# Initial Financial Assessment of the Fraport Greece Cluster A Concession

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Over the past 50 years, much trade and transportation infrastructure has been privatized worldwide (Howell et al., 2022). The private sector has taken over the operation and ownership of airport assets from the government, either through long-term concession leases or outright purchases. Private Equity (PE) investors have played a significant role in this process over the past decade.

The debt crisis forced Greece to seek bailout loans from international creditors in 2010, 2012, and 2015. In return, it was required to comply with strict austerity measures and privatize public assets. Notably, on August 11th, 2015, Greece announced it would receive €86 billion in the third bailout package in exchange for further austerity measures (Hinder & Bhattacharya, 2020). At the same time and just before 2015, all commercial airports in Greece were owned, managed, and operated by the Greek government. As part of its strategies to gain a significant foothold in today's competitive airport environment and find ways to repay debt, the Greek government promoted signing long-term contracts between the private sector and the government regarding many airports.

Specifically, the Greek government launched an extensive privatization program that granted Fraport AG the right to operate 14 airports for the next 40 years. As one of the world's leading airport operating and management companies, Fraport AG provides an array of operational and management solutions based on the expertise it has gained throughout its 95-year history. Fraport is a company that owns and manages 28 airports and airport-related businesses around the world. They function as concession operators in 23 locations, including 14 in Greece and Frankfurt, Ljubljana, Varna, Burgas, Antalya, Delhi, Lima, Fortaleza, and Porto Alegre. In addition, Fraport operates as a concession and retail developer in five places in the USA, namely Cleveland, Newark, New York, Baltimore, and Nashville. Finally, they provide logistics services in Hong Kong ("International Airports and Companies," n.d.). All Fraport business activities and services are provided at Frankfurt, Germany's most prominent commercial aviation hub, and the Group's airports worldwide. Additionally, Fraport AG was the third largest investor-owned airport company by revenue in 2021 (Poole, 2023; Scribner, 2023).

The Greek State granted two separate concessions for seven airports during an international tender process. These concessions were for two different clusters, named "Cluster A" and "Cluster B." Therefore, Fraport Greece is composed of two concession companies based in Athens, one for Cluster A called "Fraport Regional Airports of Greece A S.A." or "Fraport Greece A," and one for Cluster B named "Fraport Regional Airports of Greece B S.A." or "Fraport Greece B." Each separate airport (concession) applies to seven of the 14 airports. Cluster A comprises the airports of Thessaloniki, Corfu, Kefalonia, Aktion, Zakynthos, Kavala, and Chania, and Cluster B comprises the airports of Rhodes, Samos, Skiathos, Mitilini, Mykonos, Santorini and Kos (Figure 1). Fraport Greece will operate, maintain, and

upgrade the 14 Greek Regional Airports during the 40-year concession period, while the Greek state retains ownership of the airports.

**Figure 1**

*Fraport Greece Concessions - Cluster A & Cluster B*
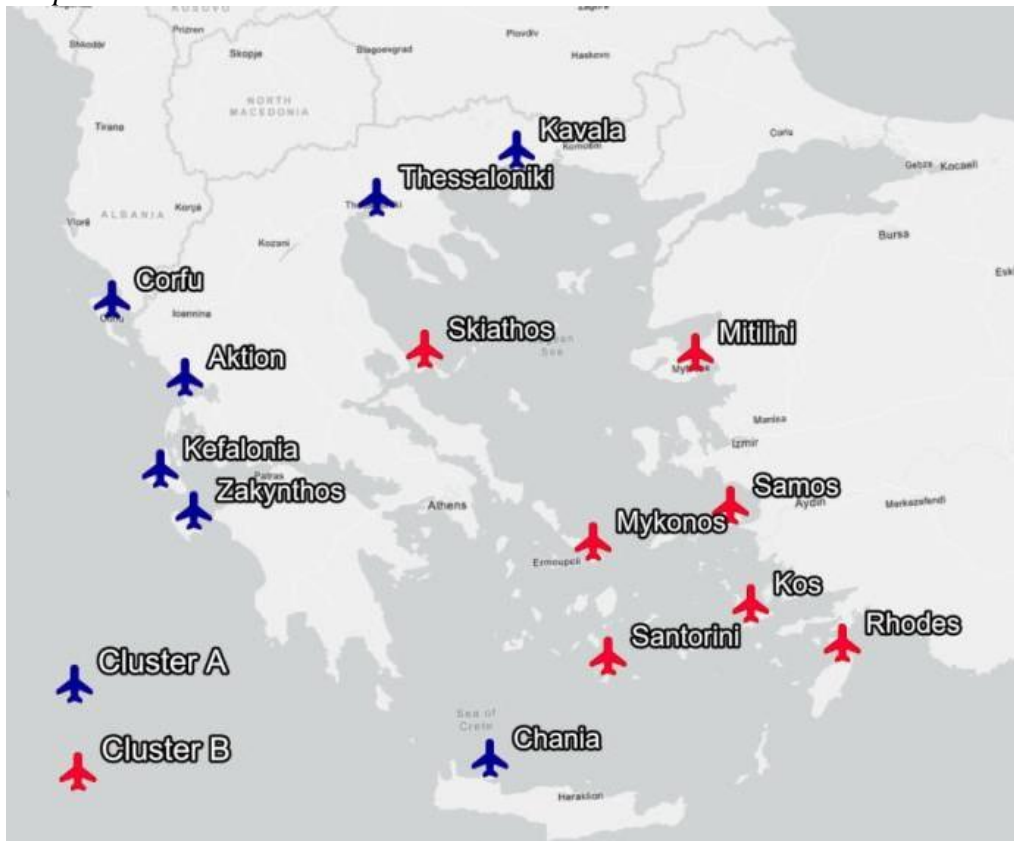


The company was established on February 27th, 2015, to operate, manage, develop, and maintain seven regional airports, three of which are in mainland Greece and four on islands. The concession of airports was completed on April 11th, 2017, the Concession Commencement Date (CCD). As part of the program, the objectives included reducing inefficiencies and financial risks associated with the management of public companies, generating public revenue to reduce public debt and thus improve its sustainability, and spurring new investment to increase productivity and economic growth (Danchev et al., 2022). The concession agreement of Cluster A triggered an investment program for terminal and runway reconstructions with a total budget of €224 million. As per the Concession Agreement, the company must pay the Greek State a total upfront concession fee of €609 million to commence the 40-year concession of the seven regional airports. As stipulated in the Concession Agreement, the completion date of the refurbishment works was two years following the date of CCD, and the

completion date of the New Works/Expansion Works was four years following the date of CCD (Table 1).

**Table 1**

*Refurbishment, New, and Expansion Works Transformed the Seven Airports*

| Airport | Completion Date | Refurbishment Works | New Works/Expansion Works |
|---|---|---|---|
| Aktion (PVK) | 2017-2019 | Painting works, WC upgrade, Replacement of outdoor signs, Roof sealing works, ditch cleaning works | Terminal upgrade/expansion (9,649 m$^2$) |
| Zakynthos (ZTH) | 2017-2018 | Rectification/Painting works, A/C repair works, sealing works, WC upgrade works, new marking | Terminal upgrade (25,530 m$^2$) |
| Kavala (KVA) | 2017-2019 | Masonry/Concrete rectification, painting works, roof sealing, tower, signage/marking | Terminal upgrade/expansion (8,570 m$^2$) |
| Thessaloniki (SKG) | 2019 | Terminal cleaning works, roof insulation, building repairs, WC refurbishment. | Terminal upgrade (33,331 m$^2$) New terminal (60,640 m$^2$) |
| Corfu (CFU) | 2020 | Roof sealing, WC upgrade, rectification works | Terminal upgrade New terminal (10,528 m$^2$) |
| Kefalonia (EFL) | 2021 | Tower/Office refurbishment works, sealing works, WC upgrade | Terminal upgrade New terminal (10,701 m$^2$) |
| Chania (CHQ) | 2022 | Refurbishment works in commercial areas | Terminal upgrade (35,899 m$^2$) |

*Note.* Fraport Greece - Cluster A, Source: Fraport Financial Statements.

Additionally, the company will have to pay the Hellenic Republic Asset Development Fund S.A (HRADF) a fixed and variable concession fee from the expiry of the investment period (4th year of the concession period) to the end of the concession period. This variable fee will be calculated every concession year as a percentage of Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA), as defined in the concession agreement, and it will be reported in the statement of comprehensive income for the corresponding period (Fraport Regional Airports of Greece "A" S.A., 2016).

This paper aims to perform an initial financial assessment of Cluster A, which contains the airport of Thessaloniki, the biggest airport in both Clusters. The assessment will involve analyzing the financial statements, assessing financial ratios, estimating the cost of capital, and valuing the enterprise using the Economic Value Added (EVA) indicator for the designated Cluster A.

## Literature Review

Several researchers have assessed airport financial performance associated with infrastructure projects or concessions. Privatization has

typically been found to substantially affect firm performance (Dinc & Gupta, 2011). Howell et al. (2022) evaluated PE acquisitions' impact on airport finances. According to their findings, only PE acquisitions improve airport performance along various dimensions, including passengers per flight, total passengers, flights, routes, airlines, cancellations, and awards. In the aftermath of PE acquisitions, net income increases, which does not reflect reduced costs or the elimination of job losses. Kumari and Aithal (2020) performed a predictive analysis of the implications of Adani Group's takeover of the Mangalore International Airport business under a Public-Private Partnership (PPP). Based on their findings, the airport will receive a significant increase in revenue, which will pave the way for further investment and economic growth by creating jobs and improving infrastructure for the people in and around the city. Another study by Graham (2020) assessed the impacts of this development and evaluated its effectiveness, using examples from all over the world. Specifically, they concluded that while the outlook for airport privatization deals and further secondary transactions looked positive until 2019, all this dramatically changed with the coronavirus pandemic in 2020. Because of this, airport investment no longer appears to be a low risk and capable of providing steady returns over time, and this casts considerable doubt on the ability of the private sector to continue investing in airports.

Researchers have also found that transparency, high levels of competition, and relatively little government interference can positively affect firm performance and productivity (Bernstein & Sheen, 2016; Davis et al., 2014; Fracassi et al., 2020;). In another study, researchers examined whether the change in ownership and management control of airports directly impacts regional airports' performance and catalyzes regional employment growth. A few key results from that research indicate that regions with granted airport concessions have higher airport activity and sectoral employment than regions without granted airport concessions (Aguirre et al., 2019). A similar study by Wibowo et al. (2022) examined the impact of infrastructure development on the company's financial and business operations, airport services, and socioeconomic aspects. Based on the results, airport infrastructure development has increased the company's revenue, debt, image, and the local economy. The impact of airport privatization appears to have benefited airport finances across many areas of the world, too. In their study (2007), Barros and Dieke concluded that airports under private ownership in Italy perform better than those under public ownership. At the same time, Perelman and Serebrisky (2012) discovered that private airports in Latin American countries are generally more efficient than those under public ownership. Last, Rolim et al. (2016) discovered that privatization in Brazil led to a 30% increase in daily passenger demand.

Understanding airport finances and cash flow is essential to making an informed investment decision, and sponsors will be more prepared to meet the matching requirements of federal and state grants or to find alternative funding sources. Financial analysis mainly assesses financial health, which identifies

strengths and weaknesses. The financial health of selected international Slovak and Czech airports was evaluated and compared by Mazanec et al. (2018). This was achieved by comparing well-known financial variables like liquidity, asset management, debt, and profitability ratios. Financial analysis is also primarily concerned with determining how partial ratios impact a company's overall financial position rather than simply calculating ratios. In addition to additive, multiplicative and mixed relationships may be observed among ratios (Kicova & Kramarova, 2013).

Profitability ratios are also used to evaluate the profitability of business efforts. Mazanec et al. (2018) compared profitability in the form of profit Earnings after Taxes (EAT), Earning before Taxes (EBT), Earnings before Interest and Taxes (EBIT), EBITDA or CF, and invested capital (equity, total assets). They used the most popular profitability ratios as Return on Sales (ROS), Return on Equity (ROE), Return on Assets (ROA), Return on Revenues (ROR), and Return on Costs (ROC). The next group of ratios were calculated based on cash flow. Current Ratio, interest coverage ratio, ROE, ROA, etc., are the most widely recognized ratios derived from cash flow. The analysis of differential indicators, which help to analyze cash flows, income analysis, expenditure analysis, and profit analysis (Cisko & Kliestik, 2013), are also part of the primary methods. Apart from this, different articles use different input and output measures, which may impact the effectiveness of the evaluation. For example, Bottasso and Conti (2017) reviewed the literature on the cost structure of the airport industry, which is necessary to analyze the efficiency and productivity of airports in the future.

Economic Value Added (EVA™) is considered by many as one of the most innovative performance measures for companies (Chen & Dodd, 1997). Jakub et al. (2015) presented one of the possible methods of calculating the Economic Value Added (EVA) indicator of Slovak companies and accounting legislation in Slovakia. Shah et al. (2016) also confirmed that EVA is designed for large companies and is the best performance measure. They also concluded that EVA provides more information than earnings and outperforms traditional measures in explaining shareholder wealth. Regarding the firm's investment activity, Tortella and Brusco (2003) proved that implementing the EVA method encourages managers to increase investment activity, which in turn seems to be associated with higher debt levels. Additionally, they have noticed EVA adoption's positive and significant effect on cash flow measures. Last, Zhou (2023) examined Three Squirrels Co., Ltd. as an example to investigate the utilization of the EVA model in food e-commerce business ventures and confirmed its applicability to the valuation of similar companies.

Creating consortiums in the aviation industry can effectively broaden revenue channels, and the industry has excellent potential for development. As an aviation company with the highest passenger scale in Greece, Cluster A has a good representation in the aviation industry. Therefore, selecting it as a case study for enterprise value evaluation is significant for investors and managers to assess the value of aviation enterprises comprehensively and accurately.

This paper takes Cluster A as an example to explore the application of the EVA model in airport enterprises and verify its applicability in the valuation of similar enterprises.

## Methodology

We applied an exploratory research approach for this study, the purpose of which was to assess the financial performance of the Fraport Cluster A business in Greece. The information in this paper comes from the financial statements and other published component reports of Fraport Cluster A. Under the legal framework, the Concessionaire is obliged to report annually. The company is not listed in the stock market, so there are no reports on a quarterly or monthly basis. Information from these sources is available annually and does not include shorter periods, which limits an analysis of finances to a yearly basis. Firstly, we collected all financial data and transformed them into summarized tables in Microsoft Excel. We compared the Balance Sheet (B/S), Profit & Loss Statement (P&L), and Cash Flow elements. Then, we assessed the financial health of Cluster A from 2016 to 2022 based on selected liquidity ratios, leverage ratios, and profitability ratios. Finally, we worked on the Cost of Capital by calculating the Capital Asset Pricing Model (CAPM) $K_e$, the Weighted-Average Ct of Capital (WACC) $K_w$, and the Economic Value Added (EVA) to estimate the Enterprise value of the newly established company.

**Financial Statements**

We followed the methodology Vogel (2019) introduced to create a common-size comparative balance sheet, an income statement, and free cash flow for 2016-2022. The Balance Sheet (B/S) represents the financial status of a company at a specific point in time, the Profit and Loss (P&L) shows the company's revenue and expenses over a particular period, while the statement of Cash Flows displays the company's cash inflows and outflows during a specific reporting period. According to the concepts of the:

1. B/S reflected by the accounting equation, Assets = Liabilities + Equity
2. P&L reflected by the accounting equation, Net Income = Revenues – Expenses
3. Free Cash Flow = Net income + Depreciation/Amortization – Change in Working Capital – Capital Expenditure

**Financial Ratios**

Next, we employed Financial Ratio analysis to gain insight into the company's liquidity, operational efficiency, and profitability. Analyzing financial ratios involves selecting, evaluating, and interpreting financial data and other relevant information to assess a company's current and future financial position and performance. As part of our analysis, we also calculated specific airport financial metrics to determine the level of revenue generated and costs controlled by the airport, resulting in a positive net income and a high return on investment. We considered metrics such as revenue per

passenger, cost per passenger, profit margin, and return on assets to measure financial efficiency.

**Cost of Capital**

Due to airports' diverse capital structures, benchmarking financial performance is also complex. Therefore, according to the recommendations formulated by the Thessaloniki Forum of Airport Charges Regulators (2016), it is essential to calculate the CAPM and WACC as part of our assessment methodology.

**Capital Asset Pricing Model**

The CAPM $K_e$ is a widely used method to estimate a business's equity cost based on risk and return. CAPM is, therefore, an acceptable way of estimating the cost of capital of an airport managing body. The CAPM is a model with only three inputs (Welch, 2021):

1. the (economy-wide) risk-free rate of interest.
2. the (economy-wide) expected risky rate of return (usually on the stock market).
3. and a "market-beta" (or just "beta" for short) that measures diversifiability.

The CAPM equation depicts the relationship between cost of capital and market returns and takes the following form,

$$CAPM: K_e = R_c + \beta_e * (R_m - R_c) \tag{1}$$

Where:

$R_c$: stands for the (economy-wide) risk-free rate of interest.

$R_m$: stands for the (economy-wide) expected risky rate of return (usually on the stock market).

The beta parameter $\beta_e$ measures diversifiability for a given firm considered as a financial asset. The more the product market tends to concentration and monopoly, and there is greater consistency in return, the lower the numerical value of the $\beta_e$ parameter. More precisely:

$\beta_e = 0$ stands for a risk-free investment.

$\beta_e < 1$ represents an investment with less risk than the market portfolio.

$\beta_e = 1$ represents an investment with the same risk as the market portfolio.

$\beta_e > 1$ represents an investment with a more considerable risk than the market portfolio.

**Weighted Average Cost of Capital (WACC)**

Airport managing bodies incur a cost known as WACC, which is a part of the overall cost structure related to the facilities and services they provide. The cost of capital, which is made up of equity and debt, is borne by the airport managing body and the users of the airport through airport charges. This cost should fairly compensate both investors and creditors. The WACC should consider the non-diversifiable level of risk borne by shareholders and

debt holders and should reflect the specific situation of the airport or airport managing body in the local and more extensive market. The WACC of an airport managing body is calculated as the weighted average of its cost of equity and cost of debt. It should be calculated using the following equation:

$$WACC = K_e \frac{E}{D+E} + K_d (1-T)\frac{D}{D+E} \tag{2}$$

Where

$K_e$: stands for the cost of equity,
$K_d$: the cost of debt,
$E$: the value of equity,
$D$: the value of debt,
$T$: the corporate tax rate.

**Economic Value Added**

EVA was developed by Stern Stewart & Co. in the late 1980s to estimate a firm's financial profit or the value created beyond what the shareholders require (Jakub et al., 2015). Regarding business performance measurement, EVA represents the most advanced tool available based on the principle of value management (Kollar et al., 2014). The concept of EVA is based on the idea that a company's top priority should be to create value for its shareholders in the form of profits that exceed the cost of capital used to generate those profits. EVA is defined as the difference between net operating profit after tax and the cost of capital. It measures the return on investment over and above the cost of capital. If the difference is positive, it means the shareholder value increases, while if it is negative, the shareholder value decreases (Li & Huang, 2009).

While it does not replace traditional accounting methods, the Economic Value Added (EVA) model adjusts them to provide a more comprehensive assessment of a company's balance sheet and income statement. This method helps mitigate any adverse effects on the enterprise's business performance. By defining corporate profit from the shareholders' perspective, EVA allows for a better examination of a company's ability to create value for its shareholders (Cen & Wang, 2022).

A company's economic value added can be calculated by comparing its net operating profit after taxes (NOPAT) metric with the cost of capital deployed. It should be calculated using the following equation:

$$EVA = NOPAT - (WACC * capital\ invested) \tag{3}$$

Where,

$NOPAT$: is the Net Operating Profits After Tax
$WACC$: is the Weighted-Average Cost of Capital ($K_w$)
*Capital invested*: is Equity + Long-Term Debt at the beginning of the period

After the evaluation of EVA, the enterprise value evaluation model is as follows:

$$V = T_0 + \sum_{t=1}^{n} \frac{EVA_t}{(1+WACC)^t} \qquad (4)$$

Where,

$V$: is the enterprise value,

$T_0$: is the initial investment cost multiplied by WACC.

## Results

### Balance Sheet

A first review of the balance sheet indicates that the company has paid a concession fee of €609,000,000 as part of its Concession Agreement upon the beginning of the concession period. Concession fees of €247,224,298 and well-identified/determined future liabilities arising from the concession agreement were recognized in the intangible asset upon commencement of the concession period. Table 2 shows that the Total amount of the agreement was €856,224,298 (2017) and was recognized as part of the total intangible amount, while the rest amount concerned designs, technical projects, borrowing, and other costs connected with the design, improvement, and development of the infrastructure of the regional airports, as well as consultation services connected with the completion of the Concession Agreement.

**Table 2**

*Intangible assets 2016-2022*

| | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|
| Intangible assets | 6,112,182 | 859,450,818 | 939,443,644 | 988,018,641 | 1,015,106,378 | 992,556,760 | 965,363,517 |

*All numbers are in €. Source: Fraport Financial Statements*

The company's share capital, as shown in Table 3, totals €75,000,000 (2022), was formed in 2017 and is divided into 75,000,000 ordinary registered shares of € 1.00 par value each. The share capital was fully paid in 2016.

**Table 3**

*Share Capital 2016-2022*

| | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|
| Share capital | 10,024,000 | 75,000,000 | 75,000,000 | 75,000,000 | 75,000,000 | 75,000,000 | 75,000,000 |

All numbers are in €. Source: Fraport Financial Statements

On March 24th, 2017, a group of financial institutions and a company agreed to issue secured bonds to fund the upfront concession fee, refurbishment, expansion, and new works at all seven of the company's regional airports. The loan amount of €560,300,000 was issued in accordance with Greek Law 3156/2003 (Table 4, line 1). In compliance with the same law, the company and its initial shareholders, Fraport AG Frankfurt Airport

Services Worldwide and Slentel Limited, also agreed to a non-secured bond loan with the loan proceeds exclusively used to fund the project (Table 4, line 2).

**Table 4**
*Loans and Bond loans from associated/related parties 2016-2022*

|  | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|
| 1. Loans | 0 | 0 | 400,942,198 | 405,612,166 | 435,899,818 | 513,830,696 | 499,657,712 |
| 2. Bond loans/ass. | 0 | 0 | 182,842,704 | 194,081,755 | 205,901,473 | 218,439,582 | 231,742,546 |

*All numbers are in €. Source: Fraport Financial Statements*

**Profit & Loss Statement – Cash Flow**

The income from air services (Aeronautical) and non-air activities are recognized in the Statement of Comprehensive Income in the period they were rendered. Figure 2 shows that both revenue lines follow a similar pattern until 2021, while in 2022, there was a sharp increase in Aeronautical Revenues. It is worth noting that during the COVID-19 period (2020-2021), both Aeronautical and Non-Aeronautical Revenues decreased by 68% and 45%, respectively, for the year 2020 and 44% and 30% for the year 2021 (basis year=2019). At this point, it is essential to note that according to interpretation 12 of the International Financial Reporting Interpretations Committee (IFRIC), the costs related to constructing and upgrading airports are recognized as non-aeronautical revenue on an annual basis, in line with International Financial Reporting Standards (IFRS) 15 "Revenue from Contracts with Customers" (Fraport Financial Statements, 2016-2022). This revenue range fluctuates from €80.1 million in 2018 to €4.5 million in 2022. Also, the decline in non-aeronautical revenues over the years was not due to COVID-19 consequences but rather to the gradual completion of construction.

Figure 3 confirms a logical trend that the yearly number of passengers follows the annual total revenues. As shown, the number of passengers returned to the same levels as just before the pandemic.

**Figure 2**

*Cluster A: Aeronautical and Non-Aeronautical Revenues 2016-2022*
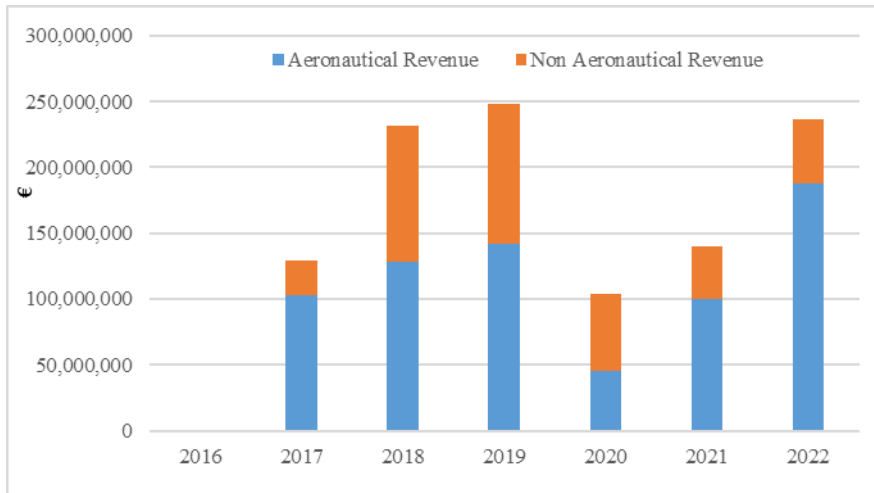


**Figure 3**

*Illustration of Number of Passengers (mil.) 2016-2022*
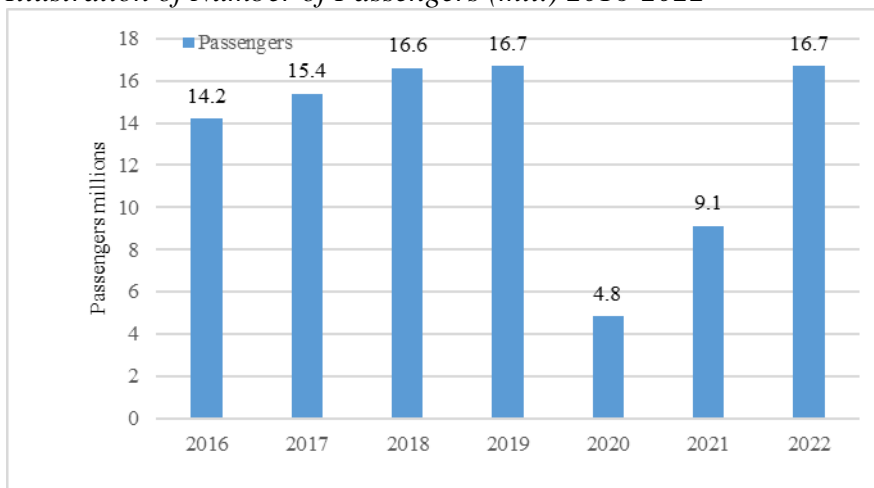


The EBITDA followed a rising route until the beginning of COVID-19 (2020) when EBITDA almost dissipated (Figure 4). The Profit/Loss before taxes (P&L) followed a similar pattern to EBITDA but created significant losses during 2020, as EBITDA was insufficient to cover interest expenses and depreciation. The Free Cash flow (FCF) route seems identical to EBITDA.

**Figure 4**
*Illustration of EBITDA – P&L – CASH FLOW 2016-2022*
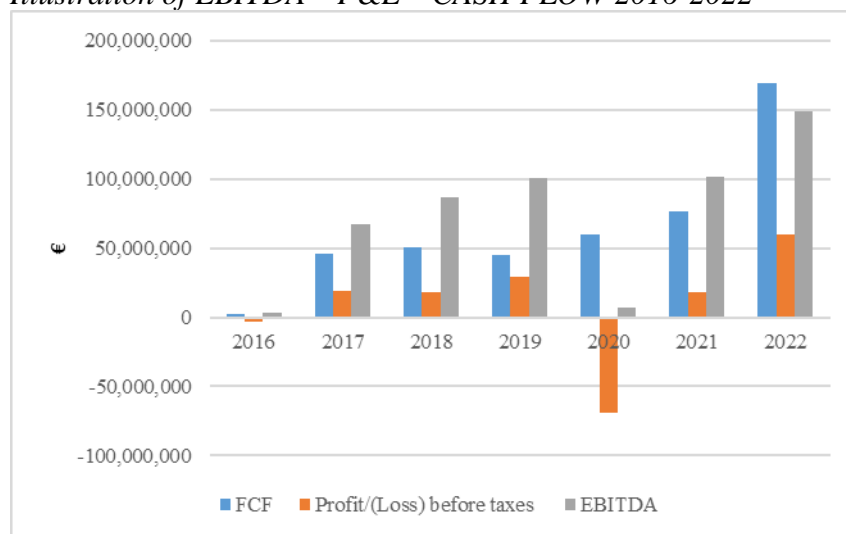


## Ratio Analysis

It is easily noticed that all financial ratios fell from the usual standards during the primary year of the COVID-19 pandemic (2020).

*Liquidity Ratios*. Figure 5 shows the trend of selected liquidity ratios from 2016 to 2022. The current ratio did not present many fluctuations during the examined years, beginning at 1.10 in 2017 and ending at 1.1 in 2022. However, a current ratio of around 1.0 is acceptable for most businesses as it shows that the company marginally pays short-term debt obligations within the current period. The quick ratio also follows a stable route between 0.08 (2017) and 0.17 (2022), meaning that the company has fewer liquid assets regarding current liabilities and struggles to pay off current liabilities. The cash ratio has a positive trend, while in the last two years, the ratio has had too high numbers, suggesting that the company has too high cash assets and may also be unable to use them for profitable activities. As shown in Figure 6, we compare the latest (2022) liquidity ratios of the company, specifically, the quick and current ratio with Fraport AG and the industry average ("Fraport AG (FRAG) Financial Ratios," n.d.). Based on the comparison, we can claim that while the current ratio is almost the same, Cluster A's quick ratio is behind the industry average and far behind the Fraport AG ratio.
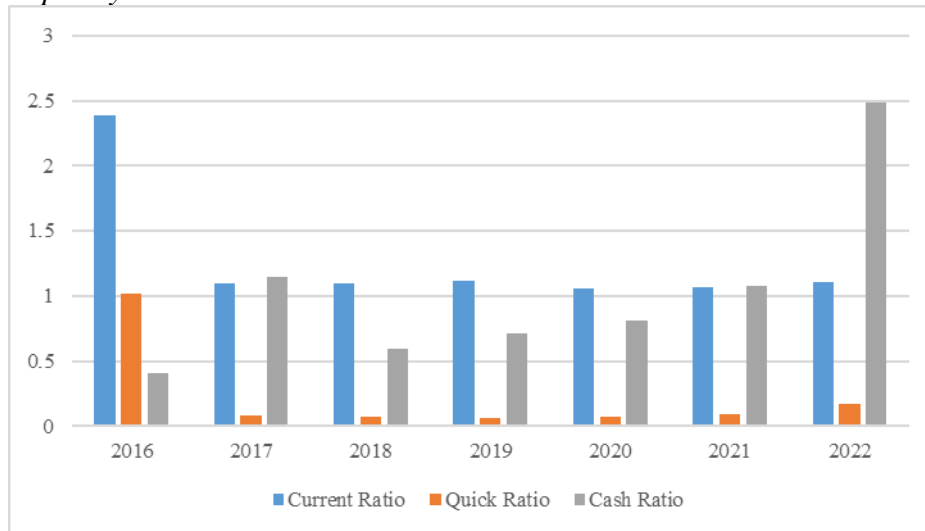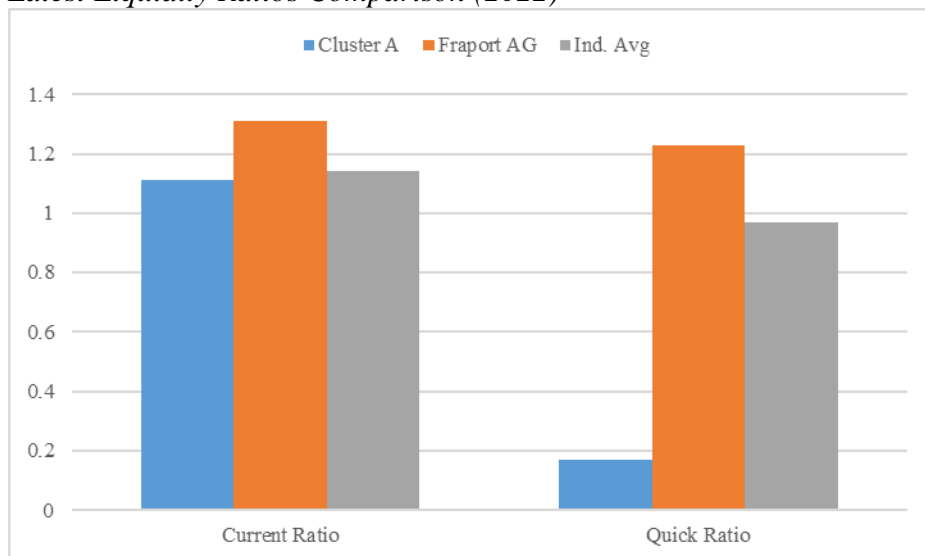
**Figure 5**
*Liquidity Ratios 2016-2022*



**Figure 6**
*Latest Liquidity Ratios Comparison (2022)*



*Profitability Ratios.* Figure 7 shows the trend of selected profitability ratios from 2016 to 2022. Return on Assets (ROA) seems to rise in the upcoming years, ending at 4.89% in 2022. When compared to Fraport AG and the Industry Average, it is far above the first one (0.81%) and far enough (3.31%) the latter one, meaning more asset efficiency (Figure 8). Return on Equity (ROE) also presents a rising route, being extremely high during 2022 (47.72%) compared to Fraport AG (2.02%) as well as to the Industry Average (6.90%), showing high performance at converting its equity financing into profits. The latest Operating and Net margin ratios also present high

performance compared to Fraport AG and the Industry Average, showing how well the company can manage costs and other expenses concerning sales.

**Figure 7**
*Profitability Ratios 2016-2022*
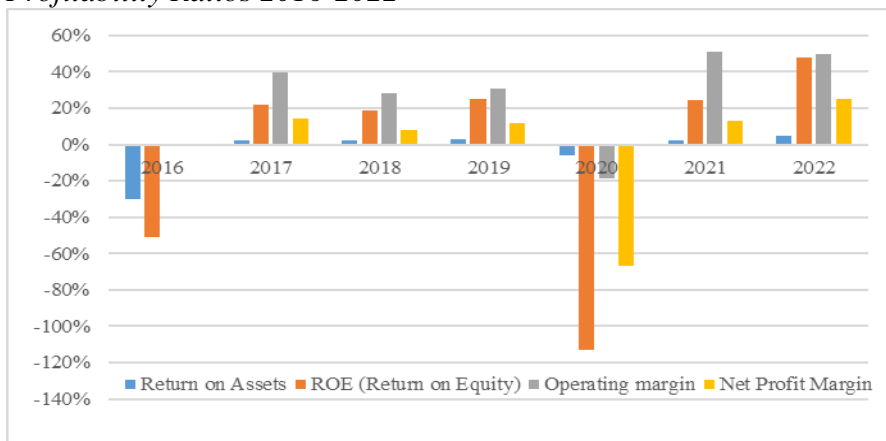


**Figure 8**
*Latest Profitability Ratios (2022)*
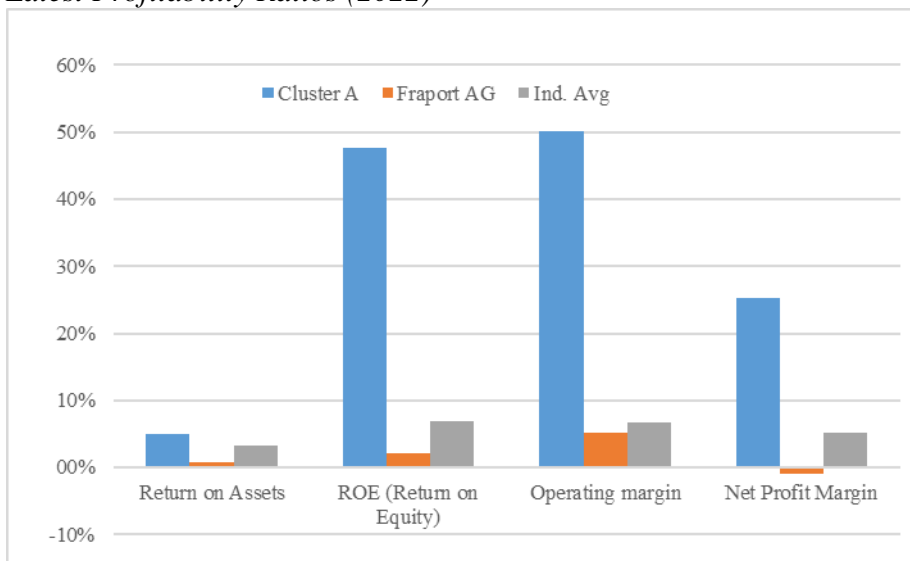


*Leverage Ratio.* At Cluster A, a substantial part of the total debt includes long-term and short-term bank loans. Therefore, the credit-debt ratio reaches more than 70% of total liabilities for 2022. Figure 9 shows the trend of the selected leverage ratio from 2016 to 2022. The D/E ratio is the most common leverage ratio used to evaluate a company's financial leverage. The high D/E ratio percentages confirm that the company borrows more market capital to fund its operations. The latest D/E ratio is exceptionally high, even from Fraport AG and the Industry Average ones, which both reflect the high capital nature of the market (Figure 10).

**Figure 9**

*Leverage Ratio 2016-2022*
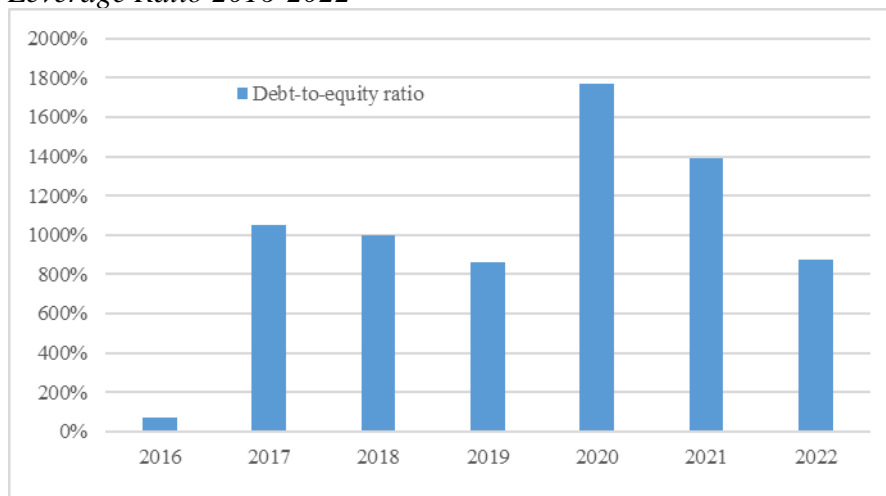


**Figure 10**

*Latest Leverage Ratio (2022)*
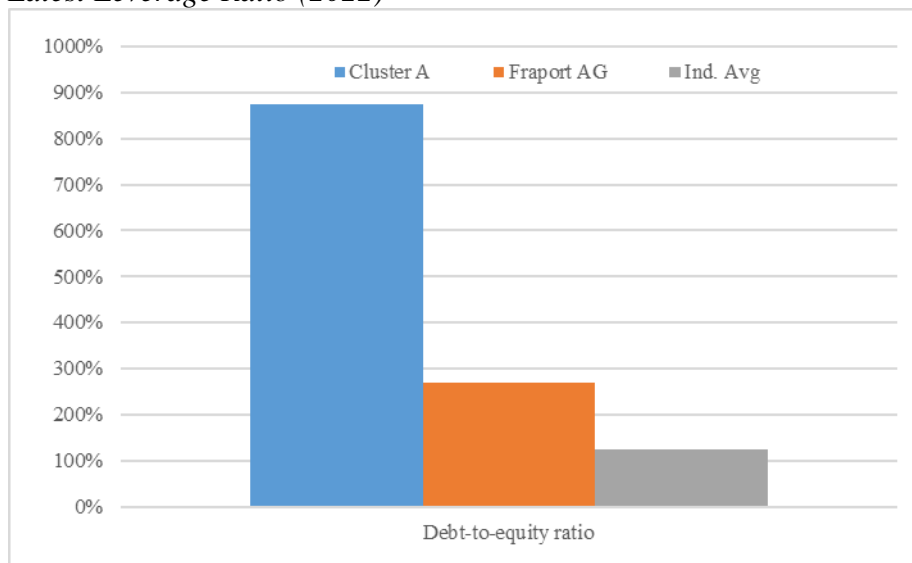


**EVA analysis of Cluster A**

The analysis of Cluster A's financial indicators, including liquidity, profitability, and leverage ratios from 2016 to 2022, suggests that the company's profitability and operating capacity indicators remained relatively stable in most cases (except for the pandemic years), indicating reasonable performance within the general economic environment. However, it should be noted that the company's leverage issues were quite high during the examined period. As a result, the organization can sustain operations, enjoys a stable external environment and financial structure within the sector, and meets the

requirements for employing the EVA approach to calculate the organization's value.

**Calculation of Net Operating Profit After Tax (NOPAT)**

Net Operating Profit After Tax (NOPAT) is a financial metric that indicates a company's operating profitability. Unlike the income statement, NOPAT does not appear directly; instead, it is calculated by summing up the net profit and interest expense items and adjusting certain accounting items. The final value of NOPAT reflects the enterprise's operating profitability.

In order to calculate the NOPAT value, the net income of the reporting period is considered along with the sum of net income and interest expense. Some accounting items are adjusted to determine the final value of NOPAT. An estimation of the adjusted net operating profit after tax of Cluster A and the specific calculation process is shown in Table 5.

**Table 5**

*Estimation of net operating profit after tax in 2016-2022*

| Net Operating Profit After Taxes | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Year** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** | **2022** |
| **Operating profit** | (2.652.632) | 13.274.487 | 11.532.348 | 21.061.831 | (52.233.934) | 12.733.889 | 46.731.299 |
| +Interest expense | (5.904) | 32.615.495 | 46.800.721 | 47.829.362 | 49.837.483 | 52.651.970 | 58.736.081 |
| +Income tax expense | (1.022.359) | 5.525.263 | 6.547.951 | 7.974.858 | (17.065.095) | 5.798.607 | 12.790.245 |
| **Earnings before interest and taxes** | (3.680.895) | 51.415.245 | 64.881.020 | 76.866.051 | (19.461.546) | 71.184.466 | 118.257.625 |
| **Adjustments:** | | | | | | | |
| Depreciation | | | | | | | |
| Other Expenses (Income) | (5.904) | (280.315) | (230.361) | (197.078) | (190.773) | 220.878 | 1.493.967 |
| LIFO Adjustment | | | | | | | |
| Research & Development | | | | | | | |
| Operating Lease Expense | | | | | | | |
| Miscellaneous | | | | | | | |
| Taxes | 1.069.172 | (14.829.130) | (18.748.691) | (18.400.554) | 4.716.557 | (15.709.176) | (26.345.350) |
| **NOPAT** | **(2.617.627)** | **36.305.800** | **45.901.968** | **58.268.419** | **(14.935.762)** | **55.696.168** | **93.406.242** |

**Calculation of Total Invested Capital**

The next step is calculating Total Invested Capital by adding Debt-to-Equity (D/E). To find Debt, it is necessary to sum all bearing Debt accounts of the financial statements:

Debt = Loans (Long-term) + Bond loans from associated/related parties + Loans (Short-term)

Equity = Total Equity from the Financial Statements

No accounting adjustments should be made to the elements concerned according to the concept of EVA value. Table 6 shows the total capital analysis table and the specific calculation procedure for Cluster A.

**Table 6**

*Calculation of Total Invested Capital 2016-2022*

| Year | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|
| **Capital Employed** | | | | | | | |
| Debt | 0 | 583,784,902 | 611,182,319 | 651,630,072 | 742,546,963 | 745,773,357 | 775,394,195 |
| Equity | 7,246,858 | 85,580,606 | 96,478,605 | 114,496,192 | 61,260,685 | 73,994,574 | 124,732,636 |
| **Book Value of Capital** | **7,246,858** | **669,365,508** | **707,660,924** | **766,126,264** | **803,807,648** | **819,767,931** | **900,126,831** |

## Calculation of Weighted-Average Cost of Capital (WACC)

The WACC ($K_w$) is made up of two elements: the cost of the company's share capital, which refers to the remuneration rate required by the shareholders, and the cost of borrowing, which refers to the amount the company pays for the bond issue or loan. Before using the equation (1) for calculating the WACC as follows, it is necessary to make the following calculations:

$K_d$: Pre-Tax Debt - to find the cost of debt, all yearly interest expenses from P&L were divided with the Total Loan amounts from the Balance sheet.

$K_e$: Cost of Equity - it can be calculated using equation (1) of the Capital Asset Pricing model. Among them,

Where:

$R_C$: Interest Rate (Cost of Debt)

$R_m$: To find the Market Risk Premium (MRP), we used data for Greece according to research made by Fernández et al. (2023), who presented the MRP for 80 countries between 2015 and 2023 (Table 7).

**Table 7**

*MRP 2016-2022*

| Financial Data | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|
| MRP | 13.0% | 15.8% | 15.8% | 15.4% | 12.7% | 6.9% | 6.6% |

$\beta_e$: To find beta levered, Table 8 presents the data for Fraport AG as presented in research by Gahrens (2022).

**Table 8**

*Beta 2016-2022*

| Financial Data | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|
| Levered beta | 0.60 | 0.60 | 0.60 | 0.60 | 1.30 | 1.30 | 0.97 |

After calculating all the above parameters, Table 9 shows the analysis of calculating the WACC ($K_w$) for the period 2016-2022:

**Table 9**
*Calculation of Weighted-Average Cost of Capital in 2016-2021*

| Year | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|------|------|------|------|------|------|------|------|
| **Cost of Capital:** | | | | | | | |
| Pre-Tax Debt ($K_d$) | 0.0% | 5.6% | 7.6% | 7.3% | 6.6% | 7.1% | 7.8% |
| Equity ($K_e$) | 7.8% | 11.7% | 12.5% | 12.1% | 14.5% | 6.8% | 6.6% |
| After-Tax Debt ($K_d$) | 0.0% | 3.9% | 5.4% | 5.5% | 5.0% | 5.5% | 6.1% |
| Equity ($K_e$) | 7.8% | 11.7% | 12.5% | 12.1% | 14.5% | 6.8% | 6.6% |
| WACC ($K_w$) | **0.00%** | **5.26%** | **5.27%** | **5.67%** | **5.52%** | **5.37%** | **5.69%** |
| | | | | | | | |
| Weighting %Debt | 41.8% | 91.3% | 90.9% | 89.6% | 94.7% | 93.3% | 89.7% |
| Weighting %Equity. | 58.2% | 8.7% | 9.1% | 10.4% | 5.3% | 6.7% | 10.3% |
| Tax Rate | **29.0%** | **29.0%** | **29.0%** | **24.0%** | **24.0%** | **22.0%** | **22.0%** |

## Enterprise value evaluation of Cluster A

Using 2017 as a starting point for EVA calculations is recommended because the initial investment happened that year. The EVA values of Cluster A for 2017-2022 can be obtained using equation (3), and the calculation process is shown in Table 10.

**Table 10**
*Calculation of Annual EVA of Cluster A in 2017-2021*

| Year | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|------|------|------|------|------|------|------|
| NOPAT | 36,305,800 | 45,901,968 | 58,268,419 | (14,935,762) | 55,696,168 | 93,406,242 |
| Capital Cost | 35,208,047 | 37,293,731 | 43,439,359 | 44,370,182 | 44,021,538 | 51,217,217 |
| WACC ($K_w$) | 5.26% | 5.27% | 5.67% | 5.52% | 5.37% | 5.69% |
| **EVA** | **1,097,753** | **8,608,237** | **14,829,060** | **(59,305,945)** | **11,674,630** | **42,189,025** |

Last, using equation (4), the enterprise value (V) evaluation model is:

$$V = 35,208,047 + \frac{1,097,753}{(1 + 5.26\%)} + \frac{8,608,237}{(1 + 5.27\%)^2} + \frac{14,829,060}{(1 + 5.67\%)^3}$$
$$+ \frac{(59,305,945)}{(1 + 5.52\%)^4} + \frac{11,674,630}{(1 + 5.37\%)^5} + \frac{42,189,025}{(1 + 5.69\%)^6}$$
$$= 47,998,809$$

According to the above estimates, the enterprise value of Cluster A in 2022 is almost €48 million, with a market value of 0.63 euros per share. As displayed above, the enterprise value is influenced by the annual indicator EVA, which went marginally positive toward the start of the investment (2017), continued with severe losses during the COVID-19 pandemic (2020), and started to ascend during the last financial published year (2022). Enterprise value is a compounded indicator that considers many years of operation. Subsequently, the financial model could help look ahead of time to estimate the enterprise value towards the completion of the concession (2056) and evaluate the impact of annual changes in significant indicators, such as Operating Profit, on the enterprise value. Our base scenario assumes that the

Operating Profit (Revenues, Total operating expenses, Operating income and Depreciation and amortization) will be increased by 5%. Our assumption is mainly based on the potential that all 14 airports of Cluster A+B have developed during 2023. Indicatively, the airport leading the race among the 14 regional ones is "Macedonia" in Thessaloniki, the main airport in Cluster A, with 7.02 million passengers. In fact, in 2023, it showed a huge increase of 18.7% compared to 2022 (Greek City Times, 2024).

Since the Company refinanced its debt in 2023, the latest financial statements have not been published yet. Thus, we must accept that Capital Cost remains stable through years. Applying the equation (4), the enterprise value (V) for 2016-2056 becomes approximately €1,5 billion. Performing a short sensitivity analysis of Operating Profit fluctuations, we conclude that if Operating Profit increases by 3%, the enterprise value becomes approximately €0,96 billion, while if the rise is 7%, then the enterprise value becomes approximately €2,3 billion.

### Discussion of the Findings

The paper assessed the financial situation of Fraport Greece Cluster A company. Based on financial analysis methods, we identified Cluster A's strengths and weaknesses and calculated the Enterprise Value for 2022 according to the latest published financial reports. We concluded that Cluster A has outstanding results when comparing profitability ratios. The latest ROE, ROA, Operating, and Net margin ratios present high performance compared to Fraport AG and the Industry Average, showing how well the company can manage costs and other expenses concerning revenues.

At the same time, Cluster A has mainly standard liquidity ratios, except for the Quick ratio, which is behind the industry average and far behind the Fraport AG ratio, meaning that the company has less amount of liquid assets regarding current liabilities and that probably struggles or will struggle to pay off current liabilities. One of the most usual ways to improve the quick ratio is to decrease the current liabilities. Given the pandemic situation, the company's request in 2021 that no Annual Concession Fee be owed to the Greek government for 2019-2023 was approved as a consequence of the above difficulties. The non-payment of the annual fee is presented as a gain of €11,620,995 under "Other income" (2021: €45,777,061). Therefore, the company's liabilities under the Concession Agreement will decrease, and almost all profitability ratios will appear to be better for 2021-2023 (than they would be) due to this effect on EBIT, EBITDA, and Net Profit.

Moreover, it seems that Cluster A has a large D/E ratio, which is merely justified by the high capital nature of the market. Still, it mainly shows that Cluster A funds a vast piece of its expected development through borrowing. However, such a high D/E ratio is unhealthy for any international airport because it is often associated with high investment risk and may have a negative influence on the profitability ratios in the long term. Generally, the methods to lower one company's D/E ratio are to pay down loans, increase profitability, improve inventory management, and restructure debt. As shown

in the results, profitability has already begun to improve. Still, the most effective solution for the company, in conjunction with previously discussed financial issues, was to enter 2022 into a subscription agreement with three Financial Institutions, Alpha Bank SA, National Bank, and Eurobank SA, to refinance the previously secured bond loan. In that way, Cluster A aims to improve its debt repayment efficiency, improving the high debt ratios compared with Fraport AG and the industry average.

Considering the EVA values, which are based on the concept that a company's top priority should be to create value for its shareholders in the form of profits generated that exceed the cost of capital used to generate those profits, we could say that the difference between net operating profit after tax and the cost of capital was positive for most of the examined years for Cluster A. That means the shareholder value increased yearly during the examined period (except for the pandemic year 2020).

Analyzing the valuation results, we could argue that for 2022, the total number of outstanding shares of Cluster A is estimated to be €75 million. Cluster A, worth €48 million, determined by the above assessment model, is partitioned by the number of shares, and the market esteem is 0.63 euros per share. In any case, it is pretty significant that the EVA indicator was negative for the year 2020 and far beneath the typical guidelines for the year 2021, demonstrating that there is an intangible part of the enterprise market esteem, principally because of the problematic finances of the enterprise in these specific years caused by COVID-19. Thus, the EVA valuation method cannot completely mirror the effect of all elements on the enterprise for those six-year periods. In addition, the number of passengers in 2023 (since November) is approximately 12% higher than in 2022 for Cluster A, meaning that the enterprise valuation would probably be better for the upcoming years than it was for 2017-2022 (€28 million).

Based on our estimation of the enterprise value over the entire concession period, we can see how investments are realized under similar concession agreements. The Fraport Group contributes €75 million as equity capital, offers its knowledge of aviation projects, and takes on substantial operating risk. All of the above will likely result in substantial profits. Notably, in our base scenario, the enterprise value attains 20 times the return on equity capital and corresponds to an annual interest rate of 8%. Considering the pessimistic scenario, the enterprise attains a return on equity capital of 12.8 times and an annual interest rate of 6.75%. In the case of an optimistic scenario, the enterprise value attains a return on equity capital of 30.67 times and an annual interest rate of 9.20%.

It is worth mentioning that Fraport Greece airports are also a significant contributor to the country's economic growth. In 2022, the travel and tourism industry accounted for approximately one-fifth of Greece's GDP, and these 14 airports (Cluster A and B) play a vital role in inbound tourism, particularly international tourism. It is estimated that 80% of all passengers passing through these 14 Fraport Greece airports are from abroad (Globe

Charting, 2023). The top five countries for flight arrivals are the United Kingdom, Italy, Germany, Spain, and France.

**Limitations and Future Research Perspectives**

The study conducted in this paper revealed that there are still significant limitations in applying the EVA model for enterprise value assessment in Cluster A. Currently, the EVA theory has not been thoroughly researched in the Greek aviation industry, as there are not enough applications for EVA models. In the calculation of enterprise value assessment, the annual EVA values for each year are crucial, and they significantly impact the enterprise's value. However, the pandemic adversely affected two of the six years of the assessment period, resulting in deviations between the evaluated and actual values. Considering this, investing in airports is not risk-free and may not yield consistent returns in the long run. This raises serious concerns about the private sector's ability to keep investing in airports. Consequently, the universality and accuracy of this EVA model must be improved by addressing these deficiencies in the future.

**Qualitative Assessment**

It is also worth noting that Fraport Cluster A Greece recently received recognition at the "2022 Airport Service Quality (ASQ) Awards" internationally. Thessaloniki Makedonia Airport was recognized as one of the top airports in Europe in the category of airports that handle 5 to 15 million passengers per year. What sets this award apart is that the criteria are based on direct evaluations by travelers on the day of their journey, providing a comprehensive picture of passenger experience and satisfaction. This remarkable distinction awarded to Thessaloniki Makedonia Airport certifies the high quality of the services offered at the airport. At the same time, it also boosts the promotion of the city and the country for the upcoming tourist seasons. ("Thessaloniki "Makedonia" Airport Has Been Awarded as One of the Top Airports in Europe Fraport Greece," n.d.).

**Applicability to the Broader Aviation Discipline**

In 2018, the Airports Council International released a policy paper on worldwide airport privatization trends. Out of the top 100 airports by passenger traffic, 51 had private sector participation in 2017, up by five from 2016. The driving force behind airport privatizations is the need to secure sources for investment in infrastructure. Additionally, when privatizing small airports with low throughput, it is advisable to cluster them into networks due to the complexity of covering their high costs. This enables infrastructure investments to be cross-financed, maximizing the economic and social benefits small airports offer to their communities and regions (ACI World, 2018). Overall, it is crucial to recognize that the number of airport management privatizations worldwide is rising. This underscores the pressing need to identify the proper methodologies for the financial evaluation of such contracts, which poses a significant challenge. On the one hand, the Government must monitor the disbursement of the upfront and annual fees and the implementation of capital expenditure. Conversely, the concessionaire

must ensure the appropriate cost of capital for his investments and attain operational efficiency. It is crucial to note that both the government and the concessionaire share a common interest in the contract's attainment of financial health and management of all risks.

The financial assessment has proven to be helpful in a) assessing the financial performance of the privatization using financial indicators as well as a widely known methodology like EVA, b) offering insights into risk management strategies and resilience planning in privatized airport projects, c) highlighting the importance of governance frameworks, regulatory mechanisms, and performance monitoring systems in ensuring the success of privatization initiatives and d) exploring the impact of airport privatization on user experience, innovation in service delivery, and the overall competitiveness of privatized entities in global aviation markets.

As such, we understand that the proposed methodology can be applied to the broader discipline of airport privatizations worldwide. We clarify that this methodology does not evaluate the broader economic benefits of having airports that attract many passengers.

## Conclusion

Similarly to the research made by Danchev et al. (2022), the Cluster A concession in Greece suggests that improving the private sector's participation in the planning and management of public infrastructure can have a beneficial economic effect. This is particularly true when it involves the entry of a skilled international strategic investor in developing assets in a sector of critical significance during a financial crisis.

Based on the research, it seems that Fraport A will be financially stable soon, as there is also a significant potential for growth that can be realized after the pandemic. However, there is a concern regarding the viability of its debt, suggesting that investors in Fraport A should find ways to maintain a relatively better proportion of debt relative to equity. The company might adjust its capital structure and reduce its leverage. Therefore, we must reassess the company's performance at other points during the 40-year term of the concession agreement.

The above considerations do not detract from the fact that the Greek Government has signed a concession contract whose central component is transferring operating risk to the concessionaire while ensuring the timely upgrading and refurbishment of concession airports. Also, receiving the upfront and annual concession fees has reduced its sovereign debt. At the same time, Fraport A management's strategy to increase debt at this level seems to be a logical consequence of their right to exploitation. The results confirm that debt can be a powerful tool for concessionaires to increase their value. By taking on debt, Fraport A could invest in new projects without immediately generating cash from its operations.

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