognized in the balance sheet and the income statement. After translation, the dual model is replaced by the unified model.

From the lessors' perspective, no apparent difference was observed between the old ASBE 21 Lease and the new one. The lessors still need to classify the financial lease and operating lease. However, the new ASBE 21 Lease emphasizes the integrity and accuracy of information disclosure more than the old one. Specifically, the new ASBE 21 Lease requires lessors to disclose in notes what kind of risk they face due to the leased assets, what relevant measures they take to deal with these risks, a more clear risk management strategy, and others.

Compared with that there are multiple studies investigating the effect on "new lease accounting standard", ASBE 21 Lease was set to take effect in January 1, 2021, in China, and there are a few studies about the Chinese new lease accounting standard. Therefore, future studies can investigate the influence caused by ASBE 21 Lease in China. Considering that different sectors may be affected to different extents, priority should be given to the sectors whose main business depends more on the lease, such as retails, transportation, software, and others.

3. RESEARCH METHODOLOGY

3.1. Research design

This research was a case study, and all five listed airline firms in the Chinese air transport industry have been analyzed. The firms include Air China Corporation, China Eastern Airlines Corporation, China Southern Air Holding Company Limited, Shandong Airlines Corporation, and Hainan Airlines Corporation.

According to the annual reports of these firms, as of the end of 2019, Air China Corporation has 699 aircrafts of various types, with an average age of 6.96 years, and operates passenger air routes up to 770, including 137 international routes, 27 regional routes, and 606 domestic routes. China Eastern Airlines Corporation operates 734 passenger aircrafts, and its passenger volume exceeded 130 million in 2019. China Southern Air Holding Company Limited has 862 aircrafts of various types. In 2019, its passenger volume was approximately 152 million, ranking first among Chinese airlines for 41 consecutive years. Additionally, the fleet size and passenger volume both ranked first in Asia and third in the world. Shandong Airlines Corporation operates a total of 124 Boeing 737 series aircraft with an average age of 6.20 years. Hainan Airlines Corporation has 361 aircrafts of various types and 81.69 million passenger volume in 2019.

The financial statements of these five firms based on the old ASBE 21 Lease were adjusted to that based on the new ASBE 21 Lease, which meant that the operating leases are converted into capital leases. Consistent with prior studies (Grossman & Grossman, 2010; Singh, 2012; Fitó, Moya, & Orgaz, 2013), the lease capitalization methodology employed was the constructive method, developed by Imhoff et al. (1991, 1997). This method includes discounting future minimum lease payments disclosed in the notes to the financial statements. The DCF method was used to estimate the PV of the disclosed minimum future lease PVOL based on the lease footnotes disclosures in the financial statements of public firms.

When converting operating leases into capital leases, the information disclosed in the lease footnote was used, and a series of significant uniform assumptions are made with regard to the interest rate and the remaining life of leases beyond 3 or 5 years. Imhoff et al. (1991) noted that the uniform assumptions employed ensure that only differences in the operating leases contribute to the differences and variations observed and not interfered by differences in the assumptions. This research followed the constructive lease capitalization methodology proposed by Imhoff et al. (1991, 1997). In the study in 1991, the researchers introduced procedures for valuing the influence of capitalizing operating leases on the balance sheet, whereas in the study in 1997, they developed an influence on the income statement.

3.2. Assumptions in research design

The following key assumptions are used to implement the DCF method in this study:

1. The interest rate used is different from firms' varied situations to proxy for the average incremental borrowing rate for the portfolio of operating leases. The interest rate is based on the interest rate on capital leases disclosed in the lease footnote of financial statements in each firm.

2. The interest payments are calculated by using the effective interest method consistent with the proposed new rules, whereas all assets are depreciated using the straight-line method of depreciation, in respect of every firms' original depreciation method.

3. Inconsistent with the prior studies which assumed uniformly a 15-year remaining lease life (Imhoff et al., 1991), the total remaining lease life is allowed to vary by firms in this study (Singh, 2012).

4. Consistent with Imhoff et al. (1991), a standard 75% asset to liability ratio is used for all firms. At the end of the lease, the account of lease assets and lease liabilities would be zero. Thus, the PV of the lease liabilities is bound to be equal to that of the lease assets. However, Imhoff et al. (1991) stated that the book value of the lease assets added to the balance sheet is lesser than that of the lease liabilities. The reason is that the depreciation deducted on the lease assets is higher than the principal reduction of the lease liabilities, whereas when the principal is small, the early payments on the lease involve large interest payments.

5. Therefore, throughout the life of the lease, the lease liability would be greater than the carrying value of the asset.

6. For simplicity, the effective tax rate for all sample firms is assumed to be the corporate tax rate of 25%.

3.3. DCF methodology

Based on the above assumptions, the DCF technique using the constructive lease capitalization methodology in this study is demonstrated as follows using China Southern Air Holding Company.

Step 1: Estimate interest rate and "thereafter" Life of Leases.

Step 2: Estimate the balance sheet asset impacts.

Step 3: Estimate income statement impacts.

Step 1: Estimate interest rate and "thereafter" Life of Leases

The incremental borrowing rate is usually not disclosed by the firms, although the favored interest rate is used to discount the cash flows. However, the average interest rate on long-term debt is disclosed in the annual report and can proxy for the incremental interest rate. China Southern Air disclosed an interest rate of 6.18% in 2018 (5.22% in 2017).

Beyond year 3, namely 2021, the annual lease payments are assumed to decrease at the rate of

¥8,850 million, which was the amount of year 3 (2021). Therefore, dividing the "thereafter portion" of the lease amount of ¥47,684 million by ¥8,850 million yielded 5.39 years, which was rounded to 5 years for a total lease term of 8 years (3 years + 5 additional years). This notion meant that year 2022 payments and beyond would be at a rate of ¥61.6 million (¥47,684/5). Considering this information, the PV of lease liability for the fiscal year 2017 and 2018 could be computed as shown in Table 1.

Table 1. PV of lease liability for fiscal year 2017 and 2018

Fiscal year	Expense (¥ million)			
	2018	PV	2017	PV
2018			8,283.0	7,872.1
2019	9,217.0	8,679.7	8,776.0	7,926.8
2020	9,978.0	8,848.6	8,271.0	7,100.1
2021	8,850.0	7,390.8		
Thereafter	47,684.0	33,376.20	44,324.0	32,474.1
PVOL		58,295.3		55,646.1

Note: PV = Present value; PVOL = Present value of operating leases.

Step 2: Estimate the balance sheet asset impacts

The PV of the minimum lease payments (PVOL) was added to total debt, whereas 75% of the lease liability was added to assets. The difference in

the asset and liability amount was then adjusted for deferred taxes and retained earnings as shown in Tables 2 and 3.

Table 2. Adjusted assets

	2018 (¥ million)			2017 (¥ million)		
	Before	Adjusted	After	Before	Adjusted	After
Assets	246,655.00	43,721.50*	290,376.50	218,329.00	37,641.19	255,970.19

Note: * Asset adjustment of 43,721.50 is 75%, of PVOL of ¥ 58,295.30.

Table 3. Adjusted liabilities and equity

	2018 (¥ million)			2017 (¥ million)		
	Before	Adjusted	After	Before	Adjusted	After
Liabilities	168,472.00	58,295.33	226,767.33	156,164.00	50,188.30	206,352.30
Deferred taxes		(3,643.5)*			(3,136.80)	
Net liabilities	168,472.00	54,651.87	223,123.87	156,164.0	47,051.5	203,215.5
Total equity	78,183.00	(10,930)**	67,252.63	62,165.0	(9,410.3)	52,754.7
Totals	246,655.00		290,376.50	218,329.0		255,970.2

Note: * Deferred taxes = $(58,295.33 - 43,721.5) \times 25\%$ tax = 3,643.5.

** Retained earnings adjustment = $(58,295.33 - 43,721.5) \times 0.75 = 10,930.4$.

Step 3: Estimate income statement impacts

The income statement was adjusted by removing the rent expense at the beginning of

the year in the minimum rent schedule and replacing it with depreciation and interest expense as shown in Table 4.

Table 4. Adjusted income statement

	Expense (¥ million)		
	Before	Adjustment	After
Sales	143,623.0		143,623.0
Less: Cost of goods sold	115,300.0	(8,283.0)	107,017.0
Less: SGA expenses	11,327.0		11,327.0
= Operating income before depreciation or EBITDA	16,996.0		25,279.0
Less: Depreciation and amortization	13,313.0	5,145.0	18,458.0
= Operating income after depreciation or EBIT	3,683.0		6,821.0
Less: Interest expense	5,108.0	3,487.8	8,595.8
Add: Non-operating income	5,900.0		5,900.0
= Pretax income	4,475.0	(349.8)	4,125.2
Less: Income taxes	1,965.0	(87.5)	1,877.5
= Income before extraordinary items	2,510	(262.4)	2,247.6

Note: EBIT = Earnings before interest and taxes; EBITDA = Earnings before interest, taxes, depreciation and amortization.

A rent expense of ¥8,283.0 million at the beginning of the year (following year payment from fiscal 2018) was removed from the cost of goods sold, thereby increasing EBITDA. An interest expense of ¥3,487.8 million was computed as the average of the PVOL, namely, lease liabilities multiplied by the interest rate of 6.19% $((58,295.3 + 50,188.3) \times 6.19\% = 3,487.8$ million). The modification on retained earnings after-tax from 2018 to 2019 was based on the difference between the total equity of 2017 and 2018, and these figures were from Step 2 $(-10,930.4 - (-9410.3)) = ¥262.4$ million). Thus, this modification on retained earnings was also the amount of what income before extraordinary items should be changed, and this amount based on a pretax basis was ¥-349.8 million $(¥-262.4/0.75)$. Considering that the PVOL increased from 2018 to 2019 as China Southern Air Holding Company entered into additional leases, the total depreciation and interest expense would be greater than the rent expense of ¥8283.0 million. To determine the depreciation expense, the pretax amount of ¥349.8 million was added to the rent expense, and the interest expense of ¥3,487.8 million was then subtracted from it. The estimated depreciation expense was ¥5145.0 million.

3.4. Estimating effect on financial statements and ratios

The balance sheet effect is determined by increasing long-term liabilities by the NPV of the lease payments, whereas assets are increased by the asset to liability ratio. Following the estimation of the asset and liability amounts, the income statement effects are estimated by removing rent expense from the cost of goods sold and replacing it with depreciation and interest expense. Interest expense is calculated by multiplying the respective interest rate by the average PV of the lease liability for the current and previous years. Subtracting the interest expense from rent expense in the minimum rent payment schedule for the current year (taken from the previous fiscal year) yields an estimate of depreciation expense. Then, the effective tax rate of 25% is applied to any difference between the rent expense and the sum of interest and depreciation expense to determine the tax effect. If the PVOL declined (increased) from one year to the next, then the sum of depreciation and interest under capital leases will be less (more) than the current operating rent expense, which will then lead to an increase (decrease) in pretax and after-tax income.

Table 5. Calculations of financial ratios used

Ratios	Expression
Profitability ratios	
ROA	$ROA = \frac{\text{Earnings before interest (EBIT)}}{\text{Total assets}}$ (1)
ROE	$ROE = \frac{\text{Earnings before interest (EBIT)}}{\text{Total shareholders' equity}}$ (2)
Leverage ratios	
Liabilities to equity	$Leverage = \frac{\text{Total liabilities}}{\text{Total shareholders' equity}}$ (3)
Coverage ratios	
Financial expenses coverage	$Coverage = \frac{\text{Earnings before interest (EBIT)}}{\text{Interest expense}}$ (4)

Following adjustments to the income statement, a set of financial ratios is computed to estimate the influence of the capitalization of operating leases. Table 6 shows the calculations of these ratios. Referring to accounting and finance textbooks, these ratios include leverage, profitability ratios — ROA, ROE — and coverage ratios, which are widely used in practice by credit-rating agencies and analysts (Fülbier, Silva, & Pferdehirt, 2006; Goodacre, 2003). They are calculated “before” and “after” the capitalization of operating leases. Leverage was calculated by dividing total liabilities by shareholders’ equity. ROA measures a firm’s ability to efficiently generate pre-tax returns from the use of its assets. ROA was calculated by dividing income before taxes by average assets. The use of income before taxes results in a measurement that is unaffected by the firm’s tax situation. ROE measures a firm’s ability to earn a profit on the money that the shareholders have invested. ROE was calculated by dividing income from continuing operations by stockholders’ equity. Coverage is the ability of a firm to make the required payments on its debt. EBITDA/interest ratio and OCF (operating activities cash flow)/interest ratio show the coverage of a firm. EBITDA/interest measures a firm’s ability to

at least make required interest payments with earnings available to pay interest. OCF/interest measures a firm’s ability to make required interest payments from cash flow derived from its operations, that is, profitability ratios.

4. RESULTS

4.1. Effect on income measures

Table 6 shows the effects of the adjustments on two key measures of income. The reduction of the rent expense leads to the increasing of EBITDA by a median increase of 48.73% including an average increase of 87.94%. In all cases, the income before extraordinary items declines. The median and the average reduction in the income before extraordinary items are 42.11% and 59.93%. For these companies, although the lease expense is added back, the depreciation related to the lease assets and the interest expense related to the lease liabilities are deducted from the revenue. In addition, given that the increasing amount is higher than the amount reduced, the income before extraordinary items declines.

Table 6. Effects of capitalizing operating leases on key measures of income, the fiscal year 2018 (RMB in millions)

	EBITDA			Income before extraordinary items		
	Before	After	% Change	Before	After	% Change
China Southern	16,996	25,279	48.73%	2,525	2,028	(19.67%)
China Eastern	17,720	21,100	19.07%	2,941	1,290	(56.13%)
Air China	21,260	28,612	34.58%	5,871	4,318	(26.46%)
Hainan	5,099	14,299	180.44%	(3,648)	(9,313)	(155.27%)
Shandong	1,637	4,203	156.44%	782	453	(42.11%)
	Median % change		48.73%	Median % change		(42.11%)
	Average % change		87.94%	Average % change		(59.93%)

Hainan Airlines and Shandong Airlines exhibit more than a 150% increase in EBITDA as a result of capitalizing their operating leases. These significant shifts are results of the size of their rent expense compared to its unadjusted EBITDA. Hainan Airlines experience a material percentage reduction in income before extraordinary items. For both companies, the decreased rent expenses and income tax expenses are less than the increased interest expenses and depreciation expenses. In addition, the effects are significantly coupled with a low net income or a net loss.

4.2. Effect on the balance sheet

Table 7 shows the influence on the balance sheet due to the capitalization of operating leases. For each firm, total assets, total liabilities, and liabilities/equity increase. The median increase in

assets (19.74%) is significantly overshadowed by the median increase in liabilities (45.89%) including the average increase in assets.

For all five firms, their liabilities/equity ratio is increased due to the capitalization of operating leases. Leverage has a 46.01% average increase. From the assumption of Imhoff et al. (1991), a standard 75% asset to liability ratio is used for all firms, and this assumption has been detailed in Section 3. Shandong Airlines experienced 699.34% increases in the liabilities/equity ratio. This significant increase results from the size of its net PV of operating leases, which is added to the balance sheet compared with its total assets and total liabilities. The NPV of the operating leases represents 139% of the assets of Shandong Airlines before adjustments, whereas the NPV of the operating leases represents 377% of the shareholders' equity of Shandong Airlines before adjustments.

Table 7. Effects of capitalizing operating leases on total assets, total liabilities, and financial leverage, the fiscal year 2018 (RMB in millions)

	Total assets			Total liabilities			Liabilities/Equity		
	Before	After	% Change	Before	After	% Change	Before	After	% Change
China Southern	246,655	290,376	17.73%	168,472	223,124	32.44%	2.15	3.32	53.96%
China Eastern	236,765	256,194	8.21	177,413	201,699	13.69%	2.99	3.70	23.82%
Air China	182,319	218,305	19.74%	98,023	143,006	45.89%	1.16	1.90	63.32%
Hainan	204,735	262,531	28.23%	135,985	208,229	53.13%	1.98	3.83	93.87%
Shandong	16,564	29,214	76.37%	12,093	27,905	130.76%	2.70	21.32	688.34%
	Median % change		19.74%	Median % change		45.89%	Median % change		63.32%
	Average % change		30.05%	Average % change		55.18%	Average % change		184.66%

4.3. Effects on profitability measures

Table 8 shows the effects of capitalizing operating leases on return on average assets and the return on average equity. ROA has a 58.97% average reduction, and ROE has a 40.39% average reduction. The capitalization of operating leases leads to a cut

in rent expense and an increase in interest expense and depreciation expense. The cut in rent expense is less than the increase in interest expense and depreciation expense, and thus, income tax expense also decreases. Therefore, profitability has an overall reduction.

Table 8. Effects of capitalizing operating leases on key measures of profitability, the fiscal year 2018

	Return on assets (Pretax)			Return on equity (After-tax)		
	Before	After	% Change	Before	After	% Change
China Southern	0.02	0.01	(27.59%)	0.03	0.03	(6.62%)
China Eastern	0.02	0.01	(60.18%)	0.05	0.02	(52.22%)
Air China	0.04	0.02	(40.06%)	0.07	0.06	(17.67%)
Hainan	(0.02)	(0.05)	(95.91%)	(0.05)	(0.17)	(223.20%)
Shandong	0.05	0.02	(71.08%)	0.17	0.35	97.76%
	Median % change		(60.18%)	Median % change		(17.67%)
	Average % change		(58.97%)	Average % change		(40.39%)

Hainan had a substantial change in ROA and ROE coupled with its net loss. Regardless of Hainan, Shandong also has a significant change in ROA and ROE. This significant decrease is a result of the size of its net PV of operating leases, which is added to the balance sheet compared with its total assets and total liabilities. Against the unadjusted fiscal year

2018 assets of ¥16,564 million and liabilities of ¥12,093 million, Shandong has the NPV of the operating leases of ¥16,867 million. On such a low assets and liabilities base, even a small change in assets and liabilities can have a large effect on ROA and ROE.

4.4. Effects on coverage and leverage measures

Table 9 reflects the influence of capitalizing operating leases on firms' coverage and leverage. For Shandong Airlines, EBITDA/interest ratio and OCF/interest ratio increase. The increase in EBITDA or OCF offsets an increase in interest expense, giving rise to an improvement in the ratio. However, in most cases, EBITDA/interest ratio declines because of the increased interest expense along with capitalizing the operating leases. The exceptions to this decline are China Southern Airlines, China

Eastern Airlines, Air China Airlines, and Shandong Airlines. The average EBITDA/interest ratio excluding Hainan Airlines decreases by 18.44%. Moreover, firms with low levels of debt displayed the largest reductions in this ratio. The average OCF/interest ratio excluding Hainan Airlines decreases by 23.83%. Firms with low levels of debt, such as Air China Airlines and Shandong Airlines, experienced a significant reduction in their OCF/interest ratios, as pro forma interest paid was increased.

Table 9. Effects of capitalizing operating leases on key measures of coverage, fiscal year 2018

	EBITDA/Interest			OCF/Interest		
	Before	After	% Change	Before	After	% Change
China Southern	3.33	2.93	(12.01%)	3.83	3.23	(15.82%)
China Eastern	3.00	2.86	(4.50%)	3.78	3.49	(7.66%)
Air China	6.50	5.06	(22.24%)	6.99	5.34	(23.64%)
Hainan	0.80	1.78	122.55	1.45	2.30	58.51%
Shandong	13.32	8.66	(35.01%)	19.94	10.33	(48.19%)
	Median % change		(12.01%)	Median % change		(15.82%)
	Average % change		9.76%	Average % change		(7.36%)
	Average % change (exclude Hainan)		(18.44%)	Average % change (exclude Hainan)		(23.83%)

5. DISCUSSION

As shown from the results, every part of firms will significantly change after the application of the new lease accounting model requiring the capitalization of operating leases. These changes may cause changes in firms' operating activities and influence the sustainability of the firm. For example, capitalizing operating leases increase the firm's liabilities and thus impact firm's credit rating, which is the key factor influencing the sustainability of the firm. However, the sustainability of the firm is not declined as financial indicators becoming worse. In other words, these significant changes are mostly affected by the new lease accounting model rather than the varieties of firms' profitability or leverage abilities. The reason is that the operating lease already exists before the modification, and the new lease accounting model enables the accurate and fair representation of the financial statements.

The results show that after applying the new lease accounting model, the firms' income before extraordinary items, namely, net income (loss), and decrease. Moreover, the total assets and the total liabilities of firms increase because of the capitalization of the operating leases. This finding is similar to that of Wong and Joshi (2015), who analyzed 107 companies from several sectors quoted on the Australian Stock Exchange in 2010. Furthermore, the extent of increase in liabilities/equity ratio is associated with the size of the firm's net PV of operating leases, which is added to the liabilities and influences the amount of shareholders' equity. This notion is also similar to that of Wong and Joshi (2015).

For profitability, the ratios concerned decrease, which means that the firm's ability to generate revenue relative to its assets and equity declines. For coverage, most firms' EBITDA/interest ratio and OCF/interest ratio decline, representing declines in a firm's ability to at least make required interest payments with earnings available to pay interest and make required debt and lease payments from cash flow derived from its operations. In addition, firms with low levels of debt displayed the largest

reductions in this ratio. The consistent results have been also shown in prior studies (Durocher, 2008; Wong & Joshi, 2015; Bohušová, 2015). The ratio of liabilities to equity is used to gauge the level of each firm's financial leverage, which is a measure of the relative proportion of borrowed capital and owned capital. For all five firms, their liabilities/equity ratio is increased due to the capitalization of operating leases. Imhoff et al. (1991) proposed that a standard 75% asset to liability ratio is used for all firms. The results also demonstrate that if the size of NPV of the operating leases is larger than liabilities and shareholders' equity, then the increase will be higher. In addition, this change of leverage was also shown in the study of Morales-Díaz and Zamora-Ramírez (2018).

Effect of new lease accounting standard

The new lease accounting standard has positive and negative effects. For investors, they can obtain additional accurate information about the concerning firms because firms cannot cover up unfavorable information about their leasing. After translation, given that operating leases and financial leases should be recognized in the financial statements, firms cannot whitewash their financial statement. Hence, the financial statements will more fairly and truly present the economic businesses of the company to the investors or stakeholders. Therefore, the risk of investors can be reduced with more accurate information.

Firms are required to present all of the lease assets, lease liabilities, and other items related to the lease. Hence, their probability and leverage will be reduced because of the capitalization of the operating lease, but their coverage will be increased. These trends show that the financial performance of firms has declined. Specifically between 2020 and 2021, when the new accounting standard will be firstly applied, the variances of the financial ratio between these two years may, to some extent, be caused by the application of the new accounting standard. These variances can influence the firm's ability to finance capital or do its operating activities.

6. CONCLUSION

This study investigated the influence of the new lease accounting model on Chinese firms' financial performance in the fiscal year of 2018. The results of this study revealed that the application of the new lease accounting model has a significant influence on Chinese airlines' financial performance.

The results show that after applying the new lease accounting model, the firms' net income (loss) decrease. The total assets and the total liabilities of firms increase. Furthermore, the extent of increase in liabilities/equity ratio is associated with the size of the firm's net PV of operating leases. The coverage and profitability of firms will decrease, whereas the leverage of firms will increase. However, these variations are because of the capitalization of operating leases that firms' financial performance will decline and thus the sustainability of firms will decline. Therefore, the investor or other stakeholders interested in Chinese airlines should not be affected by these negative indicators not caused by the actual operating activities of firms. The reason is that the operating lease already exists before the modification, and the new lease accounting model enables the accurate and fair representation of the financial statements. From another perspective, the adjusted figure shows

a highly accurate and fair financial performance of firms, which can help stakeholders of firms to make a decision related to the firm.

For limitations, the number of listed Airlines Corporation in China is small. Therefore, this study can be only thought of as a case study. This study uses several assumptions on the capitalization of operating leases. These assumptions will differ in practice and across firms, including the interest rates used to NPV of the operating leases, varieties in the assets to liabilities ratios, and the use of a single effective tax rate for all airline firms instead of specific effective income tax rates for concerned firms. Furthermore, the calculation of financial ratios differs in practice across firms, which can result in differences in the effects on firms' financial performance.

For future studies, further research can use additional airline corporations in the Chinese airline industry if their data of the fiscal year of 2018 can be found and can prove that their data provided are accurate. Additionally, to have a round understanding of the key financial effects, triggered by the application of the new accounting standard — ASBE 21, on financial statements of Chinese companies, future research can be made on the firm in other sectors in China, such as retailers, restaurants, and others.

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