Case study of Chinese and Korean airlines’ MD&As across countries, markets, and ownership—A regulatory perspective

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ABSTRACT
We compare the management discussion and analysis sections (MD&As) of 1) Korean and Chinese airlines in their home countries, with different MD&A regulations; 2) a Chinese airline dual-listed in both the Chinese and U.S. markets, with different levels of information disclosure discretion; and 3) ownership types such as state-owned enterprises (SOEs) and non-SOEs with different regulatory pressure. We find that the more liberal the management’s discretion regarding information disclosure and the higher the government’s regulatory pressure, the higher the MD&A quality. Although requiring more forward-looking information in the MD&A is also conducive to enhancing quality, the impact of regulations on MD&A quality is weaker than that of the first two measures. The results have important implications for regulatory agencies. Promulgating legal provisions, such as the safe harbour provision and improving regulatory pressure, is more efficient for augmenting MD&A quality than modifying regulations.

KEYWORDS
Management discussion and analysis; disclosure quality; regulatory factors; airline industry; China; Korea

1. Introduction
We focus on the quality of supervision of firms’ management discussion and analysis (MD&A) and investigate which regulatory factors are more important in this process. Specifically, we consider that regulators can conduct quality supervision at two points in time: pre-disclosure and in-disclosure. During pre-disclosure, regulators can improve disclosure quality by formulating MD&A disclosure regulations. Conversely, during in-disclosure, they can encourage higher quality disclosure by giving management more attention and discretion regarding information disclosure. The MD&A provides a narrative explanation of a firm’s financial statements, which allows expertise-lacking investors to easily understand a company’s status, thereby mitigating information asymmetry. Prior research has investigated the impact of firm-level factors (e.g. firm size, value, performance) on non-financial information disclosure quality (Duran & Rodrigo, 2018; Gao et al., 2016; Ghasempour & Md Yusof, 2014; Hyeon et al., 2014) but the regulatory factors that affect MD&A quality and the difference in their degree of influence have received inadequate focus.

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We examine three factors that we expect to influence MD&A disclosure quality. First, differences in MD&A regulations could affect MD&A disclosure. We predict that the more forward-looking the information required by MD&A regulations, the higher its quality will be. Therefore, we test the impact of regulations on the quality of MD&A using a cross-national comparative analysis. Second, regarding information disclosure discretion, we anticipate that MD&A information disclosure discretion is higher in developed markets than in emerging markets as there are more legal provisions about disclosing forward-looking information in developed markets (i.e. safe harbour provisions), thus encouraging higher quality information disclosure. Therefore, we test the quality of MD&A between developed and emerging markets. Third, regulatory pressure could also shape firms’ behaviours regarding their MD&A. We predict that the more attention regulatory agencies pay, the higher the disclosure quality will be. Thus, we compare the quality of the MD&A of state-owned enterprises (SOEs) with that of non-state-owned enterprises (non-SOEs).

To address our research objectives, our research setting is as follows. We use a small representative sample of four 2017 MD&As from three Chinese and Korean airlines. We further conduct a comparative study of MD&As disclosed by 1) Korean and Chinese airlines in their home countries (different MD&A regulations), 2) a Chinese airline in both the Chinese and U.S. markets (different levels of information disclosure discretion), and 3) SOEs and non-SOEs (different regulatory pressure) using scoring indices and qualitative analysis. Specifically, we first use Holder-Webb’s scoring index, developed following the U.S. MD&A regulations, to evaluate the quality of MD&As. Holder-Webb (2007) categorised MD&A disclosures into four areas – general, results of operations, capital resources, and liquidity – with a total of 46 disclosure items and a maximum possible score of 82 points, where a higher score indicates better quality disclosure. Second, to mitigate market differences, we used a regulation scoring index based on each country’s MD&A regulations. Finally, to understand the reasons for quality differences, we manually collected and compared the detailed contents of MD&As.

Consistent with our prediction, we first found that within emerging markets, Chinese MD&A regulations required more forward-looking information than Korean MD&A regulations; thus, the MD&As of Chinese firms were of better quality than those of Korean firms. Second, we found that MD&As in developed markets had better disclosure quality than those in emerging markets because of differences in the information disclosure environment. Third, we found evidence that Chinese SOEs disclosed more and better quality information than non-SOEs. This finding can be attributed to the regulatory agency paying more attention to SOEs than non-SOEs. Fourth, we found that improving disclosure discretion augmented the quality of MD&A disclosure the most, followed by increasing regulatory pressure then formulating more regulations to increase mandatory disclosure items.

Our study makes several contributions to the MD&A literature. First, we assessed MD&A research in China from 2002 to 2019,¹ which showed that scholars have primarily focused on the status and quality of MD&A disclosure, although comparative research at the market and corporate levels is relatively scarce. Our study

¹See, Table A1 for details.
narrowed this gap in the research. We focused on representative airlines in China and Korea and provided detailed differences in regulation content, levels of discretion, and regulatory agency attentiveness. Regulatory agencies have traditionally tried to improve MD&A disclosure quality by increasing the number of mandatory disclosure items, but we found that, compared to disclosure discretion, regulations have a weaker impact on improving MD&A quality. Thus, we established that for regulatory agencies, promulgating legal provisions, such as a safe harbour provision, is more efficient for improving the quality of MD&A disclosures. Furthermore, it helps increase the external attention paid by regulatory agencies. Second, we expand the literature on the factors that influence non-financial information disclosure. We found detailed differences in the non-financial information disclosure requirements of China and Korea, as Korea's MD&A policies offer more disclosure of non-financial information. Last, we offer proposals to national and international authorities for effective MD&A policies. We suggest including caveats for forecast information and exemptions to encourage forecast information disclosure (Zhao, 2019; Wang et al., 2013; Zhong & Li, 2006). In 1979, the Securities and Exchange Commission (SEC) realised that disclosing future analytical information was critical for assessing a company's potential profitability and issued a safe harbour provision.

The remainder of this paper is organised as follows. Section 2 outlines the theoretical background and related literature. Section 3 discusses the methodology and samples. Section 4 presents and discusses the comparative findings, and Section 5 states our conclusions and suggests policy implications.

2. Theoretical background and related literature

An important channel for communicating with investors, the MD&A provides stakeholders with relevant past and future information, thereby effectively reducing information asymmetry. MD&As differ from traditional business reports in various ways. First, they help make investment decisions by providing information about the company's estimated future status that cannot be obtained from traditional business reports. Second, the non-financial information available in MD&As allows investors without expertise to easily understand a company's status, thus mitigating information asymmetry. This proves to be an advantage over traditional business reports.

Yeo and Park (2017) found a positive correlation between MD&A quality and accounting transparency. The higher the quality of the company's MD&A disclosure, the more accurately the accounting profit reflects the stock price. Moreover, Kim and Lee (2017) found a negative correlation between MD&A quality and financial analysts' forecasting variance – high-quality MD&A improves the accuracy of financial analysis and reduces information uncertainty.

What, then, drives firms to disclose more information in their MD&As? To answer this question, we considered three regulatory factors that could impact MD&A quality: (1) A difference in the emphasis MD&A regulations give to the content. (2) The higher the level of information disclosure discretion, the greater the amount of information that will be disclosed, especially non-financial information. (3) The more attention paid by a regulatory agency, the higher the quality of information disclosed by the firm. Based on the above reasoning, we developed the following steps.
Table 1. Different description formats of MD&As by country: U.S., Korea, and China.

| Item                        | U.S.                              | Korea      | China     |
|-----------------------------|-----------------------------------|------------|-----------|
|                            | Native private issuers | Foreign private issuers | Korea | China |
| Annual report               | 0                                 | 0          | 0         | 0       |
| Securities report           | 0                                 | 0          | ☒         | 0       |
| Semi-annual report          | 0                                 | ☒          | ☒         | 0       |
| Quarterly report            | 0                                 | ☒          | ☒         | ☒       |
| Position in the annual report | Item 7                          | Item 5     | Item 6    | Item 4  |
| Title of MD&A               | Management Discussion and Analysis of the Financial Condition and Operating Results | Operating and Financial Review and Prospects | Management Discussion and Analysis | Management Discussion and Analysis |
| Main item                   | • Operating results              | • Operating results | • Financial condition and operating results | • Main operating conditions |
|                             | • Liquidity                     | • Liquidity and capital resources | • Liquidity and capital resources | • Prospects for future development |
|                             | • Capital resources              |                                                |                                      |                                      |

1) ☒: This type of report is not required.

2.1. MD&A description formats

Table 1 presents the differences in description format by country. The MD&A was first introduced in the United States (U.S.) in 1968. As leaders in MD&As, U.S. companies provide MD&A reports regularly, primarily discussing operating results, liquidity, and capital resources. The fact that more MD&A reports are issued in the U.S. than elsewhere implies that investors pay more attention to MD&A information. The U.S. has two types of description formats for native and foreign private issuers. Item 7 in Form 10-K is required for domestic firms listed in the U.S. capital market. International firms provide Item 5 in Form 20-F. As shown in Table 1, the description formats are the same except that the SEC does not require semi-annual and quarterly reports from foreign private issuers. Korea and China introduced MD&A in 1997 and 2001, respectively. Korean companies issue MD&A reports annually to discuss the financial condition, operating results, liquidity, and capital resources. The description of financial condition is similar to that in the Chinese MD&A reports but differs from those of other countries in reporting type and period. Chinese MD&As also specifically discuss future development prospects. Additionally, we noted that Chinese companies issue MD&A reports more often than Korean companies, but less often than U.S. companies.

We found that Korean MD&A regulations are similar to those in the U.S. as both focus more on describing financial information. Nevertheless, China requires descriptions of not only financial information but also forward-looking information in MD&A reports. Romajas (1993) notes that the scope of an MD&A includes forward-looking information to improve the ability to predict future earnings. This widened scope allows investors to view the company through the ‘eyes of its management’ by requesting that managers provide financial statements along with their short and long-term analyses of the company’s business profitability and sustainability. Furthermore, he suggests that affirmative duty

\[2\] See Appendix B.5 in Heizman et al. (2010) for the detailed definition and conditions of affirmative duty.
requires the disclosure of forward-looking information regarding the impact of events, trends, and uncertainties on corporate business. He also believes that this disclosure increases information quality by establishing certain reliability standards for investors. Muslu et al. (2015) also tested the informativeness of forward-looking information in MD&As and supported the SEC’s calls for greater prospective disclosure to help improve MD&A information quality. Therefore, we anticipated that firms would provide more high-quality information under the China MD&A regulations because, compared to the traditional information found in other sections of the annual report, information found in the MD&A section about the company’s future is more important for investors.

2.2. MD&A disclosure and market type

To test how the level of information disclosure discretion impacts MD&A quality, we focused on the difference in the MD&A disclosure environments in developed (U.S.) and emerging markets (China).

One important difference between the MD&A disclosure environments of the U.S. and Chinese markets is that of the level of discretion in predictive information disclosure. A company’s management is reluctant to disclose uncertain information, as this may increase the risk of litigation. However, in 1979, the U.S. SEC recognised that analytical information about the future plays a very important role in assessing a company’s potential profitability and implemented the safe harbour provision. According to the disclaimer, if the disclosure of forecast information is based on good faith with a reasonable basis, the management is not liable even if the actual result deviates from the forecast. Gelb and Zarowin (2002) examined the association of voluntary disclosure, including forward-looking information, and the informativeness of stock prices, and found that greater disclosure with predictive information provides investors with information benefits. Bochkay and Levine (2019) noted that more predictive information increases MD&A informativeness, that is, MD&A quality. Furthermore, they suggested that MD&A informativeness positively contributes to firm information environments. In sum, prior research suggests that more predictive information improves MD&A quality and this improvement allows investors to make better decisions.

However, as mentioned above, China’s MD&A demands more forward-looking information disclosure. Hitherto, China has not introduced any legal provision similar to the U.S. safe harbour provision. Prior research has highlighted that China’s MD&A quality is low owing to a lack of forward-looking information disclosure (Meng et al., 2014; Wang et al., 2013; Zhou, 2016). Zhao (2019) highlights that when management discloses forward-looking information, there is a clear tendency to seek and document advantages and avoid disadvantages, as well as an aversion to risks. In other words, managers tend to disclose only positive information without reporting the negative. As early as 2006, to solve the legal liability problem of MD&A information in the securities market and protect the legitimate rights of investors, Zhong and Li (2006) analysed the MD&A information disclosed by listed companies in China and the U.S. They pointed out that the relevant provisions in U.S. securities laws should be used to improve China’s MD&A, indicating it is necessary to use a safe harbour provision to induce disclosure of forward-looking information. The importance of a safe harbour provision has also been emphasised by Wang et al. (2013) and Zhao (2019).
Therefore, compared to China’s market, MD&As in the U.S. likely disclose more predictive information owing to a higher level of information disclosure discretion.

2.3. **MD&A disclosure and regulatory pressure**

Drawing on socio-political theory, which indicates that voluntary disclosure is related to social and political pressures firms face (Patten, 2002), we anticipated that MD&A quality is also affected by regulatory pressure. We measured the difference in regulatory pressure using ownership styles, as SOEs are more sensitive to regulatory pressure (Zeng et al., 2012).

The most prominent feature of the Chinese market is its firm ownership structure. The fundamental mission of SOEs is to achieve social stability and sustainable development (Zhang et al., 2019). Their improper behaviour can have a great impact on the industry; thus, regulatory agencies impose strict requirements on them. Moreover, prior research suggests that the government’s regulatory requirements affect SOEs’ information disclosure (Huang & Kung, 2010) as SOEs are pioneers in implementing new regulations and are likely to disclose more voluntary information (Zeng et al., 2012).

Hence, this study also focused on quality differences in MD&As between SOEs and non-SOEs in the Chinese market.

3. **Sample and methods**

3.1. **Sample collection**

We selected the aviation industry to compare the quality of MD&As. The aviation industry is widely used as an indicator of national economic strength and for promoting economic growth in China (Zhao, 2011; Zhang, 2016). However, owing to fuel price fluctuations, the development of high-speed railways, and frequent aviation accidents in Korea and China, the aviation industry has recently become unstable, and its growth has stagnated.

Furthermore, the aviation industry is characterised by more uncertainty than other industries, and information regarding uncertain risks is an essential determinant of investment decisions (You & Shin, 2012). You and Shin (2012) report that investors and spectators in the aviation industry are increasingly demanding qualitative corporate information, such as MD&As.

To obtain comprehensive data points to address the disclosure status of companies in different markets and with different types of ownership, we used a small representative sample of four MD&As from three airlines.³

Korea’s representative airline, Korean Air, was founded in 1962 and is now the largest non-state-owned airline in Korea and Asia. However, with the increasing uncertainty of its internal and external environment (e.g. competition with low-cost carriers, unstable

³We chose the aviation industry for this study because it is important for both investors and the country. Therefore, we expected managers to disclose more qualitative information beyond the quantitative information to attract investors. To facilitate analysing MD&A details, our study focused on a small sample. Despite the limitation that MD&A differences may vary depending on industry uncertainty, we believe that our research identifies MD&A differences due to market and ownership types and that these results offer MD&A policy proposals for authorities.
aviation fuel prices due to trade wars, and ethical issues in its management), the importance of its MD&A has increased recently. Additionally, the Korean high-speed railway has developed rapidly since 2004, and has severely impacted the aviation industry.

We selected China Eastern Airlines as the Chinese representative of a state-owned airline because it was the first Chinese airline to be multi-listed on the New York Stock Exchange, Hong Kong Stock Exchange, and Shanghai Stock Exchange in 1997. It has an MD&A with the longest disclosure tenure in the U.S. market. Moreover, it is one of China’s three major airlines.

Hainan Airline, established in 1993, was the Chinese representative of a non-state-owned airline. As of 2021, it is the only non-SOE among China’s four largest airlines.

### 3.2. Methods

Measuring the quality of non-financial information disclosure has always been a focus as well as a challenge for research on this topic. Two main methods have been used in prior studies: using absolute values, that is, simply adding the scores of each item, and using relative values, that is, dividing the actual obtained disclosure score by the maximum obtainable points. We used the more reasonable relative ratio calculation method. Specifically, we used two indices to measure MD&A quality, then determined the reasons for the differences in quality through a detailed analysis using the following method.

First, we used the MD&A scoring index tool developed by Holder-Webb in 2007 to objectively evaluate MD&A quality. Holder-Webb (2007) categorised MD&A disclosures into four areas: general, results of operations, capital resources, and liquidity, with a total of 46 disclosure items and a maximum possible score of 82 points (i.e. not all items apply to every business). If a basic item is disclosed, a basic score is obtained; if additional explanations are disclosed, an enhanced score is obtained. To measure disclosure quality, we needed to calculate the ratio of points discussed – the sum of both basic and enhanced points awarded for appropriately discussed items – to the adjusted business-dependent available points, calculated as 82 less the sum of the points of non-applicable items for a particular business context. The resulting ratio, defined as the discussed points divided by the available points, represents the final disclosure quality score. A higher score indicates better quality disclosure.

Second, we developed and analysed a regulation scoring index based on each country’s MD&A regulations to mitigate market differences. As Holder-Webb’s MD&A scoring index was developed using the MD&As of U.S.-listed firms, even though emerging markets’ MD&A rules align with developed markets’ regulations, (such as those applicable in the U.S.), adopting these assessment standards across different countries’ MD&A disclosures may generate bias (i.e. the bias of results outside the required range or incomplete assessment). Therefore, Holder-Webb’s MD&A scoring index needs to be adjusted when it is used to measure the quality of MD&As in emerging markets. The calculation method of our regulation scoring index is analogous to Holder-Webb’s MD&A scoring index. However, the underlying classification

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4We need to distinguish between 0-point items and non-applicable items, which will lead to different denominators. 0-point items mean the related items are disclosed but do not contain the key points that are the elements in parentheses, whereas non-applicable items mean the related items are not disclosed at all.
understand and scoring are different. First, we developed China’s regulation scoring index to include 15 historical information pointers and 10 forward-looking pointers. Second, we categorised and added caveats about forecast information, overview, financial condition, operating results, liquidity and capital resource, off-balance sheet arrangements, and other items to analyse Korea’s regulation scoring index. The U.S. regulation scoring index comprises operating results, liquidity and capital resources, R&D patents and licences, off-balance sheet arrangements, tabular disclosure of contractual arrangements, etc. We expected that the regulation scoring index would capture the effect of market type on MD&A quality. We manually screened each firm’s MD&A content and calculated its regulation scoring index. The regulation score is also defined as the points discussed divided by the situation-dependent available points. A higher regulation score indicates better quality disclosure.

Finally, to understand the reason for quality differences, we manually collected and compared the detailed content of the firms’ MD&As.

4. Results

4.1. Holder-Webb’s MD&A scoring index

Table A2 shows each company’s detailed Holder-Webb scores; these results are summarised in Table 2. First, slight differences are observed among non-SOEs in emerging markets. Hainan Airlines’ disclosure quality score is 0.67, whereas that of Korean Air is 0.63, indicating that Hainan Airlines provides more MD&A items and better quality MD&A disclosure. Second, the disclosure quality score in developed markets (0.78) is higher than those in emerging markets (0.71, 0.67, and 0.63.) This gap between emerging and developed markets suggests that firms listed in developed markets provide better quality disclosure, especially regarding liquidity. Last, the disclosure quality score is 0.71 in Chinese SOEs and 0.67 in Chinese non-SOEs. This quality gap and the underlying

| Market                  | Emerging market                      | Developed market                  |
|-------------------------|--------------------------------------|-----------------------------------|
| Ownership               | SOE                                  | Non-SOE                           | SOE                               |
| Item                    | Company                              | Company                           |                                   |
| General                 | China Eastern Airlines: Chinese      | Hainan Airlines                   | Korean Air                        | China Eastern Airlines: U.S. |
|                         | market                               |                                   |                                   | market                           |
| Results of operations   | 8                                    | 8                                 | 6                                 | 5                                 |
| Capital resources       | 11                                   | 4                                 | 2                                 | 11                                |
| Liquidity               | 5                                    | 3                                 | 4                                 | 9                                 |
| Total score             | Discussed points                     | Available points                  |                                   |                                   |
|                         | 32                                   | 22                                | 20                                | 31                                |
|                         | Holder-Webb’s disclosure quality     |                                   |                                   |                                   |
|                         | score 1)                             |                                   |                                   |                                   |
|                         | 0.71                                 | 0.67                              | 0.63                              | 0.78                              |

1) Holder-Webb’s disclosure quality score = Discussed points ÷ Available points.
2) See, Table A2 for the detailed calculation process.
disclosure items suggest that SOEs not only provide better quality disclosures but also disclose more items. Overall, Table 2 suggests that market and ownership types affect disclosure quality.

4.2. Regulation scoring index

Tables A3, A4, and A5 show each country’s detailed regulation scores. Table 3 summarises and compares Holder-Webb’s MD&A index scores and the regulation scoring index. First, China’s MD&A scoring index contents are based on regulatory item 4 in the relevant 2017 annual reports. The CSRC (2017) divides MD&A regulations into historical information (i.e. core business, non-core business, assets and liabilities, investment status, major assets and equity sales, major subsidiaries, structured entity) and forward-looking information (i.e. industrial development trend, company development strategy, management plan, possible risks). The index includes all the above items. China Eastern Airlines’ regulation score is 0.93, whereas Hainan’s is 0.81.

Next, Korea’s MD&A scoring index is based on regulatory item 6 in the 2017 annual reports, including caveats regarding forecast information, overview, financial condition, operating results, liquidity, capital resources, and off-balance sheet arrangements. Korean Air’s regulation score is 0.79.

Last, the U.S.’s MD&A scoring index is compiled according to accounting guidance topic 9 of the relevant 2017 annual report. It comprises six items: operating results; liquidity and capital resources; R&D, patents, and licences; off-balance sheet arrangements; tabular disclosure of contractual arrangements; and other items. The calculated regulation score of China Eastern Airlines in the U.S. market is 0.95.

The regulation scoring index provides additional support for Holder-Webb’s MD&A scoring index results. This analysis implies that the evaluation of MD&A quality remains unchanged, even after considering the different regulations. We analyse these quality gaps in detail in the next section.

| Table 3. Score comparison among the U.S., Korea, and China. |
| --- | --- | --- | --- |
| Index | Type | Emerging markets | Developed markets |
| | | SOE | Non-SOE | SOE |
| | China Eastern Airlines: Chinese market | Hainan Airlines | Korean Air | China Eastern Airlines: U.S. market |
| Holder-Webb’s MD&A Scoring Index | 0.71 | 0.67 | 0.63 | 0.78 |
| Regulation Scoring Index | 0.93 | 0.81 | 0.79 | 0.95 |

5Specifically, item 4 as set out in the ‘Contents and Forms of Corporate Information Disclosure for Public Issuance of Securities No. 2 – Content and Form of Annual Report’, issued by the China Securities Regulatory Commission (CSRC) in 2017.

6Specifically, item 6 as set out in the ‘Standards for the Formulation of Company Disclosure Form’, issued by Korea’s Financial Supervisory Service in 2020.

7Topic 9 refers to ‘Management’s Discussion and Analysis of Financial Position and Results of Operations’, as set out in the ‘Financial Reporting Manual’ issued by the SEC in 2008.
4.3. Detailed analysis

The previous section discusses the results of the disclosure quality score index, which indicates the existence of various quality gaps. To address these gaps, in this section, we analyse the differences in MD&A content within emerging markets (Table 4), across market types (Table 5), and across ownership types (Table 6).

Table 4. Comparison between the 2017 MD&As of Korean air and Hainan airlines.

| Item                                | Content                                                                 | Korean Air | Hainan Airlines |
|-------------------------------------|-------------------------------------------------------------------------|------------|-----------------|
| Caveats of forecast information     | Description of significant differences and uncertainties in forecast information | 0          | ✗              |
| Financial condition and operating   | Description of investment status including terminated business           | ✗          | 0               |
| results                              | Description of major customers and suppliers                            | 0          | ✗              |
| Liquidity and capital resources     | Description of funding status                                           | 0          | ✗              |
| Others                              | Discussion of aircraft information                                      | 0          | ✗              |
|                                    | Major subsidies and rewards received from government                    | 0          | ✗              |
|                                    | Discussion of future information including trends, strategies, and       | 0          | ✗              |
|                                    | management plans                                                        |            |                 |

1) ✗: This type of report is not required.

Table 5. Comparison between 2017 MD&As of China Eastern airlines in the Chinese and U.S. markets.

| Item                                | Content                                                                 | China       | U.S.          |
|-------------------------------------|-------------------------------------------------------------------------|-------------|---------------|
| Results of operations               | Components of revenues and expenses                                    | 2-year data| 5-year data  |
|                                    | Detailed changes in income and costs                                   | Sector comparison | Year comparison |
|                                    | Subsidiary information                                                 | 0          | ✗              |
|                                    | Bond issuance plan for 2018                                             | ✗          | 0              |
| Liquidity and capital resources     | Description of cash flows                                              | 2-year data| 3-year data  |
|                                    | Bond issuance plan for 2018                                             | ✗          | 0              |
| Others                              | Application of critical accounting policies                            | ✗          | 0              |
|                                    | Strategy, trend information, etc.                                       | 0          | ✗              |

1) ✗: This type of report is not required.

Table 6. Comparison between 2017 MD&As of China Eastern airlines and Hainan airlines.

| Item                                | Content                                                                 | China Eastern Airlines | Hainan Airlines |
|-------------------------------------|-------------------------------------------------------------------------|------------------------|-----------------|
| Caveats about forecast information  | Description of significant differences and uncertainties in forecast information | 0          | ✗              |
| Operating conditions                | Description of reason for changes in cost                               | 0          | ✗              |
|                                    | Description of tax, investment revenue, etc.                            | 0          | ✗              |
|                                    | Description of the composition of assets, liabilities, and              | 0          | ✗              |
|                                    | contingent liabilities by business/product                              |            |                 |
|                                    | Description of interest rate and exchange rate fluctuation              | 0          | ✗              |
|                                    | Aircraft and related equipment purchase and financing plans             | 0          | ✗              |
|                                    | Major subsidies and rewards from the government                         | 0          | ✗              |
|                                    | Subsidies⁴                                                               | 0          | ✗              |
|                                    | Tax refund⁵                                                              | ✗          | 0              |
|                                    | Government special subsidies⁶                                            | 0          | ✗              |

1) A kind of government award.
2) A kind of tax benefit.
3) Established by the state to promote industry development, such as energy-saving and emission reduction, and special tasks.
4) ✗: This type of report is not required.
4.3.1. **Comparative analysis of MD&A regulations among countries**

Table 4 shows the results of the comparative analysis of the non-SOE emerging market airlines using the 2017 MD&As of Korean Air and Hainan Airlines. The 2017 MD&As of Hainan Airlines and Korean Air represent 6.7% (14 of 209 pages) and 1.9% (7 of 376 pages), respectively, of their annual reports. This simple difference in quantity implies that Hainan Airlines provides more detailed information. Korean Air describes the notices of forecast information and funding status, whereas Hainan Airlines discloses its current investment status, projected future status, information about customers and suppliers, aircraft, and the major subsidies and rewards received from the government. Table 4 indicates that within emerging markets, the number of items and content features differs substantially even when firms belong to the same industry.

The quantitative comparative analysis results imply that the MD&A quality of Hainan Airlines is higher than that of Korean Air; Hainan Airlines’ score is higher than Korean Air’s score in both the regulation scoring index (0.67 > 0.63) and Holder-Webb’s scoring index (0.81 > 0.79). In the qualitative comparative analysis, we found that Hainan Airlines’ MD&A constituted a greater proportion of its annual report than did Korean Air’s. Hainan Airlines provided more information, such as financial conditions, operating results, and forward-looking information. This difference is due to Korea’s MD&A regulations, which require more financial historical-only information compared to China’s MD&A regulations, which focus on both historical and forward-looking information. Combining the quantitative and qualitative analysis results, the difference in emphasis between China’s and Korea’s MD&A regulations results in higher quality MD&As among Chinese firms.

In addition, we found that Hainan Air’s MD&A included information about subsidies and rewards. High airline costs mean that companies in the Chinese aviation industry cannot easily operate without a government subsidy. This aspect highlights the importance of the aviation industry in China (Zhao, 2011; Zhang, 2016).

Thus, the findings support the hypothesis that MD&A regulation differences cause a significant gap in MD&A quality in emerging markets.

4.3.2. **Comparative analysis of market type**

We analysed one firm that is dual-listed in different markets to verify the existence of differences in MD&A quality owing to market type.

Table 5 shows the results of the comparative analysis between emerging and developed markets, that is, between the 2017 MD&As of China Eastern Airlines in the Chinese and U.S. markets. First, China Eastern Airlines’ 2017 MD&A accounts for 22.1% (33 of 149 pages) and 18.6% (24 of 129 pages) of the annual reports in the Chinese and U.S. markets, respectively. Second, there is a preference for tables rather than narrative descriptions in both markets (28 tables in the Chinese market report, and 10 tables in the U.S. market report). Finally, the MD&A in the U.S. market discloses more years of data than that in the Chinese market. In terms of quantity, China Eastern Airlines’ MD&A in the Chinese market provides more information than that in the U.S. market. In terms of content, both disclose expected future status information. The Chinese market MD&A discloses future trend information, and the U.S. market proposes a future bond issuance plan, which indicates that China Eastern Airlines provides different information to different markets.
When comparing the scoring index, the quality of the MD&A in the developed market appears to be higher than that in the emerging market. The MD&A score in the developed market is higher than that in the emerging market in both the regulation scoring index (0.78 > 0.71) and Holder-Webb’s scoring index (0.95 > 0.93). The detailed analysis results imply that the Chinese market’s MD&A emphasises a higher quantity of information, whereas that of the U.S. market emphasises higher quality information to facilitate accurate prediction. In addition, MD&A reports in China tend to use more tables and provide narrative explanations for investors. Finally, MD&A reports in China contain more future trend information than those in the U.S.; however, they do not mention a specific plan to achieve targets. Unlike in the Chinese market, MD&A reports in the U.S. disclose detailed financing arrangements, which is useful information for investors.

MD&A regulations in the Chinese and U.S. markets are different. Companies in the Chinese market have been required to disclose more future information, which may appear to be a sign of high quality. However, our results show that companies in the Chinese market have lower quality MD&As than those in the U.S. market. Therefore, the importance of MD&A disclosure is further strengthened. Developed markets such as the U.S. have sufficient investment capital and are more transparent than emerging markets (Wan, 2018). In particular, the existence of a safe harbour provision improves MD&A disclosure discretion, which encourages firms in the U.S. market to disclose details regarding plans. Therefore, market features and their distinct environments drive firms to disclose more information in developed markets than in emerging markets. The results of our detailed analysis and scoring indices indicate that firms disclose more high-quality information in developed markets than in emerging markets.

Collectively, our findings support the fact that the level of discretion in information disclosure affects MD&A quality.

### 4.3.3. Comparative analysis of ownership type

We analysed whether regulation pressure influences MD&A content and quality by ownership type. To understand the disclosure quality gap⁸ associated with ownership type in the same market, Table 6 shows the results of the comparative analysis between SOEs and non-SOEs using the 2017 MD&As of China Eastern Airlines and Hainan Airlines, respectively.

The 2017 MD&As of China Eastern Airlines and Hainan Airlines constituted 22.1% (33 of 149 pages) and 6.7% (14 of 209 pages), respectively, of their annual reports. Additionally, no regulations are required in China to describe the caveats of forecast information. However, China Eastern Airlines provides caveats regarding forecast information. Overall, China Eastern Airlines discloses more information about its condition than Hainan Airlines does.

The results of a comparison of the regulation scoring index values are consistent with the Holder-Webb index scores. These consistent quantitative results imply that the MD&A reports of SOEs have better disclosure quality than those of non-SOEs. Qualitatively, the detailed analysis supports the results of both scoring indices. China Eastern Airlines, an SOE, appears to disclose more information than Hainan Airlines, a non-SOE. Noticeably,

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⁸Disclosure quality gap is 0.04 = China Eastern Airlines (0.71) – Hainan Airlines (0.67) in Holder-Webb’s index, and 0.12 = China Eastern Airlines (0.93) – Hainan Airlines (0.81) in the regulation scoring index.
both China Eastern Airlines and Hainan Airlines receive government subsidies and rewards, regardless of the ownership type. However, the different sizes and types of national support suggest that the Chinese government favours SOEs (Lu & Yao, 2004; Wu et al., 2009; Wu & Zhang, 2013). When comparing the size and type of government aid reported in their MD&A reports, China Eastern Airlines is found to have received more varied government funds than Hainan Airlines.

Generally, SOEs have low bankruptcy risk owing to the government’s endorsement. Therefore, SOEs pay less attention to external investments than non-SOEs, and thus, have no incentive to provide information to external investors. However, China Eastern Airlines, an SOE, unexpectedly discloses detailed information, a result of the power of regulatory pressure. The motivation for SOEs to disclose information is not limited to economic benefits. Disclosing information also satisfies part of their social responsibility reporting (Gao & Xu, 2018).

Thus, supporting our prediction, the findings show that regulatory pressure improves MD&A disclosure quality.

5. Conclusion

This study investigated the regulatory factors that impact MD&A using a national and corporate-level comparative analysis. The three regulatory factors are 1) MD&A regulation differences; 2) information disclosure discretion; and 3) regulatory pressure. We examined MD&A disclosure status and the quality of Korean and Chinese airlines’ MD&As through two scoring indices and detailed qualitative analysis. We adopted Holder-Webb’s MD&A scoring index and formulated a new scoring system: a regulation score index (reflecting each country’s regulations). We built each country’s regulation scoring index according to its standards, manually screened the firm’s MD&A content, and calculated the score. The results of the regulation scoring index are consistent with those of Holder-Webb’s MD&A scoring index. From these results, we concluded that the regulation scoring index provides additional support for Holder-Webb’s MD&A scoring index results.

Our findings are as follows. First, the MD&A quality comparison within emerging markets shows that Chinese firms have better MD&A quality than Korean firms. This difference is because China’s MD&A requires disclosure of both non-financial and forward-looking information, whereas Korea’s MD&A disclosure is mainly based on financial information alone. Second, by comparing MD&A quality between emerging and developed markets, we find that MD&As in the U.S. are of higher quality. This finding supports previous results indicating that the U.S. market provides a better information disclosure environment (Wan, 2018). Third, the comparison between the MD&As of China Eastern Airlines and Hainan Airlines shows that since Chinese SOEs face greater social responsibility and receive more attention from the government, they disclose more information than non-SOEs (Gao & Xu, 2018; Lee et al., 2010). Fourth, by comparing the effects that these regulatory factors have on MD&A quality, we found that improving disclosure discretion has the most effect on improving MD&A disclosure quality, followed by increasing regulatory pressure, and finally, formulating more regulations to increase mandatory disclosure items.
Focusing on representative airlines in China and Korea, this study provides detailed differences according to regulation content, level of discretion, and regulatory agency attentiveness, and is a cornerstone for MD&A comparative research.

Second, we extend the literature on the factors that influence non-financial information disclosure. Non-financial information can provide details about a company’s core competencies (e.g. intangible assets, human capital, sales channels, customer groups, and goodwill) and sustainability, which will enhance the company’s credibility and help investors make informed decisions. However, non-financial information disclosure requirements for MD&As in Korea are lower than those in China, and the actual information disclosed by Korean companies is also less than that provided by Chinese companies. Therefore, non-financial information disclosure requirements should be boosted in Korea’s MD&A policies.

Finally, we also offer proposals to national and international authorities for effective MD&A policies. We suggest the enactment of the required disclosure of caveats regarding forecast information in China. Limited information is available about such caveats, even though China’s regulations demand more forward-looking information. Notifying the public about the caveats of forecast information leads investors to make decisions based on an adequate analysis of uncertainty over time. Providing such caveats may increase the credibility of MD&A content in China.

Moreover, exemption provisions should be enacted to encourage forecast information disclosure (Zhao, 2019; Wang et al., 2013; Zhong & Li, 2006). Korea needs to encourage firms to disclose more forecast information, and China also needs to increase numerical forecast information disclosure by enacting provisions to reduce management’s litigation risk concerning disclosing forecast information.

As the quantity and quality of MD&A information disclosure increases, a company's accounting information reliability also increases. This can make attracting investment easier and more cost-effective, thereby promoting the development of the aviation industry and enhancing a country’s basic industries. Because of time and resource constraints, this study involved only the aviation industry. However, the results may apply to other industries as well.

This study has several limitations. First, we selected our samples from the aviation industry, which is marked by high uncertainty. However, the study did not consider managers’ behaviours and their impact. For example, managers in the aviation industry face great disclosure pressure to provide more detailed information, but provide minimum information in the absence of this pressure because of substantial uncertainty. Thus, further research analysing MD&A quality should consider a manager’s thought processes and actions. Second, we only focused on a small sample in a specific industry. Even though differences in MD&As may depend on industry uncertainty, our results are meaningful for regulatory agencies, especially those in the aviation industry. Third, this is a case study that analyses the current status of MD&As. Therefore, an analysis of causality was not performed. Future research requires an analysis of the causal relationship between regulations and MD&As through an empirical test and text analysis.

Now that COVID-19 has restricted human activity and the aviation industry is one of the most affected markets, companies in this sector are expected to disclose more forward-looking information related to this development. Therefore, it is necessary to analyse this aspect in future research.
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### Appendix A

**Table A1. Status of MD&A research in China from 2002 to 2019 (CNKI).**

| Year | Item                              | 02 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | Total |
|------|-----------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
|      | Disclosure status and quality     | ☒ | ☒ | ☒ | ☒ | ☒ | 1  | 2  | 1  | 6  | 5  | 1  | 6  | ☒ | 1  | 1  | 2  | ☒ | ☒ | 37    |
|      | Usefulness                        | ☒ | ☒ | ☒ | ☒ | ☒ | 1  | 1  | 2  | 1  | 5  | 5  | 2  | 4  | ☒ | 1  | 1  | 2  | ☒ | ☒ | 25    |
|      | Country comparison                | 1  | ☒ | 4  | 2  | 3  | 3  | ☒ | ☒ | 1  | 1  | ☒ | 1  | ☒ | ☒ | ☒ | 2  | ☒ | ☒ | 18    |
|      | Linguistic features               | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | 2  | ☒ | 5  | 9  | ☒ | 16    |
|      | Influence factors                 | ☒ | ☒ | 2  | 1  | 1  | 1  | ☒ | ☒ | 4  | ☒ | ☒ | ☒ | ☒ | ☒ | 3  | ☒ | ☒ | ☒ | 12    |
|      | Forecast information              | ☒ | ☒ | ☒ | ☒ | 1  | ☒ | ☒ | ☒ | ☒ | 1  | 2  | 1  | ☒ | 2  | 1  | ☒ | 2  | ☒ | 10    |
|      | Discussion and advice             | ☒ | ☒ | ☒ | ☒ | ☒ | 2  | ☒ | ☒ | 2  | 1  | 1  | 1  | ☒ | ☒ | 1  | ☒ | ☒ | ☒ | 8     |
|      | Readability                       | ☒ | ☒ | ☒ | ☒ | ☒ | 2  | ☒ | ☒ | 2  | 1  | 1  | 1  | ☒ | ☒ | 1  | ☒ | ☒ | ☒ | 8     |
|      | Others                            | ☒ | ☒ | 1  | 2  | 1  | 1  | ☒ | ☒ | 1  | 2  | 1  | ☒ | 2  | ☒ | 2  | 3  | 16    |
|      | Total                             | 1  | 1  | 8  | 13 | 12 | 8  | 5  | 8  | 18 | 12 | 10 | 5  | 6  | 9  | 10 | 18 | 144   |

1) ☒: Presence of information required.

1) ☒: absence of information required.
Table A2. Holder-Webb’s MD&A Scoring Index – China Eastern Airlines, Hainan Airlines, Korean Air.

| Item                                                                 | Criteria                  | Chinese market | U.S. market | Hainan Airlines | Korean Air |
|----------------------------------------------------------------------|---------------------------|----------------|-------------|-----------------|------------|
| ● General (14')                                                      |                           |                |             |                 |            |
| General description of business provided                            | Basic: 1 Enhanced: ☐      | 1              | 1           | 1               | 1          |
| Major products, segments, or subsidiaries (description; relative contribution to sales or results) | 1 1                       | 2              | 2           | 2               | 2          |
| Specific details about products, including manufacture, shipping, inventory turns (qualitative; quantitative) | 1 1                       | NA¹            | NA          | NA              | NA         |
| Segments and subdivisions (impact on operations; breakdown of impact on operations by segment) | 1 1                       | 2              | NA          | 2               | 2          |
| Customers or markets (description; percentage provided to each customer segment or market) | 1 1                       | 1              | 1           | 1               | 1          |
| Description of facilities (list primary manufacturing, retail, service centres; discuss capacity) | 1 1                       | 2              | 1           | 2               | NA         |
| Number of employees                                                 | Basic: ☐                  | NA             | NA          | NA              | NA         |
| Order backlog                                                       | Basic: ☐                  | NA             | NA          | NA              | NA         |
| Recent acquisitions, impact on current operations                    | Basic: ☐                  | NA             | NA          | NA              | NA         |
| Total item score                                                    |                           | 8              | 5           | 8               | 6          |
| Total NA items score                                                |                           | 5              | 7           | 5               | 7          |
| ● Results of Operations (28')                                        |                           |                |             |                 |            |
| Loss provisions, explained in terms of an event                     | Basic: ☐                  | NA             | 1           | NA              | 1          |
| Extraordinary gains or losses, current impact (qualitative; quantitative) | 1 1                       | NA             | NA          | NA              | NA         |
| Extraordinary gains or losses, future impact (qualitative; quantitative) | 1 1                       | NA             | NA          | NA              | NA         |
| Current unusual or infrequent items, not extraordinary (qualitative, with details; quantitative impact on operations) | 1 1                       | NA             | NA          | NA              | NA         |
| Anticipated unusual or infrequent items, not extraordinary (qualitative, with details; quantitative impact on future operations) | 1 1                       | NA             | NA          | NA              | NA         |
| Discontinued operations, impact on current results (qualitative; quantitative) | 1 1                       | 1              | NA          | NA              | 2          |
| Discontinued operations, impact on future results (qualitative; quantitative) | 1 1                       | NA             | NA          | NA              | NA         |
| Economic risks and climate, known (discuss risks in the economic climate of the firm; quantify the impact on current results) | 1 1                       | 1              | NA          | 1               | 1          |
| Economic risks and climate, anticipated (discussion)                | Basic: ☐                  | 1              | NA          | 1               | 1          |
| Revenues, current trends (explain by volume/price changes; analyse factors) | 1 1                       | 2              | 2           | 2               | 1          |

(Continued)
| Item                                                                 | Criteria                                                                                     | Basic | Enhanced | Awarded score | Awarded score | Awarded score | Awarded score |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------|----------|----------------|---------------|---------------|---------------|
| Revenues, anticipated trends (projected trends or discussion of uncertainties that prevent projection) |                                                                                              | 2     | ☒        | NA             | NA            | NA            | NA            |
| Gross margin/gross profit, current trends (identify and explain trends; discuss as percentage of sales) |                                                                                              | 1     | 1        | 0              | NA            | 0-            | 0             |
| Gross margin/gross profit, anticipated trends (projected trends or discussion of uncertainties that prevent projection) |                                                                                              | 1     | ☒        | NA             | NA            | NA            | NA            |
| Cost of sales, cost of goods sold, or operating income, current (discuss; analyse factors) |                                                                                              | 1     | 1        | 2              | 2             | 2             | 1             |
| Cost of sales, cost of goods sold, or operating income, anticipated (discuss trend; analyse factors) |                                                                                              | 1     | 1        | NA             | NA            | NA            | NA            |
| Inflation, changing prices, and currency translations (quantify the impact on current operating results) |                                                                                              | 1     | ☒        | 1              | 1             | 1             | 1             |
| Total item score                                                   |                                                                                              |       |          | 8              | 6             | 7             | 8             |
| Total NA items score                                               |                                                                                              |       |          | 16             | 22            | 18            | 15            |
| • Capital Resources (23’)[1]                                        |                                                                                              |       |          |                 |               |               |               |
| Current commitments (list current expenditures or explicitly state that there are none) |                                                                                              | 1     | ☒        | 1              | 1             | 1             | NA            |
| Sources of funds for current commitments (individually identify sources; provide details about sources such as interest rates, limits) |                                                                                              | 1     | 1        | NA             | NA            | NA            | NA            |
| Sources of funds for current commitments, trends (known; anticipated) |                                                                                              | 1     | 1        | NA             | 1             | NA            | NA            |
| Proposed commitments (list proposed; provide schedule or projection) |                                                                                              | 1     | 1        | 2              | 1             | NA            | NA            |
| Sources of funds for proposed commitments (identify, including currently unused sources and negotiations underway; provide details as above) |                                                                                              | 1     | 1        | 2              | 1             | NA            | NA            |
| Time frame (time frame for proposed expenditures or hiatus in spending) |                                                                                              | 1     | ☒        | 1              | 1             | NA            | NA            |
| Changes in capital resources, items (quantitative description of new or renegotiated lines, stock issues, etc.; analyse effect of new or changed source on current and future expenditures) |                                                                                              | 1     | 2        | 1              | NA            | 1             | NA            |
| Changes in capital resources, costs (qualitative discussion; discuss the impact of costs on current and future operations) |                                                                                              | 1     | 2        | NA             | NA            | NA            | NA            |
| Debt covenants (details; potential effects)                        |                                                                                              | 1     | 1        | 1              | 2             | NA            | NA            |

(Continued)
### Table A2. (Continued).

| Item                                                                 | Company          | Criteria | China Eastern Airlines | Hainan Airlines | Korean Air |
|---------------------------------------------------------------------|------------------|----------|------------------------|-----------------|------------|
|                                                                     |                  | Basic    | Awarded score          | Awarded score   | Awarded score |
| Economic climate (effect on ability to finance costs of capital)    |                  | 1        | 0                      | 1               | NA         | NA         |
| Business risks, including economic and financial (list significant) |                  | 1        | 1                      | 1               | 1          | 1          |
| Risk management (discuss risk management method; quantitative details; limitations on effectiveness) |                  | 1        | 2                      | 2               | 1          | 1          |
| Total item score                                                    |                  | 11       | 11                     | 4               | 2          |            |
| Total NA item score                                                 |                  | 7        | 8                      | 15              | 18         |            |
| **Liquidity (17’)**                                                 |                  |          |                        |                 |            |            |
| Working capital, known trends (qualitative, include cause; quantitative) |                  | 1        | 1                      | 2               | 1          | 1          |
| Working capital, anticipated trends (qualitative, include cause; quantitative) |                  | 1        | 1                      | NA              | NA         | NA         |
| Current demands and obligations (list)                              |                  | 1        | NA                     | NA              | NA         | NA         |
| Sources of funds to meet current demands and obligations (discuss internal and external sources; identify the disposition of each in the current period) |                  | 1        | NA                     | NA              | NA         | 1          |
| Changes in the supply of funds, current and projected effects (quantify current; discuss projected) |                  | 1        | NA                     | NA              | NA         | 1          |
| Liquidity effects of balance sheet conditions (current impact; projected trends) |                  | 1        | 1                      | 1               | NA         | NA         |
| Liquidity effects of operations (current impact; projected trends)  |                  | 1        | 1                      | 1               | 1          | NA         |
| Liquidity effects of investing and financing items (current impact; projected trends) |                  | 1        | 1                      | 1               | 1          | 1          |
| Liquidity deficiencies (source of deficiency; action taken or planned, or reason why a deficiency cannot be remedied) |                  | 1        | NA                     | 2               | NA         | NA         |
| Total item score                                                    |                  | 5        | 9                      | 3               | 4          |            |
| Total NA item score                                                 |                  | 9        | 5                      | 11              | 10         |            |
| Total Score                                                         |                  | 32       | 31                     | 22              | 20         |            |
| Discussed points                                                    |                  | 45       | 40                     | 33              | 32         |            |
| Available points                                                    |                  |          |                        |                 |            |            |
| Holder-Webb’s Disclosure quality score^2)                           |                  | 0.71     | 0.78                   | 0.67            | 0.63       |            |

1) NA: Non-Applicable
2) Holder-Webb’s Disclosure quality score = Discussed points ÷ Available points
3) ☐: absence of enhanced information required
### Table A3. MD&A Regulation Scoring Index in China – Hainan Airlines, China Eastern Airlines.

| Item | Main Content | 2017 | 2017 |
|------|--------------|------|------|
| | | China Eastern Airlines: Chinese market | Hainan Airlines |
| | | Criteria | Awarded score | Awarded score |
| | | Basic | Enhanced | | |
| ● Historical information (24') | Discuss the main components of operating income by industry, region | 1 | ☐ | 1 | 1 |
| Core business | The main components of operating costs (list items; discuss as a percentage of total cost) | 1 | 1 | 2 | 2 |
| | Top 5 suppliers and customers | 1 | ☐ | 1 | 1 |
| | Changes in expense composition (description; analyse factors) | 1 | 1 | 2 | 2 |
| | R&D input (project details; provide the percentage of total investment in operating revenue) | 1 | 1 | NA | NA |
| | Changes in cash flow composition (description; analyse factors) | 1 | 1 | 2 | 2 |
| Non-core business | Amount, reasons, and sustainability of profits | 1 | ☐ | 1 | NA |
| Assets and liabilities | Changes in asset and liability composition (description; analyse factors) | 1 | 1 | 2 | 2 |
| Investment status | Significant equity investment (provide details) | 1 | ☐ | 1 | 1 |
| | Significant non-equity investment (provide details) | 1 | ☐ | 1 | NA |
| | Financial asset investment (provide details) | 1 | ☐ | 1 | 1 |
| Major asset and equity sales | Sold (discuss the impact on financial status, operating results; discuss as a percentage of total profit) | 1 | 1 | 1 | 1 |
| Major subsidiaries | Not sold as planned (analyse factors; action taken) | 1 | 1 | NA | NA |
| Structured entity | Details; impact on operations | 1 | 1 | 2 | 2 |
| | Control rights and content; benefits and risks | 1 | 1 | NA | NA |
| Total item score | | | 17 | 15 |
| Total NA items score | | | 6 | 8 |
| ● Forward-looking information (15') | Analyse industry opportunities and challenges; discuss the impact on future operations | 1 | 1 | 2 | 2 |
| Industrial development trend | Development strategy, known (qualitative; quantitative) | 1 | 1 | 2 | 1 |
| Company development strategy | Development strategy, anticipated (discussion) | 1 | ☐ | NA | NA |
| Management plan | Progress of the development strategy, business plan, previous year | 1 | ☐ | NA | NA |
| | Analyse factors for failure to meet the plan goals | 1 | ☐ | NA | NA |
| | Business target or plan, anticipated (qualitative; quantitative) | 1 | 1 | 2 | 1 |
| Possible risks | Cautionary statement for the forecast information | 1 | ☐ | 1 | NA |
| | Strategy risks, business target risks (impact on current and future operations; quantitative) | 1 | 1 | 2 | 2 |
| | Risk management method (action taken or planned; quantitative) | 1 | 1 | 1 | 0 |
| | New risk factors (reason, effect, management method) | 1 | ☐ | NA | NA |
| Total item score | | | 10 | 6 |
| Total NA item score | | | 4 | 5 |
| Total Score | Discussed points | 27 | 21 |
| | Available points | 29 | 26 |
| Regulation score | | | 0.93 | 0.81 |

1) NA: Non-Applicable
2) Regulation score = Discussed points ÷ Available points
3) ☐: absence of enhanced information required
### Table A4. MD&A Regulation Scoring Index in Korea – Korean Air.

| Item (37') | Main Content | Basic | Enhanced | Awarded score |
|------------|--------------|-------|----------|---------------|
| Caveats about forecast information | Cautionary statement for the forecast information shall be published by the standards established by law | 1 | ☒ | 1 |
| Overview | Summary of key issues in overall disclosure (description; use the major management indicators) | 1 | 1 | 2 |
| Financial condition and operating result | General factors affecting financial condition, operating result (analyse factor; impact on future results) | 1 | 1 | 1 |
| | Outline of new projects (description; compare the changes in projects in the previous two years) | 1 | 1 | NA<sup>3</sup> |
| | Discontinued operations (impact on current results; future results) | 1 | 1 | 1 |
| | Main content, reasons, impact of business rationalisation | 1 | 1 | NA |
| | Exchange rate fluctuation (impact; management method) | 1 | 1 | 2 |
| | Loss provisions (analyse factor) | 1 | ☒ | 1 |
| Liquidity and capital resources | Analysis of liquidity status, composition, changes, reasons | 1 | ☒ | 1 |
| | Liquidity deficiencies (analyse factor; solution) | 1 | 1 | NA |
| | Analysis of the impact on future liquidity if the main causes of change are expected to continue to affect | 1 | ☒ | NA |
| | Size, cost of funds described by source | 1 | ☒ | 1 |
| | Changes in the fund-raising environment (known; anticipated) | 1 | 1 | 1 |
| | Recruitment amount by item/maturity of funds to repayment | 1 | ☒ | NA |
| | Impact of funding conditions on non-compliance | 1 | ☒ | 1 |
| | Changes in the form of financing and costs in the future | 1 | 1 | NA |
| | Current expenditures (purpose, scale) | 1 | 1 | NA |
| | Proposed expenditures (purpose, scale; provide schedule or projection) | 1 | 1 | NA |
| Off-balance sheet arrangements | Current off-balance sheet arrangements (status, causes, impact; counterparty situation) | 1 | 1 | 1 |
| | Follow-up events leading to important capital expenditures in the future | 1 | ☒ | NA |
| Others | Application of critical accounting policies | 1 | ☒ | 1 |
| | Changes in the environment, employees (cause, impact; action taken or planned) | 1 | 1 | NA |
| | Changes in matters concerning regulatory regulations | 1 | ☒ | NA |
| | Impact of derivative products, risk management policies | 1 | ☒ | 1 |
| Total Score | Discussed points | 15 | 15 |
| | Available points | 19 | 19 |
| Regulation score<sup>2</sup> | | | 0.79 |

<sup>1</sup> NA: Non-Applicable  
<sup>2</sup> Regulation score = Discussed points ÷ Available points  
<sup>3</sup> ☒: absence of enhanced information required
### Table A5. MD&A Regulation Scoring Index in U.S. – China Eastern Airlines.

| Item (30’)                                      | Main Content                                                                 | Basic | Enhanced | Awarded score |
|-------------------------------------------------|-----------------------------------------------------------------------------|-------|----------|---------------|
| Operating results                               | Factors affecting the amount of income                                       | 1     | ☰        | 1             |
| Changes in components of revenues (analyse factor; discuss as contribution to total revenues) | 1     | 1        | 2         |
| Changes in components of expenses (analyse factor; discuss as contribution to total expenses) | 1     | 1        | 2         |
| Factors affecting net sales/revenues/income (known; anticipated) | 1     | 1        | 1         |
| Change in the relationship between costs and revenues (cause; describe the change) | 1     | 1        | NA ¹      |
| Increase in net sales (discuss the price vs volume mix) | 1     | ☰        | NA        |
| Liquidity and capital resources                 | Material cash requirements                                                  | 1     | ☰        | 1             |
| Sources and uses of cash (provided by/used in operations, investing, financing activities) | 1     | 1        | 2         |
| Cash flows to satisfy obligations, capital expenditures (when, how to; material trends, uncertainties) | 1     | 1        | 2         |
| Debt covenants (details; potential effects)     | 1     | 1        | 2         |
| Liquidity deficiencies (describe the cash flows; affected by the cash flows) | 1     | 1        | 2         |
| R&D, patents, licences                          | Amount spent during each of the last three years                             | 1     | ☰        | NA            |
| Off-balance sheet arrangements                  | Off-balance sheet arrangements (nature, business purpose; current/future effect) | 1     | 1        | NA            |
| Results of off-balance sheet arrangements (qualitative; quantitative) | 1     | 1        | NA        |
| Termination or material reduction (analyse factor; action taken or planned) | 1     | 1        | NA        |
| Tabular disclosure of contractual arrangements  | Table of contractual arrangements                                           | 1     | ☰        | 1             |
| Footnote disclosure of items excluded (analyse factor) | 1     | ☰        | 1         |
| Others                                          | Trend information                                                           | 1     | ☰        | 1             |
| Safe harbour                                    | 1     | ☰        | 1         |
| Total Score                                     | Discussed points                                                            | 19    |           |               |
|                                                 | Available points                                                            | 20    |           |               |
| Regulation score ²                              |                                                                              |       |           | 0.95          |

1) NA: Non-Applicable  
2) Regulation score = Discussed points ÷ Available points  
3) ☰: absence of enhanced information required