

The Market-to-Book Value Gap and Implications for Accounting Standards: A Case Study Based on Airbus

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Abstract. Book value is the value presented on the balance sheet. In contrast to book value, which reflects the past value, market value is based on the current value of the enterprise and includes all price influencing factors in the market. An accurate valuation of an enterprise is critical to making correct investment decisions. The gap between the book value and market value of an enterprise can lead to deviations in enterprise value valuation, which can affect the judgment of financial statement users. However, the current accounting standards cannot meet such decision-making needs of information users and need to be improved in the future reform. The purpose of this paper is to analyze the reasons for the gap at the empirical level and to assess the implications for the reform of accounting standards.

Keywords: Book value, market value, gap, reason, empirical level, accounting standards.

1. Introduction

Book value is the value of equity as stated on the balance sheet and is equal to total assets minus total liabilities. It is transaction-based and does not include the value of assets that are not transaction-based, such as goodwill and the management level of managers. Market value is the price of an asset in the trading market, which is a mutually acceptable price resulting from bidding between buyers and sellers, and is equal to the share price per share multiplied by the total number of shares issued.

Therefore, the book value of an asset and its market value tends to form a gap, which weakens the relevance of the decision. In this paper, Airbus is used as an example to explain the possible implications of accounting standards on the gap based on financial statements.

2. Market-to-Book Value Gap of Airbus

Table 1. The Equity Part of Airbus IFRS Consolidated Statements of Financial Position

(In €million)	2021	2020
Equity and liabilities		
Equity attributable to equity owners of the parent		
Capital stock	787	785
Share premium	3,712	3,599
Retained earnings	6,834	250
Accumulated other comprehensive income	-1,822	1,853
Treasury shares	-45	-42
Total equity attributable to owners of the parent	9,466	6,445
Non-controlling interests	20	11
Total equity	9,486	6,456

Airbus is a multinational aerospace company headquartered in France and constantly designing, manufacturing, and selling products for civil and military use worldwide.

Table 2. The Number of Shares Issued and Fully Paid

(In €million)	2021	2020
Issued at 1 January	784,149,270	783,173,115
Issued for ESOP	1,934,420	976,155
Issued for convertible bond	-	-
Issued at 31 December	786,083,690	784,149,270
Treasury shares	-454,735	-432,875
Outstanding at 31 December	785,628,955	783,716,395

According to the annual report approved at the reporting date, Airbus had book value of equity of €9,486 million in 2021 (see Table 1) and 785,628,955 shares in issue (see Table 2, the shares are exclusively ordinary shares in par value of € 1.00). In addition, the share price of Airbus is € 112.36 as of 31 December 2021. Summarizing the above information, the market value of equity of Airbus is the product of the number of shares and the share price, reaching €88,273 million in 2021, which is approximately nine times the book value. Previously, Marzo (2013) reported that book values fail to converge to market values due to accounting fallacies, and that the gap between them can be a weakness of accounting. The following part of this paper will discuss two important reasons for the difference between market and book values for Airbus.

3. Reasons for the Market-to-Book Value Gap

The following analysis and findings are derived from and should be read together with the annual report of Airbus for the year ended 31 December 2021, which has been prepared in accordance with International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board.

3.1 Cost Model and Assumed Long Useful Lives

Table 3. The Items of Property, Plant and Equipment as of 31 December 2021 and 2020

(In €million)	31 December 2021			31 December 2020		
	Gross amount	Depreciation/Impairment	Net book value	Gross amount	Depreciation/Impairment	Net book value
Land, leasehold improvements, and buildings, including buildings on land owned by others	10,344	-5,324	5,020	9,767	-5,086	4,681
Technical equipment and machinery	23,697	-16,609	7,088	23,650	-16,582	7,068
Other equipment, factory, and office equipment	3,853	3,013	840	3,699	-2,888	811
Construction in progress	1,890	-	1,890	2,310	-	2,310
Right-of-use assets	2,486	-788	1,698	2,426	-622	1,804
Total	42,270	-25,734	16,536	41,852	-25,178	16,674

According to Note 20: Property, Plant and Equipment (PPE) of the annual report, the subsequent accounting of Airbus' PPE follows the cost model, which values PPE at acquisition or manufacturing costs less accumulated depreciation and impairment losses. Under the cost model, the subsequent accounting of PPE is based on historical cost without considering possible upward changes in fair value, which constitutes a key reason why the market value differs from the book value so much.

According to Nijam's analysis (2018), manufacturing companies that tend to declare their fixed assets at historical cost have a higher level of plant and machinery in their asset structure. As Figure 3 shows, the net book value of Airbus' land and buildings is approximately €5,020 million, while the

net book value is approximately €7,928 million for plant and machinery, or approximately 1.58 times the land and buildings.

Table 4. The Useful Lives of Items of Property, Plant and Equipment

Buildings	10 to 50 years
Site improvements	6 to 30 years
Technical equipment and machinery	2 to 20 years
Jigs and tools	5 years
Other equipment, factory and office equipment	2 to 10 years

Although Barlev et al. (2007) state a negative relationship between a company’s PPE revaluation propensity and its market-to-book ratio under the UK accounting system, no such relationship was found in other countries. Most of the researchers believe that companies can reduce the underinvestment problem by revaluing their assets. Since upward revaluation of assets can equalize their book value with market value, some companies want to present a favorable financial position through revaluation (Missonier-Piera, 2007). However, not all impacts due to asset revaluation are significant. Choi et al. (2013) state that land and property are more suitable than other depreciable assets for revaluation, and the difference between their carrying value and fair value would be larger than for other PPE items. As shown in Figure 4, a 10-50 year building useful life is assumed by Airbus, which is the longest of all PPE items. Since property prices have been rising dramatically in recent years, there has been significant variation in fair value, further magnifying the differences caused by the cost model.

In the context of these arguments, Airbus adopts the cost model to account the fixed assets due to its plant and machinery dominated asset structure, resulting in part of difference between the market value and book value of equity. In addition, the assumed long useful lives cause the book values of the buildings to deviate significantly from their fair values, further magnifying the difference.

3.2 Unrecognizable internally generated brands

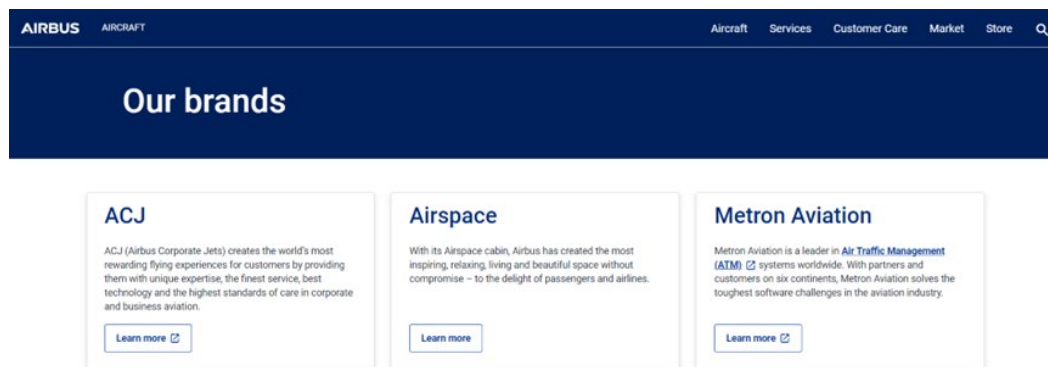


Figure 1. Part of the Airbus Brands (from Airbus Official Website)

Although an internally generated brand exhibits similar characteristics to an acquired brand in many important aspects, accounting standards prohibit the identification of it as an asset due to its indefinable cost or estimated value (Van der Spuy, 2015). However, brands are now considered by some companies as one of their most valuable assets. Brands have become strategic resources for creating entity value and are no longer seen as marketing and sales tools (Gromark & Melin, 2011). In the S&P 500, brands may be worth more than 30% of a company's stock value. Therefore, non-disclosed internally generated brand is the other key reason in this paper.

Airbus has seven major brands in the world, covering air traffic management, aftermarket services, aerospace testing and other areas. Satair and Metron Aviation were acquired by Airbus as fully owned subsidiaries both in 2011, while NAVBLUE and Testia have been separate companies from Airbus since 1985 and 1991. In addition to these, Airbus Business Jets, Airspace and Skywise are internally generated brands of Airbus. In the brand evaluation conducted in 2021, the financial value of the

Airbus brand reached €12.2 billion, an increase of 24% compared to 2018. Therefore, the value of the Airbus brand represents about 13% of the market value and is one of the largest assets owned by it.

The above evidence shows that when a company with a strong self-generated brand like Airbus can not be recognized, accounting standards may not provide useful information to users of financial statements, which is the other reason why the book value provided by the financial statements and the market value perceived by investors are different.

3.3 Stock Calculation Method

Stock price is the discounted future value and relies on future cash inflows from assets. Therefore, the calculation method of stock price may result in its appraised value should be higher than the book value.

The value of a stock, bond or company depends on all cash inflows and outflows expected to be generated throughout the remaining useful life of the asset, discounted at an appropriate interest rate. Future earnings are considered to be permanent or long-term earnings from the company's operations, while the share price is considered to be the capitalization of future earnings. Accounting earnings do not take into account future cash flows and do not take into account the time value of money, while stock prices take into account the discounted value of future earnings. Thus, accounting values that do not consider cash flows and time value tend to be lower than economic values.

In addition to this, the market value of a company is closely related to its intrinsic value. In a strong efficient market, where the prices of all assets at any given time fully reflect all public and non-public market information, the market value and intrinsic value should be equal and investors should not be able to make excessive profits by having insider information about certain stocks. If the market is not strong efficient, the market value and intrinsic value of a company will not be equal for a period of time.

Table 5. Discounted-Cash-Flow-Based Intrinsic Value Estimates

Discounted -Cash-Flow-Based Intrinsic Value Estimates	Actual Dec-2021	Forecast Dec- 2022	Forecast Dec- 2023	Forecast Dec- 2024	Forecast Dec-2025	Forecast Dec-2026
<i>(in millions €)</i>						
Present value of free cash flow	7,819.00	2,763.52	912.58	1,896.75	2,246.16	
Present value of horizon value	66,506.41				66,506.41	95,893.40
Present value of entity	74,325.42					
Less net debt	-3,400.00					
Intrinsic value of equity	70,925.42					
Number of outstanding shares (in millions)	785.63					
Estimate of the value of equity per share	90.28					

Based on the annual report, the intrinsic value of Airbus is measured. This paper assumes a WACC of 9.58%, which was published by Airbus in its 2021 annual report used for a discounted cash flow analysis of its A220 program. Thus, after the calculation process shown in the figure above, this paper yields an intrinsic value of €70,925 million for the Airbus equity and a share price of €90.28. This indicates that Airbus' intrinsic value is lower than the market value and the market is not strong efficient.

4. Implications for Accounting Standards

In recent years, the complexity and diversity of fixed assets are increasing, and the recognition of fixed assets depends largely on the managers' knowledge of it, which may lead to differences in value due to management motives. In many special industries, it is impossible to accurately recognize fixed assets by relying only on the definition of fixed assets. In the case of Airbus, for example, the fixed assets are not only of high value, but also of a wide range of categories, and many of them need to function in conjunction with each other. Therefore, accounting standards can encourage enterprises

to disclose fixed assets in the form of asset groups, measure the value of their fixed assets based on the actual situation of asset groups, consider asset groups as the basic unit of fixed asset management, and adjust the subsequent measurement and presentation of fixed assets such as depreciation and provision for impairment on this basis.

With the growing importance of internally generated brands, current accounting disclosures are not responding well to the needs of users of accounting information. These intangible assets cannot be recognized mainly due to the unreliable estimation of costs, but with the advanced valuation tools in the era of artificial intelligence, significant unrecognized intangible assets can be disclosed within the notes to ensure the usefulness of the financial statements.

5. Conclusion

Through the analysis of Airbus' annual report, three main reasons were chosen to explain the gap between the book value and market value of equity. The results of the research showed that the measurement of fixed assets, the non-recognition of internally generated brands, and the equity calculation method were found to be significantly related to the discrepancy. In addition, future research should focus on improvements to the IASB framework and standards to address the presence of corporate reporting of PPE motives and the lack of reliable valuation of internally generated brands.

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