

Research Article

Research on the Relationship Between Oil Dependence and Profitability in the Airspace of Europe^{*}

Olcay ÖLÇEN¹, Serdar ALNIPAK²

¹ Dr., Aviation Consulting Group, ACG, olcayolcen@gmail.com, ORCID: 0000-0002-4835-1171 ² Assoc. Prof. Dr., İstanbul Nişantaşı University, serdar.alnipak@nisantasi.edu.tr, ORCID: 0000-0002-5722-9960

Abstract: Air Navigation profitability is one of the key issues in civil aviation. To ensure good profitability ratios in civil aviation, the countries should focus on efficient and effective air space utilization. The European continent is known for the rareness of oil resources. This research investigates if there is a relationship between oil importing and air space utilization in European air space. While it realizes GSYIH, labour force, passenger and cargo numbers are utilized. It will close an important scientific gap regarding the features of the most profitable navigation services considering countries. According to MABAC scores, generally, as the profitability scores increase, the importing of oil and oil-related products increases. This situation is an expected result in the European Aviation System and air geography, but it is also so important finding as other variables are taken into account such as Gross Domestic Product, Labor force, and Air passenger numbers between the years 2017-2020. Countries such as Turkey, Georgia, Armenia, Estonia, Albania, Latvia and Spain are the most oil and oil-related importing geography and air traffic management.

Keywords: Air Navigation, Profitability, MABAC, Oil Dependence Jel Codes: B26, O18, R11

Avrupa Hava Sahasında Petrol Bağımlılığı ve Karlılık Arasındaki İlişki Üzerine Araştırma

Öz: Hava Seyrüsefer (Navigasyon) karlılığı sivil havacılığın en önemli konularından biridir. Sivil havacılıkta bu alanda daha iyi kârlılık oranları sağlamak için ülkelerin hava sahalarının daha etkili ve etkin kullanılmasına odaklanması gerekmektedir. Avrupa kıtası, petrol kaynaklarının seyrekliliği ile bilinmektedir. Bu araştırmada Avrupa hava sahasında petrol ve petrole bağlı ürün ithali ile hava sahası kullanımı arasında bir ilişki olup olmadığı araştırılmaktadır. Bunu yaparken, araştırma modeline GDP, işgücü, yolcu ve kargo sayıları, nüfus değişkenleri koyulmuştur. Araştırma, ülkeler dikkate alındığında, en karlı navigasyon hizmetlerinin özellikleri konusunda önemli bir bilimsel boşluğu kapatacaktır. MABAC skorlarına göre en hava trafik sahasının karlı kullanımı artıtıkça, petrol ve petrol ithali artmaktadır. Bu durum Avrupa Havacılık Sisteminde ve hava coğrafyasında beklenen bir sonuç olmakla birlikte, 2017-2020 yılları arasında Gayri Safi Yurtiçi Hasıla, İşgücü, Hava yolcu sayıları gibi diğer değişkenler de dikkate alındığında oldukça önemli bir bulgudur. Türkiye, Gürcistan, Ermenistan, Estonia, Arnavutluk, Letonya ve İspanya gibi ülkeler, coğrafi ve hava trafiği yönetimi açısından olarak stratejik konumlarının yanı sıra, en yüksek seviyede petrol ve petrol türevi ithal eden ülkelerdir.

Anahtar Kelimeler: Hava Seyrüsefer, Karlılık, MABAC, Petrol Bağımlılığı Jel Kodları: B26, O18, R11

Cite: Ölçen, O. & Alnıpak, S. (2025). Research on the relationship between oil dependence and profitability in the airspace of Europe. *Fiscaoeconomia*, 9(2), 822-832. https://doi.org/10.25295/fsecon. 1519830

Submitted: 21.07.2024 Accepted: 19.12.2024



Copyright: © 2025. (CC BY) (https://creativecommons.org /licenses/by/4.0/).

^{*} The study was presented orally at the 1st International Energy Congress, which was held in Istanbul between 16 March 2023 and 17 March 2023.

1. Introduction

One of the important realities in civil aviation is the structure and utilization of airspace. Especially, after the declaration of the Paris Convention of 1919, airspace and its utilization gained importance in terms of international politics and law. When the First World War opened new doors to civil air transportation quickly, new aircraft technologies, new airport designs, new service types, and new routes were witnessed in this special area. The civil aviation industry developed and continues to develop politically, technologically and economically. But, protection and utilization of airspace also save its position in civil aviation regardless of country, especially, since it has been felt it's important in crisis and war times. Therefore, it becomes the national identity of a country.

If it is focussed on the world economic conjuncture practically and theoretically, energy politics has great importance with other fields such as sustainability and high technological development. Sustainability, for example, is a manifestation of the United Nations and has great importance for developing and developed countries one by one considering its social, environmental and economic sides. High technological development is also an important variable and identity for countries because of its business, educational, cultural and resource-dependent sides. On the other side, energy and energy management or creating an energy climate through increasing of efficiency and effectiveness of fossil fuels utilization, renewable energy politics and nuclear energy transform to also a national specific identity.

This paper aims to analyze the relationships between two of these variables, fuel importation and airspace utilization. While this analysis is realized, it benefits from the profitability of ANSP and the energy-importing power of the countries. For this cause, the research can be thought of as a mapping of European air space according to energy import. The literature review section will concentrate on the fuel imports and related actions of countries regarding fuel-related matters and Air Navigation Service Providers (ANSP) will be the focus. In the second part, it will begin to talk about selecting variables and forming a model. In the third part, the research develops with the research methodology and then conclusions, discussions and suggestions will be made in the last part of the analysis.

2. Literature Review

If it is concentrated on the development of civil aviation politics across the European Zone, the impacts of multi-state and multi-culture can be easily observed, though the aviation politics of the United States are formed under the impacts of one state, one nation and one air space. The old continent has suffered from conflicts, wars and crises for a long time. These negative impacts directly affect airspace utilization with its national dependency.

When Bauranov & Rakas (2021) state the importance of utilization of airspace, they give some important details on the specific options which are safety, social, system factors and aircraft factors and underline some specific details such as technological complexity, noise and privacy. Besides these, position, altitude, heading and speed are other main determinants in civil aviation systems in terms of air space management. As long as they are managed with communication, navigation and surveillance effectively and efficiently, they can form a safe system. For Button & Neiva (2013) especially to reach a single European Sky is another important dimension in air space management, so air traffic management. Gaxiola et al. (2018) maintain that airspace management should have two dimensions. They are aircraft loss of separation and airspace complexity. Airspace management is formed around two important variables, they are competition and safety. To ensure safe, efficient and equitable civil aviation system resource management, using of slot auctions can be counted as another important reality (Ball et al, 2003; Skorup, 2019). If it is added the last developments to this framework, Ostroumov et al. (2019) describe a

framework in which navigation specifications requirements take priority. Raffarin (2004) draws attention to congestion in the management policy of aviation through pricing considering the options of economic growth price competition and hub and spoke organisation. Nonetheless, some complexities such as increased reconfiguration complexities, and similar traffic pattern complexities are especially important for a dynamic airspace design. Weather and meteorological variables are other important determinants in airspace capacity management structures in the Mitchell et al. (2006) and Krozel (2007) analysis. According to Kopardekar et al. (2007), flexibility, dynamic and adaptable airspace developments depending on traffic demand, equipage and weather are other important definitive fields in airspace management. For Hoekstra et al. (2016) capacity and safety are critical and essential concepts in air space management and traffic structure has also deep importance in the definition of airspace management (Sunil, 2016).

In light of the airspace management arguments, For Villard et al. (2012) Air Navigation Service Providers (ANSP) are essential parts of civil aviation systems. They should arrange and manage according to the principles of ICAO. Their commercialization and especially, their effective and efficient privatization, so air transport infrastructure can be an essential part of the civil aviation industry. According to Button & Neiva's (2014) focus, physical and policy input-creating features of the ANSP industry are essential. The emerging place of the commercial aviation system is the Chicago Convention of 1944, since then, airlines, airports and air traffic management services have developed efficient and effective policies step by step to reach goals financially (Plavin, 2009). The ANSP industry is at the centre point of the operation world considering managerial, financial and regulative mechanisms to develop commercialization policies (Dougall & Roberts, 2008). As it is focused on the financial development of ANSPs, it can be confronted with some special economic details such as efficiency and effectiveness in commercialization and privatization of air space of the countries.

Oil imports are decisive and determinant factors for countries, for example, Wang et al. (2020) state that regions have got a great impact on the oil imports of countries. For Lin et al. (2021) oil price shocks have a larger fluctuation to the economic policy uncertainty of oil exporters than that of oil importers, moreover, for the oil exporters, the negative response to the oil price shock is greater than that of the oil-importing countries. The analysis of Sun et al. (2017) shows that the applicability and efficiency of oil policy have descriptive impacts on the oil politics of the countries. Therefore, it can be concluded that oil import politics need a national strategy for all of the civil aviation world. Security needs and requirements are other forming impacts on oil importing politics (Zhang et al., 2013). For Sun et al. (2014), politics-dependent-country risks, and geopolitical risks are on both sides of exporting and importing countries are so specific risks in terms of oil imports. Risk management and behaviours toward risks in oil imports can be counted as other important determinants in oil importing matters. The countries should decide on specific measures to overcome the risks (Ge & Fan, 2013). When Kim & Baek (2013) analyze Korea's oil import demand, they underline specific impacts of national income and oil prices. In addition, Wu et al. (2007) state that international oil prices, diversification, imports and geopolitics factors are important variables in the oil import policies of the countries. There are also some other relationships in literature, for example, Zhao & Wu (2007) described a context in China in which industrialization is so important and transportation and the automobile sector have great importance and more oil-consumed industries. Wu et al. (2009) added to this picture the impacts of the marine transportation. Ghosh (2009) creates a framework that relates to oil imports of countries that price underlines as a central determinant. Vivoda (2009) describes a model in which energy security is the centre of many elements in the most oil-imported countries such as the United States, Japan and China. Domestic oil consumption, real GDP and oil prices have great importance in Turkey's oil-importing relationships (Ozturk & Arisoy, 2016). Schönsteiner (2016) describes a line between the relationship between the aviation and marine industries of the countries and the oil politics of the same countries. Therefore, it

can be easily understood that the oil-importing features of countries have a uniform structure like the segments and branches of the ANSP industry.

3. Data and Methodology

The data of the paper is collected from the Eurocontrol website and worldbank.com between the years of 2017 and 2020 for 34 European Air Navigation Service Providers (Annex 1) to reach a refined financial dataset. The financial ratios are utilized in 5 groups and 13 ratios as in Table 1 and reached some values.

OPEX (Operational Expenditure) / CAPEX (Capital Expenditure) ANALYSES		
Profit/OPEX	Profit per operational expenditure (POPEX)	
Profit/CAPEX	Profit per capital expenditure (PAPEX)	
POPEX/PAPEX	The ratio of POPEX to PAPEX	
Return on OPEX (ROPEX)	Return (EBITDA) per operational expenditure (ROPEX)	
Return on CAPEX (RAPEX)	Return (EBITDA) per capital expenditure (RAPEX)	
ROPEX/RAPEX	The ratio ROPEX to RAPEX	
OPEX/CAPEX	Operational expenditure per capital	
	expenditure	
ASSET ANALYSES		
ROA-1-	Return (EBITDA) on Fixed assets	
ROA-2-	Return (EBITDA) on Current assets	
ROA-3-	Return (EBITDA) on Total assets	
DEBT ANALYSES		
ROD-1- Return (EBITDA) on Short-Term I		
ROD-2- Return (EBITDA) on Long-Term D		
ROD-3-	Return (EBITDA) on Total Debts	
STOCK RETURN ANALYSES		
ROE-1	RETURN(EBITDA) on equity	
FCF/SE	Free cash flow/Shareholder equity	
OPERATIONAL ANALYSES		
(Return on Operational Activity) RONOA	Return (EBITDA) per an operational activity	
(Return on Investment Activity) RONIA	Return (EBITDA) per an investment activity	

Table 1. The Ratios Used in The Analysis

To degrade these 13 ratios to one ratio, the MABAC (Multi Attributive Border Approximation Area Comparison) method was utilized. The MABAC method, which was included in the literature by Pamucar & Cirovic in 2015, is based on analysis according to regions where ideal and negative solutions are found. In this context, evaluations are made by measuring the criterion functions of the relevant alternatives to the distance to the boundary approximation area. The MABAC method is a relatively new measuring technique. At the same time, it ensures consistency even when there is a structural change in measurement criteria. There are many studies in literature using this method depending on its features, for instance, Bobar et al. (2020) used the MABAC method to solve the problem of selecting the type of social media that should be used in communication with the citizens of the country via the Internet in the context of public administration. Delice & Can (2017) listed the possible failure types in assembly lines by using FMEA and MABAC methods together. Akbulut (2020) measured the relationship between the financial performance of cement companies traded in the stock market and their stock returns by using CRITIC and MABAC methods together. Bozanic et al. (2018)

The method consists of 6 steps. These are;

Step 1: Creating the decision matrix (*X*)

Step 2: Normalisation of *X* : The values of (*X*) are normalised according to Equation (1) depending upon the criteria of whether it is beneficial (J^+) or cost (J^-) Oriented.

$$n_{ij} = \begin{cases} \frac{x_{ij} - \min_{l} x_{ij}}{\max_{l} x_{ij} - \min_{l} x_{ij}}, & if \ j \in J^{+} \\ \frac{x_{ij} - \max_{l} x_{ij}}{\min_{l} x_{ij} - \max_{l} x_{ij}}, & if \ j \in J^{-} \end{cases}$$
(1)

Step 3: Creating the weighted normalised matrix: Equation (2) is used by using the previously determined weights (w_j) of the relevant criteria.

$$v_{ij} = w_j (n_{ij} + 1)$$
 (2)

Step 4: Creating bordering approximative areas matrix (*G*): Equation (3) is used for calculations. *m* is the number of alternatives. By using this equation, $G = [g_1, g_2, ..., g_n]$ matrix in (1*xn*) dimension is created.

$$g_j = \left(\prod_{i=1}^m v_{ij}\right)^{1/m}$$
(3)

Step 5: Calculating the distances to G matrix: The elements of the distance matrix (Q) are calculated using Equation (4).

$$q_{ij} = v_{ij} - g_j \tag{4}$$

 q_{ij} represents the position of the relevant alternative to the boundary approximative areas. In this context, Equation (5) is used, as *G* is the bordering approximative area, G^+ is the upper bordering approximative area, and G^- is the lower bordering approximative area.

$$A_{i} \in \begin{cases} G^{+}, & q_{ij} > 0 \\ G, & q_{ij} = 0 \\ G^{-}, & q_{ij} < 0 \end{cases}$$
(5)

Step 6: Ranking the alternatives. By using the equation (6), the q_{ij} of the relevant alternatives are added and the most suitable alternative is determined by ordering these values from the highest to the lowest (Aytekin, 2022; Vesković, 2018).

$$S_i = \sum_{j=1}^n q_{ij} \tag{6}$$

After the numerical values are reached, a research model is created to measure the relationship between the numerical values of degraded MABAC results with other variables in parallel with Ölçen & Alnipak (2023). In this research model, it is utilized the following variables, i) Population, ii) Gross Domestic Products, iii) Labor, iv) Cargo volume, v) Passenger volume and vi) Fuel and fuel-related products importing. The causes of selecting these variables are given in the following Table 2 between the years 2017 and 2020.

Table 2. Model Variables

Index Value (with MABAC methodology Dependent Variable Every country has only one airspace, and countries shall have absolute severeginty your ref it. Air space of the country shall be managed by only one ANSP company legally. The ANSP company legally. The ANSP company spatiality pradices and the ange by your. Object & Almpak (2023) Pepulation Explanatory variable The population is o important variable for every industrial structure. Egid 4. Mattedi (2021) Population Explanatory variable The population is no important variable for every industrial structure. Egid 4. Mattedi (2021) CGD? (Gross Domestic Product) Explanatory Variable The GDP is a definitive variable for every industrial inflation rate is times on and on the lock downs, its sectoral distribution and the time needed for recovery. (CDP is negatively affected by the effects of specific periods such as COVT)-9. Have last et al. (2021) Labour Explanatory Variable The labour power of company legally the effect of specific periods such as COVT)-9. Bernstein et al. (2020) Labour Explanatory Variable The labour power of company statis af a there hat job destruction and macro and micro economic shocks are so in important. I abour is nomber main variable for industrial structure. I he labour supply shocks are more effective than labour Birnstein et al. (2020) Cargo volume (formas) Variable Explanatory Variable The labour power of company effective structure, received explanatory Variable <th>Variable</th> <th>Variable Type</th> <th>Explanations</th> <th>Reference</th>	Variable	Variable Type	Explanations	Reference
MABAC methodology Variable Aristable space of the country shall be managed by only one it. ANSP company legally. The ANSP company legally. Egid 6. Manfredi (2021) Population Explanatory variable The Population is to important variable for every industrial structure. Egid 6. Manfredi (2021) Population Explanatory variable The COMP is a definitive variable for every industrial structure. Egid 6. Manfredi (2021) CDP (Geoss Domestic Product) Explanatory Variable The COP is a definitive variable for every industrial structure. Havriant et al. (2021) CDP (Geoss Domestic Product) Explanatory Variable The COP is a definitive variable for every industrial structure. Havriant et al. (2021) CDP (Geoss Domestic Product) Explanatory Variable The COP is a definitive variable for every industrial structure. Habit et al. (2022) Labour Explanatory Variable The labour proves developments is a first to a specific periods. Pena et al. (2021) Labour Explanatory Variable The labour proves developments is a first and period manage variable of a rice argo logidits IATA Passenger volume Explanatory Variable The main performance variable of a rice argo logidits IATA Passenger volume Explanatory Variable The main performance variabl	Index Value (with	Dependent	Every country has only one airspace, and countries shall	Ölçen & Alnıpak (2023)
Image: Construct of the country shall be managed by only one MASS company's profibibility and profibibility and profibibility and profibibility and profibibility and profibibility and profibibility and profibibility and profibibility and profibibility and by year. Egidi & Manfredi (2021) Population Explanatory variable The population is or important variable for every indices in the or class of public biblity. The MASS such as a class of public biblity of the moment of the profibibility and	MABAC methodology)	Variable	have absolute sovereignty over it.	
AbSP compary logally, The ANSP compary spotiability and profitability practices can change by country and by year. Figld & Manfredi (2021) Population Fixplanatory variable The population is so important variable for every industrial structure. Figld & Manfredi (2021) GDP (Cross Domestic Product) Preduct) The GDP is a definition structure in the variable such as inflation rate, CDP and heading protection more profile ibile ibile. Harviant et al. (2021) GDP (Cross Domestic Product) Explanatory Variable The GDP is a definition and the time needed for recovery, GDP is a gettroid structure. Harviant et al. (2021) Labour Explanatory Variable The GDP is a definitive variable such as software. Harviant et al. (2022) Labour Explanatory Variable The Ibour power of revery industrial structure. Bernstein et al. (2020) Cargo volume (Tormes Explanatory Variable The labour power of row revery industrial structure. Brinca et al. (2021) Fuel Import Explanatory Variable The main performance variable of air cargo logistics IATA Cargo volume (Tormes Explanatory Variable The main performance variable of air cargo logistics IATA Fuel Import Explanatory Variable The main performance variable of air cargo logistics IATA			Air space of the country shall be managed by only one	
Image: Second			ANSP company legally.	
Population Explanatory variable The population is simportant variable for every industrial structure. Egidi & Manfredi (2021) GDP (Gross Domestic Product) Explanatory Variable Fis one of the main indicators of migration and mortality rates in times of catastrophen like Covid 19. It can be also in a relationship with other variables such as inflation rate, CDP intervariable such as inflation rate, CDP intervariable such as inflation rate, CDP intervariable such as inflation rate, CDP intervariable for every industrial structure. Havitant et al. (2021) CDP (Cross Domestic Product) Explanatory Variable The everying of the time needed for recovery, CDP is negatively affected by the impacts of Covid 19 dramatically. It can be such as report structure. Havitant et al. (2022) Labour Explanatory Variable The labour source or every industrial structure. Bernstein et al. (2020) Cargo volume (Tornes per kilometer) Explanatory Variable The labour source or every industrial structure. Bernstein et al. (2021) Cargo volume (Tornes per kilometer) Explanatory Variable The main performance variable of air cargo logistics IATA Passenger volume (beed per kilometer) Variable The main performance variable of air cargo logistics IATA Fuel Import Explanatory Variable The main performance variable of air cargo logistics IATA Fuel			The ANSP company's profitability and profitability	
Population Explanatory variable The population is so important variable to every indistrial structure. Egdit & Manredi (2021) Product) Product of the main indicators of migration and mortality rates in finance of catastrophe lock columns. Here are basis on a relationship with other variable such as periods bible this. CDP (Gross Domestic Product) Explanatory Variable The CDP is a distribution, and the time needed for recovery. CDP is engether blocks depends on the lockdowns, its sectoral distribution, and the time needed for recovery. CDP is engether blocks dependent on the lockdowns, its sectoral distribution, and the time needed for recovery. Variable Jen et al. (2021) Labour Explanatory Variable The isour power of companies is affected by the impacts of Covid 9 distribution and macro and micro economic shocks are so important. Labours another main variable for industrial structure. Bensiein et al. (2020) Cargo volume (fromes Parkilometer) Explanatory Variable The main performance variable for industrial structure. The labour preformance variable for industrial structure. The labour performance variable of air possenger IATA Passenger volume Explanatory Variable The main performance variable of air passenger IATA Passenger volume Explanatory Variable The main performance variable of air passenger IATA Passenger volume Variable The main performance variable of air passenger volume of the period structure of the soft flows affected by geographical consideration and advected by geographical consideration and advected by ge			practices can change by country and by year.	
Carabie If some of the main indicators of migration and mortality rates in times of catestrophes like Covid-19. It can be also in a relationship with other variables such as inflation rate, CDP and health protection measures in periods like diss. Harvlant et al. (2021) CDP (Cross Domestic Product) Explanatory Variable The GDP is a definitive variable for every industrial structure. Harvlant et al. (2021) CDP (Cross Domestic Product) Explanatory Variable The severity of the shocks depends on the lockdowns, its structure. Jena et al. (2022) CDP is a definitive variable for every industrial structure. Jena et al. (2022) The severity of the shocks depends on the lockdowns, its structure. Salisu et al. (2022) Labour Explanatory Variable The labour power of comparise is affected by the impacts of Covid 19 destruction and macro and micro economic shocks are so important. Bernstein et al. (2020) Cargo volume (Tornes per klometer) Feplanatory Variable The main performance variable of air grasp logistics IATA Passenger volume (heads per klometer) Production of destruction of socks are so important. Pickering et al. (2022) Fuel Import Explanatory Variable The main performance variable of air gassenger IATA Passenger volume (heads per klometer) Variable The energy clinable of the European continent was and is affected	Population	Explanatory	The population is so important variable for every	Egidi & Manfredi (2021)
GDP (Cross Domestic Product) Psplanatory Variable The GDP is a definitive variable for every industrial protobal lab this. Havrlant et al. (2021) GDP (Cross Domestic Product) Psplanatory Variable The GDP is a definitive variable for every industrial sectoral distribution, and the time needed for recovery, GDP is negatively aftected by the effects of specific periods such as COVID-19. Havrlant et al. (2021) Labour Explanatory Variable The CDP is a definitive variable for every industrial sectoral distribution, and the time needed for recovery, GDP is negatively aftected by the effects of specific periods such as COVID-19. Bernstein et al. (2022) Labour Explanatory Variable The labour power of comparise is affected by the impacts of Covid 19 dramatically. It can be said here that job destruction and macro and micro conomic shocks are so important. Bernstein et al. (2021) Cargo volume (Tonnes Explanatory Variable The labour supply shocks are more effective than labour demanat shock is in specific periods. Brinca et al. (2021) Passenger volume (bread per klometer) Variable The main performance variable of air cargo logistics JATA Fuel Import Explanatory Variable The energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2022) Fuel Import Explanatory Variable The energy climate of the European continent was		variable	industrial structure.	
Campa of the set of the action action and structures of the set of the action actin action action action action action action action action			rates in times of catastrophes like Covid 19	
GDP (Gross Domestic Product) Explanatory Variable The GDP is a definitive variable for every industrial structure. Havrlant et al. (2021); Havrlant et al. (2022); Havrlant et al. (2021); Havrlant et al. (2022); Yavrlant et al. (2022); Havrlant et al. (2023); Havrlant et al. (2024); Havrlant et al. (2024); Havrlant et al. (2025); Havrlant et al. (2025); Havrlant et al. (2026); Havrlant et al. (2026); Havrlant et al. (2027); Havrlant et al. (2027); Havrlant et al. (2028); Havrlant et al. (2028); Havrlant et al. (2029); Havrlant et al. (2029); Havrlant et al. (2029); Havrlant et al. (2020); Havrlant et al. (2020); Havrlant et al. (2020); Havrlant et al. (2020); Havrlant			It can be also in a relationship with other variables such as	
Construction Construction Product is another periods like this. GDP (Gross Domestic Product) Explanatory Variable The GDP is a definitive variable for every industrial structure. Havrlant et al. (2021) Labour Explanatory Variable The GDP is a definitive variable for every industrial structure. Jena et al. (2022) Labour Explanatory Variable The labour power of companies is affected by the impacts of Covid 19 dramatically. It can be said here that job destruction and macro and micro economic shocks are so important. Bernstein et al. (2022) Cargo volume (Tomes per kilometer) Explanatory Variable The labour power of companies is affected by the impacts of Covid 19 dramatically. It can be said here that job destruction and macro and micro economic shocks are so important. Bernstein et al. (2020) Cargo volume (Tomes per kilometer) Explanatory Variable The main performance variable of air cargo logistics IATA Tuel Import Explanatory Variable The emergy climate of the European continent was and is affected by goographical considerations. Especially production of electricity through different methods needs a strong energy trade. There are efforts towards the utilization of biotiles and alternative trade. Pickering et al. (2020) Chan, Europe an states suffer from fossil fuel methods needs a fitting ensign from fossil fuel methods needs a fitting ensign fossil fuel decreased in European comparis, especially after the B			inflation rate. GDP and health protection measures in	
CDP (Gross Domestic Product) Explanatory Variable The GDP is a definitive variable for every industrial structure. Havefant et al. (2021) The severity of the shocks depends on the lockdowns, its sectoral distribution, and the time needed for recovery. CDP is negatively affected by the effects of specific periods such as COVID-19. Havefant et al. (2022) The CDP is a definitive variable for every industrial structure. Salisu et al. (2022) The CDP is a definitive variable for every industrial structure. Salisu et al. (2020) Variable The labour power of companies is affected by the impacts of Govid 19 dramatically. It can be said here that job destruction and macro and micro economic shocks are so important. Bernstein et al. (2021) Cargo volume (Tormes Explanatory Variable The main performance variable of air cargo logistics IATA Passenger volume (theads per kilometer) Variable The main performance variable of air passenger tructure IATA Fuel Import Explanatory Variable The energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2022) Fuel Import Explanatory Variable The energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2022) Fuel Import Explanatory Variable The energy climate of the European c			periods like this.	
Product) Variable Inserventy of the shocks depends on the lockdowns, its sectoral distribution, and the time needed for recovery, Habibi et al. (2022), CDP is negatively affected by the offects of specific periods such as COVID-19. Jena et al. (2022) Labour Explanatory The labour power of companies is affected by the impacts of COVID-19. Bernstein et al. (2022) Labour Explanatory The labour power of companies is affected by the impacts of COVID 19. Bernstein et al. (2020) Cargo volume (Tonnes per kilometer) Explanatory The labour power of companies is affected by the impacts on important. Bernstein et al. (2021) Cargo volume (Tonnes per kilometer) Explanatory The main performance variable of air cargo logistics IATA Passenger volume (Tonnes per kilometer) Explanatory The main performance variable of air cargo logistics IATA Fuel Import Explanatory The main performance variable of air cargo logistics IATA Fuel Import Explanatory The main performance variable of air cargo logistics IATA Fuel Import Explanatory The main performance variable of air cargo logistics IATA Cargo volume (Tonnes per kilometer) Explanatory The energy climate of the European continent was and is an effected by goographical considerations. Pickering et al. (2022) Fuel Import Explanatory The energy climate of the European continent was and is	GDP (Gross Domestic	Explanatory	The GDP is a definitive variable for every industrial	Havrlant et al. (2021)
Image: Sectoral distribution, and the time needed for recovery, GDP is negatively affected by the effects of specific periods such as COVID-19. Habiti et al. (2022) Labour Explanatory Variable The labour power of companies is affected by the impacts of Covid 19 dramatically, it can be said here that job destruction and macro and micro economic stocks are so important. Bernstein et al. (2020) Cargo volume (Tonnes Explanatory Variable The main performance variable of industrial structure. Bernstein et al. (2021) Cargo volume (Tonnes Explanatory Variable The main performance variable of air cargo logistics IATA Passenger volume Explanatory Variable The main performance variable of air passenger intervention. IATA Passenger volume Explanatory Variable The main performance variable of air passenger intervention. IATA Passenger volume Explanatory Variable The energy climate of the Earopean continent was and is affected by geographical considerations. Pickering et al. (2022) Fuel Import Explanatory Variable The energy climate of the Earopean continent was and is affected by geographical considerations. Pickering et al. (2022) Image: Constructure in the intervent of topicals and alternative fuels. Image: Constructure in the intervent of topicals and alternative fuels. Image: Constructure in the intervent of topical and alternative fuels. Image: Constructure in the intervent of topical in the world. Europes in the world. Che	Product)	Variable	structure.	
Image: sectoral distribution, and the time needed for recovery. Habibi et al. (2022). GDP is negatively affected by the effects of specific periods such as COVID-19. Salisu et al. (2022) The GDP is a definitive variable for every industrial structure. Sectoral distribution, and the time needed for every industrial structure. Bernstein et al. (2020) Labour Explanatory The labour power of companies is affected by the impacts of Covid 19 dramatically. It can be said here that job destruction and macro and micro economic shocks are so important. Bernstein et al. (2021) Cargo volume (Tonnes Explanatory per kilometer) The main performance variable of air cargo logistics IATA Passenger volume Explanatory Variable The main performance variable of air cargo logistics IATA Fuel Import Explanatory Variable The energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2022) Variable The energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2022) Fuel Import Explanatory Variable The energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2022) Fuel Import Explanatory Variable The energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2020) Fuel Import Explanatory Variable The energy climate of the			The severity of the shocks depends on the lockdowns, its	Jena et al. (2021);
Image: Control of the second			sectoral distribution, and the time needed for recovery,	Habibi et al. (2022)
Labour Explanatory Variable The CDP is a definitive variable for every industrial structure. Salisu et al. (202) Labour Explanatory Variable The labour power of companies is affected by the impacts destruction and macro and micro economic shocks are so important. Bernstein et al. (2020) Cargo volume (Tormes per kilometer) Explanatory Variable The main performance variable for industrial structure. Brinca et al. (2021) Cargo volume (Tormes per kilometer) Explanatory Variable The main performance variable of air cargo logistics IATA Passenger volume (heads per kilometer) Variable The energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2022) Fuel Import Explanatory Variable The energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2022) Fuel Import Explanatory Variable The energy table. Pickering et al. (2020) Variable Although European states suffer from fossil fuel affected by geographical considerations. Especially production of electricity through different methods needs as strong energy trade. Pickering et al. (2020) Foreal Led Legondery and the need for fossil fuel adversarial graps the energy trade line and leadership of the world. Chen et al. (2020) <t< td=""><td></td><td></td><td>GDP is negatively affected by the effects of specific</td><td></td></t<>			GDP is negatively affected by the effects of specific	
Labour Explanatory Variable The GDP is a definitive variable for every industrial safected by the impacts of Covid 9 dramatically. It can be said here that job destruction and macro and micro economic shocks are so important. Bernstein et al. (2020) Cargo volume (Tonnes Explanatory Variable The labour supply shocks are more effective than labour demand shocks in specific periods. Brinca et al. (2021) Cargo volume (Tonnes Explanatory Variable The main performance variable of air cargo logistics and the singeoff and the si			periods such as COVID-19.	
Labour Explanatory Variable The labour power of companies is affected by the impacts of Covid 19 dramatically. It can be said here that job destruction and macro and micro economic shocks are so important. Labour is another main variable for industrial structure. Bernstein et al. (2020) Cargo volume (Tonnes per kilometer) Explanatory Variable The main performance variable of air cargo logistics Brinca et al. (2021) Cargo volume (Tonnes per kilometer) Explanatory Variable The main performance variable of air cargo logistics IATA Passenger volume (Ineads per kilometer) Variable The main performance variable of air passenger IATA Fuel Import Explanatory Variable The energy climate of the European confinent was and is affected by geographical considerations. Especially production of electricity through different methods needs a storng energy trade. There are efforts towards the utilization of biofuels and alternative fuels. Pickering et al. (2020) Although European states suffer from fossil fuel production, renevable fuel production nas an increasing trend. Chen et al. (2020) Or biointer projects. Fossil fuel dependency and the need for fossil fuel adecreasing trend. Sadr et al. (2022) Or biointer projects. Fossil fuel dependency and the need for fossil fuels decreased in European companies, especially after the Paris Agreement of 2015. Nuclear energy and its derivatives gain importance in the energry politics and trades of Euro			The GDP is a definitive variable for every industrial	Salisu et al. (2022)
Labour Explanatory Variable Va	T 1		structure.	D (1 (2020)
Cargo volume (Tornes Explanatory The nain performance variable of air cargo logistics Brinca et al. (2021) Cargo volume (Tornes Explanatory The main performance variable of air cargo logistics IATA Per kilometer) Variable The main performance variable of air cargo logistics IATA Per kilometer) Variable The main performance variable of air cargo logistics IATA Fuel Import Explanatory The nergy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2022) Fuel Import Explanatory The energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2022) Variable Although European states suffer from fossil fuel methods needs a strong energy trade. Chen et al. (2020) Production, renewable fuel production has an increasing trend. European states bind to Russia in terms of fossil fuel trade strict y and soundly. China, Europe, and United States, the Russian ferend fuel Gercased in European companies, especially after the energy partice in European companies, especially after the energy policis and trades of European companies, especially after the energy policis and trades of European companies, especially after the energy policis and trades of European companies, especially after the energy policis and trades of European companies, especially after the energy policis and trades of European companies, esp	Labour	Explanatory	The labour power of companies is affected by the impacts	Bernstein et al. (2020)
Cargo volume (Tornes Explanatory The labour supply shocks are more effective than labour demand shocks in specific periods. Brinca et al. (2021) Cargo volume (Tornes Explanatory The main performance variable of air cargo logistics IATA Passenger volume Explanatory The main performance variable of air cargo logistics IATA Passenger volume Explanatory The main performance variable of air cargo logistics IATA Passenger volume Explanatory The main performance variable of air cargo logistics IATA Passenger volume Explanatory The energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2022) Fuel Import Explanatory The energy climate of the European solution of electricity through different methods needs a strong energy trade. Pickering et al. (2020) Fuel Import Explanatory Although European states suffer from fossil fuel read stricity and soundly. Chen et al. (2020) Production, renevable fuel production has an increasing trend. European states of a logistic series of fossil fuel read stricity and soundly. China, Europe, and United States, the Russin Federation and Australia grasp reade in European companies, especially after the Paris Agreement of 2015. Sadr et al. (2022) Europe is the key a		variable	destruction and macro and micro aconomic checks are so	
Labour is another min variable for industrial structure. Labour is another min variable for industrial structure. The labour supply shocks are more effective than labour demand shocks in specific periods. Brinca et al. (2021) Cargo volume (Tonnes Explanatory The main performance variable of air cargo logistics IATA Passenger volume Explanatory The main performance variable of air passenger IATA (heads per kilometer) Variable The energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2022) Fuel Import Explanatory The energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2020) Fuel Import Explanatory There are efforts towards the utilization of biofuels and alternative fuels. Chen et al. (2020) Foreare efforts towards the utilization of biofuels and alternative fuels. Chen et al. (2020) Pickering et al. (2020) Foreare efforts towards the energy trade line and leadership of the world. European states bind to Russi in terms of fossil fuel trade strictly and soundly. China, Europe, and United States, the Russian Federation and Australia graps the energy trade line and leadership of the world. Sadr et al. (2022) European states' oil dependency and the need for fossil fuel trade depending on biofuel			important	
Image: Cargo volume (Tornes per kilometer) Explanatory Variable The labour supply shocks are more effective than labour demand shocks in specific periods. Brinca et al. (2021) Cargo volume (Tornes per kilometer) Variable The main performance variable of air cargo logistics IATA Passenger volume (heads per kilometer) Variable The main performance variable of air passenger IATA Fuel Import Explanatory Variable The energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2022) Attract the energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2020) Variable The energy climate of the European continent was and is affected by geographical considerations. Pickering et al. (2020) Variable The energy climate of the European continent was and is affected by geographical consideration. Pickering et al. (2020) Although European states suffer from fossil fuel production has an increasing trend. Chen et al. (2020) Pickering et al. (2020) China, Europe, and United States, the Russian Federation and Australia graps the energy trade. Sadr et al. (2022) European states of ide line and leadership of the world. Sadr et al. (2022) Vecerased in European comparies, especially after the Paris Agreement of 2015.			Labour is another main variable for industrial structure	
Intersteel Intersteel Intersteel Cargo volume (Tonnes) per kilometer) Explanatory Variable The main performance variable of air cargo logistics IATA Passenger volume (heads per kilometer) Explanatory Variable The main performance variable of air passenger transportation IATA Fuel Import Explanatory Variable The energy climate of the European continent was and is affected by geographical considerations. Especially production of electricity through different methods needs a strong energy trade. There are efforts towards the utilization of biofuels and alternative fuels. Pickering et al. (2022) Although European states suffer from fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) European states bind to Russia in terms of fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) China, Europe, and United States, the Russian Federation and Australia grasp the energy trade line and leadership of the world. Sadr et al. (2022) decreased in European companies, especially after the Paris Agreement of 2015. Sadr et al. (2022) Usclear energy and its derivatives gain importance in the energy politics and trades of European countries. Liu et al. (2023) Europe is the key and important market for Russian fossil fuel utilization diminishes carbon discide emissions in Europe. Liu et al. (2023)			The labour supply shocks are more effective than labour	Brinca et al. (2021)
Cargo volume (Tonnes per kilometer) Explanatory Variable The main performance variable of air cargo logistics IATA Passenger volume (heads per kilometer) Explanatory Variable The main performance variable of air cargo logistics IATA Fuel Import Explanatory Variable The energy climate of the European continent was and is affected by geographical considerations. Especially production of electricity through different methods needs a strong energy trade. There are efforts towards the utilization of biofuels and alternative fuels. Pickering et al. (2022) Although European states suffer from fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) European states bind to Russia in terms of fossil fuel rend. European states bind to Russia in terms of fossil fuel production, renewable fuel production has a decreasing trend depending on biofuel Projects. Sadr et al. (2022) Fossil fuel dependency and the need for fossil fuels decreased in European companies, especially after the Paris Agreement of 2015. Nuclear energy and its derivatives gain importance in the energy politics and trades of European countries. Liu et al. (2023) It is proved in this paper clearly that the decrease in fossil fuel utilization diminishes carbon dioxide emissions in Europe. Liu et al. (2023) The leader and important insurer of fuel production. Europea tates of fuel production in the world is Russia. Balaz et al. (2020)			demand shocks in specific periods.	
per kilometer) Úraiable Itemain performance variable of air passenger IATA Passenger volume (heads per kilometer) Explanatory Variable The main performance variable of air passenger IATA Fuel Import Explanatory Variable The energy climate of the European continent was and is affected by geographical considerations. Especially production of electricity through different methods needs a strong energy trade. There are efforts towards the utilization of biofuels and alternative fuels. Pickering et al. (2022) Although European states suffer from fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) European states bind to Russia in terms of fossil fuel trade stricity and soundly. Chen et al. (2020) China, Europea, and United States, the Russian Federation and Australia grasp the energy trade line and leadership of the world. Sadr et al. (2022) European states' oil dependency and the need for fossil fuels decreased in European companies, especially after the Paris Agreement of 2015. Sadr et al. (2022) Instraining the key and important market for Russian fossil fuel production. Liu et al. (2023) Liu et al. (2023) It is proved in this paper clearly that the decrease in fossil fuel production. Europe is the key and important market for Russian fossil fuel production. Liu et al. (2020)	Cargo volume (Tonnes	Explanatory	The main performance variable of air cargo logistics	IATA
Passenger volume (heads per kilometer) Explanatory Variable The main performance variable of air passenger transportation IATA Fuel Import Explanatory Variable The energy climate of the European continent was and is affected by geographical considerations. Especially production of electricity through different methods needs a strong energy trade. There are efforts towards the utilization of biofuels and alternative fuels. Pickering et al. (2022) Although European states suffer from fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) European states bind to Russia in terms of fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) European states bind to Russia in terms of fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) European states bind to Russia in terms of fossil fuel production, renewable fuel production and Australia grasp the energy trade line and leadership of the world. Sadr et al. (2022) European states of il demand has a decreasing trend depending on biofuel Projects. Sadr et al. (2022) European states of European companies, especially after the Paris Agreement of 2015. Liu et al. (2023) It is proved in this paper dearly that the decrease in fossil fuel utilization diminishes carbon dioxide emissions in Europe. Liu et al. (2023) Europe is the key and important market for Russian fossi fuel utilization diminishes carbon	per kilometer)	Variable		
(heads per kilometer) Variable transportation Fuel Import Explanatory Variable The energy climate of the European continent was and is affected by geographical considerations. Especially production of electricity through different methods needs a strong energy trade. Pickering et al. (2022) Image: Construct on the energy of the European states suffer from fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) European states bind to Russia in terms of fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) European states of the European states as differ from fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) European states of the world. European states of the world. European states of the world. European states of ide more parts define mergy trade line and leadership of the world. Sadr et al. (2022) decreased in European companies, especially after the Paris Agreement of 2015. Sadr et al. (2022) Nuclear energy and its derivatives gain importance in the energy politics and trades of European contries. Liu et al. (2023) If the utilization diminishes carbon dioxide emissions in Europe. Liu et al. (2020) The leader on atural gas production in the world is Russia, The leader on faural gas production in the world is UAE (Initried Arab Emirates) Balaz et al. (2020)	Passenger volume	Explanatory	The main performance variable of air passenger	IATA
Fuel Import Explanatory Variable The energy climate of the European continent was and is affected by geographical considerations. Especially production of electricity through different methods needs a strong energy trade. There are efforts towards the utilization of biofuels and alternative fuels. Pickering et al. (2022) Although European states suffer from fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) European states bind to Russia in terms of fossil fuel rend. Chen et al. (2020) China, Europe, and United States, the Russian Federation and Australia grasp the energy trade line and leadership of the world. Sadr et al. (2022) European states of the world is UAE Sadr et al. (2020) Variable Fossil fuel dependency and the need for fossil fuel decreased in European countries. Sadr et al. (2022) Europe is the key and important market for Russian fossil fuel production. Liu et al. (2023) Liu et al. (2023) It is proved in this paper clearly that the decrease in fossil fuel utilization diminishes carbon dioxide emissions in Europe. Liu et al. (2020) The leader on alimportant market of the production in the world is Russia, The leader of natural gas production in the world is UAE ((Inited Arch Emirette)) Balaz et al. (2020)	(heads per kilometer)	Variable	transportation	
Variable affected by geographical considerations. Especially production of electricity through different methods needs a strong energy trade. There are efforts towards the utilization of biofuels and alternative fuels. Although European states suffer from fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) European states bind to Russia in terms of fossil fuel strictly and soundly. China, Europe, and United States, the Russian Federation and Australia grasp the energy trade line and leadership of the world. Sadr et al. (2022) European states' oil demand has a decreasing trend depending on biofuel Projects. Sadr et al. (2022) decreased in European companies, especially after the Paris Agreement of 2015. Sadr et al. (2022) Europe is the key and importance in the energy politics and trades of European countries. Liu et al. (2023) Europe is the key and important market for Russian fossil fuel utilization diminishes carbon dioxide emissions in Europe. Liu et al. (2023) The leader on important insurer of fuel production in the world is Russia, The leader on faural gas production in the world is UAE (Inited Arab Emirette) Balaz et al. (2020)	Fuel Import	Explanatory	The energy climate of the European continent was and is	Pickering et al. (2022)
Especially production of electricity through different methods needs a strong energy trade. There are efforts towards the utilization of biofuels and alternative fuels. Although European states suffer from fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) European states bind to Russi in terms of fossil fuel trade strictly and soundly. China, Europe, and United States, the Russian Federation and Australia graps the energy trade line and leadership of the world. European states voil demand has a decreasing trend depending on biofuel Projects. Sadr et al. (2022) Gecreased in European companies, especially after the Paris Agreement of 2015. Nuclear energy politics and trades of European countries. Liu et al. (2023) Europe is the key and important market for Russian fossil fuel utilization diminishes carbon dioxide emissions in Europe. Liu et al. (2023) The leader and important insure of fuel production in the world is Russia, The leader of natural gas production in the world is UAE ((Inited Arab Ervictue)) Balaz et al. (2020)		Variable	affected by geographical considerations.	
Implementation of provide the string energy trade. There are efforts towards the utilization of biofuels and alternative fuels. Although European states suffer from fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) Production, renewable fuel production has an increasing trend. European states bind to Russia in terms of fossil fuel trade strictly and soundly. China, Europe, and United States, the Russian Federation and Australia grasp the energy trade line and leadership of the world. European states' oil demand has a decreasing trend depending on biofuel Projects. Fossil fuel dependency and the need for fossil fuels decreased in European companies, especially after the Paris Agreement of 2015. Sadr et al. (2022) Getter energy politics and trades of European countries. Liu et al. (2023) Europe is the key and important market for Russian fossil fuel tuit et al. (2023) Liu et al. (2023) It is proved in this paper clearly that the decrease in fossil fuel eutilization diminishes carbon dioxide emissions in Europe. Liu et al. (2020) The leader of natural gas production in the world is UAE (Integ Arab Emirate) Balaz et al. (2020)			Especially production of electricity through different	
Intere are enormative fuels. Although European states suffer from fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) Production, renewable fuel production has an increasing trend. European states bind to Russia in terms of fossil fuel trade strictly and soundly. China, Europe, and United States, the Russian Federation and Australia grasp the energy trade line and leadership of the world. European states' oil demand has a decreasing trend depending on biofuel Projects. Fossil fuel dependency and the need for fossil fuels decreased in European companies, especially after the Paris Agreement of 2015. Sadr et al. (2022) Europe is the key and important market for Russian fossil fuel tis proved in this paper clearly that the decrease in fossil fuel tis proved in this paper clearly that the decrease in fossil fuel at the energy politics and trades of European countries. Liu et al. (2023) Europe is the key and important market for Russian fossil fuel tis proved in this paper clearly that the decrease in fossil fuel at the energy is production. Liu et al. (2023) The leader and important insurer of fuel production in the world is Russia, The leader of natural gas production in the world is UAE (Intered and important gas production in the world is UAE (Intered For antural gas production in the world is UAE (Intered For antural gas production in the world is UAE (Intered For antural gas production in the world is UAE (Intered For antural gas production in the world is UAE (Intered For antural gas production in the world is UAE (Intered For antural gas production in the world is UAE (Intered For antural gas production in the world is UAE (Intered For antural gas prod			There are efforts towards the utilization of historics and	
Although European states suffer from fossil fuel production, renewable fuel production has an increasing trend. Chen et al. (2020) European states bind to Russia in terms of fossil fuel trade strictly and soundly. China, Europe, and United States, the Russian Federation and Australia grasp the energy trade line and leadership of the world. Curopean states oil demand has a decreasing trend depending on biofuel Projects. Fossil fuel dependency and the need for fossil fuels decreased in European companies, especially after the Paris Agreement of 2015. Sadr et al. (2022) Unclear energy and its derivatives gain importance in the energy politics and trades of European countries. Liu et al. (2023) Europe is the key and important market for Russian fossil fuel production. Liu et al. (2023) It is proved in this paper clearly that the decrease in fossil fuel world is Russia, Liu et al. (2020) The leader and important insurer of fuel production in the world is Russia, Balaz et al. (2020)			alternative fuels	
Initial production, renewable fuel production has an increasing trend. Initial production has an increasing trend. European states bind to Russia in terms of fossil fuel trade strictly and soundly. China, Europe, and United States, the Russian Federation and Australia grasp the energy trade line and leadership of the world. European states' oil demand has a decreasing trend depending on biofuel Projects. Sadr et al. (2022) Fossil fuel dependency and the need for fossil fuels decreased in European companies, especially after the Paris Agreement of 2015. Sadr et al. (2022) Europe is the key and important market for Russian fossil fuel trade in this paper clearly that the decrease in fossil fuel utilization diminishes carbon dioxide emissions in Europe. Liu et al. (2023) The leader and important insurer of fuel production in the world is UAE (Inited Arab Emirates) Balaz et al. (2020)			Although European states suffer from fossil fuel	Chen et al. (2020)
internet. internet. internet. European states bind to Russia in terms of fossil fuel trade strictly and soundly. China, Europe, and United States, the Russian Federation and Australia grasp the energy trade line and leadership of the world. European states' oil demand has a decreasing trend depending on biofuel Projects. Fossil fuel dependency and the need for fossil fuels decreased in European companies, especially after the Paris Agreement of 2015. Sadr et al. (2022) Undear energy politics and trades of European countries. Europe is the key and important market for Russian fossil fuels fuel queroduction. It is proved in this paper clearly that the decrease in fossil fuel tilization diminishes carbon dioxide emissions in Europe. Liu et al. (2023) The leader and important insurer of fuel production in the world is UAE (United Arab Emirates) Balaz et al. (2020)			production renewable fuel production has an increasing	Cheff et al. (2020)
European states bind to Russia in terms of fossil fuel trade strictly and soundly. China, Europe, and United States, the Russian Federation and Australia grasp the energy trade line and leadership of the world. European states' oil demand has a decreasing trend depending on biofuel Projects. Fossil fuel dependency and the need for fossil fuels decreased in European companies, especially after the Paris Agreement of 2015. Nuclear energy politics and trades of European countries. Europe is the key and important market for Russian fossil fuel production. It is proved in this paper clearly that the decrease in fossil fuel utilization diminishes carbon dioxide emissions in Europe. The leader and important insurer of fuel production in the World is Russia, The leader of natural gas production in the world is UAE (United Arab Emirates)			trend.	
Image: Construction of the second			European states bind to Russia in terms of fossil fuel trade	
China, Europe, and United States, the Russian Federation and Australia grasp the energy trade line and leadership of the world. Intervention European states' oil demand has a decreasing trend depending on biofuel Projects. Sadr et al. (2022) Fossil fuel dependency and the need for fossil fuels decreased in European companies, especially after the Paris Agreement of 2015. Sadr et al. (2022) Nuclear energy and its derivatives gain importance in the energy politics and trades of European countries. Liu et al. (2023) Europe is the key and important market for Russian fossil fuel utilization diminishes carbon dioxide emissions in Europe. Liu et al. (2023) The leader and important insurer of fuel production in the world is Russia, The leader of natural gas production in the world is UAE (United Arab Emirates) Balaz et al. (2020)			strictly and soundly.	
and Australia grasp the energy trade line and leadership of the world. of the world. European states' oil demand has a decreasing trend depending on biofuel Projects. Sadr et al. (2022) Fossil fuel dependency and the need for fossil fuels decreased in European companies, especially after the Paris Agreement of 2015. Sadr et al. (2022) Nuclear energy and its derivatives gain importance in the energy politics and trades of European countries. Liu et al. (2023) Europe is the key and important market for Russian fossil fuel production. Liu et al. (2023) It is proved in this paper clearly that the decrease in fossil fuel utilization diminishes carbon dioxide emissions in Europe. Liu et al. (2020) The leader and important insurer of fuel production in the world is Russia, The leader of natural gas production in the world is UAE Balaz et al. (2020)			China, Europe, and United States, the Russian Federation	
of the world. European states' oil demand has a decreasing trend depending on biofuel Projects. Fossil fuel dependency and the need for fossil fuels decreased in European companies, especially after the Sadr et al. (2022) decreased in European companies, especially after the Paris Agreement of 2015. Nuclear energy and its derivatives gain importance in the energy politics and trades of European countries. Europe is the key and important market for Russian fossil Liu et al. (2023) It is proved in this paper clearly that the decrease in fossil Liu et al. (2023) It is proved in this paper clearly that the decrease in fossil Europe. The leader and important insurer of fuel production in the Balaz et al. (2020) world is Russia, The leader of natural gas production in the world is UAE (United Arab Emirates) (United Arab Emirates)			and Australia grasp the energy trade line and leadership	
European states' oil demand has a decreasing trend depending on biofuel Projects. Fossil fuel dependency and the need for fossil fuels Sadr et al. (2022) decreased in European companies, especially after the Paris Agreement of 2015. Nuclear energy and its derivatives gain importance in the energy politics and trades of European countries. Europe is the key and important market for Russian fossil Liu et al. (2023) fuel production. It is proved in this paper clearly that the decrease in fossil fuel utilization diminishes carbon dioxide emissions in Europe. The leader and important insurer of fuel production in the Balaz et al. (2020) world is Russia, The leader of natural gas production in the world is UAE			of the world.	
depending on biofuel Projects. Image: Construct Projects in the section of the project in the sect in the section of the project in the sect			European states' oil demand has a decreasing trend	
Fossil fuel dependency and the need for fossil fuels Sadr et al. (2022) decreased in European companies, especially after the Paris Agreement of 2015. Nuclear energy and its derivatives gain importance in the energy politics and trades of European countries. Europe is the key and important market for Russian fossil Liu et al. (2023) fuel production. It is proved in this paper clearly that the decrease in fossil fuel utilization diminishes carbon dioxide emissions in Europe. The leader and important insurer of fuel production in the Balaz et al. (2020) world is Russia, The leader of natural gas production in the world is UAE			depending on biofuel Projects.	
Image: Constraint of the labor of the l			Fossil fuel dependency and the need for fossil fuels	Sadr et al. (2022)
Image: Construction of Data Nuclear energy and its derivatives gain importance in the energy politics and trades of European countries. Image: Construction of Data Europe is the key and important market for Russian fossil fuel production. Image: Construction of Data Image: Construction of Data Image: Construction of Data Image: Construction of Data <t< td=""><td></td><td></td><td>Paris A groement of 2015</td><td></td></t<>			Paris A groement of 2015	
Image: Second relation of the leader of second relation of the leader of the leader of natural gas production in the world is UAE Image: Second relation of the leader of natural gas production in the world is UAE Image: Second relation of the leader of natural gas production in the leader of natural gas production in the world is UAE Image: Second relation of the leader of the lea			Nuclear energy and its derivatives gain importance in the	
Europe is the key and important market for Russian fossil fuel production. Liu et al. (2023) It is proved in this paper clearly that the decrease in fossil fuel utilization diminishes carbon dioxide emissions in Europe. Liu et al. (2023) The leader and important insurer of fuel production in the world is Russia, Balaz et al. (2020) The leader of natural gas production in the world is UAE (United A rab Emiratec) Balaz et al. (2020)			energy politics and trades of European countries.	
fuel production. It is proved in this paper clearly that the decrease in fossil fuel utilization diminishes carbon dioxide emissions in Europe. Balaz et al. (2020) The leader and important insurer of fuel production in the world is Russia, Balaz et al. (2020) The leader of natural gas production in the world is UAE (United A rab Emiratec)			Europe is the key and important market for Russian fossil	Liu et al. (2023)
It is proved in this paper clearly that the decrease in fossil fuel utilization diminishes carbon dioxide emissions in Europe. The leader and important insurer of fuel production in the world is Russia, The leader of natural gas production in the world is UAE (United A rab Emiratec)			fuel production.	
fuel utilization diminishes carbon dioxide emissions in Europe. The leader and important insurer of fuel production in the world is Russia, The leader of natural gas production in the world is UAE (United Arab Emirates)			It is proved in this paper clearly that the decrease in fossil	
Europe. The leader and important insurer of fuel production in the world is Russia, The leader of natural gas production in the world is UAE			fuel utilization diminishes carbon dioxide emissions in	
The leader and important insurer of fuel production in the world is Russia, Balaz et al. (2020) The leader of natural gas production in the world is UAE (United Arab Emirates)			Europe.	
world is Russia, The leader of natural gas production in the world is UAE (United Arab Emirates)			The leader and important insurer of fuel production in the	Balaz et al. (2020)
I ne leader of natural gas production in the world is UAE			world is Russia,	
			(United Arab Emirates)	

In light of the arguments above, the research model is formed and shows Equation 7. $Indexvalue_{ij} = \beta_0 + \beta_1 \log Population_{ij} + \beta_2 \log_G DP_{ij} + \beta_3 \log Labor_{ij} + +\beta_4 \log Passenger_{ij} + \beta_5 \log_{Fuel Import_{ij}} + +\varepsilon_{ij}$ (7)

> After the creation of a research model, GDP, Population, Labor, Cargo (per volume in km), Passenger (per head number in km) and fuel import values (% merchandising goods) are taken from the World Bank database. Logarithmic transformations are utilized on the data set. If there are individual effects and time effects on the data, F-tests are utilized. With the detection of the existence of these two important effects, the two-way fixed effect regression model is selected. But, in light of the argument that the data include time restrictions depending on the data set, there are data limitations on the research model. For these reasons, the time effect is disregarded. To reach strong individual effects explanations fixed effect (FE) estimation (F test), random effect (RE) estimation (Breusch Pagan LM test) and maximum likelihood (MLE) estimation (LR test and Score test) have been utilized on the Stata program and results taken (Tatoğlu, 2021). To make a selection between RE and FE, the Hausman test is utilized. The results are given in Table 3.

 Table 3. Model selection results

	Fixed effect estimation	Random effect estimation	Maximum likelihood effect estimation
F test value	6.241		
Score test			281.237
LR test (chi2_c)			14.934
Breusch Pagan LM test		8.554	
Hausman test score		160.954	
p values	0.000***	0.000***	0.000***

According to model selection results Fixed effect estimation results are suitable to continue analysis. The fixed estimation results are given in Table 4.

INDEX VALUE MABAC	Coefficient	Std. err	Т	P value
Log Population	-4.895	1.250	-3.91	0.000***
Log GDP	-0.3725	0.1495	-2.49	0.014*
Log Labor	2.168	0.5330	4.07	0.000***
Log Cargo	-0.008	0.0079	-1.10	0.274
Log Passenger	0.031	0.0173	1.77	0.080*
Log fuel import	0.302	0.065	4.60	0.000***
cons	23.473	7.191	3.26	0.002***
R Squared value	es		F test Results	
Within	0.569	F(6,95)=20.90	prob=0.0	000***
Between	0.001			
Overall	0.000]		

Table 4. Fixed estimation results of the model

The research model can be described and formed in the following Equation 8.

 $Indexvalue_{ij} = 23.473 - 4.895(\log Population)_{ij} - 0.3725(\log_{GDP_{ij}}) - +2.168(\log Labor)_{ij} + 0.0307(\log Passenger)_{ij} + 0.302(\log Fuel Import)_{ij} + u_{it}$ (8)

According to FRE results, as other variables are constant, a %1 increase in population causes to -%4.895 decrease in profitability (index) values, a %1 increase in GDP causes to -%0.3725 decrease in profitability (index), a %1 increase in labour causes to %2.168 increase in profitability (index), %1 increase in passenger number causes to %0.307 increase in profitability (index), %1 increase in Fuel Imports causes to %0.302 increase in

profitability (index) for 2017-2020 (pre-Covid 19) period. R squared value is 0.5690 and the F test value is statistically significant. There is no significant relationship between cargo number and MABAC index value.

4. Conclusion

The general characteristics of more profitable ANSP companies across Europe from 2017 to 2020, -if it is considered here that they are only one for their countries, the main features of their countries can be counted as follows i) They generally have a lower population relatively (in number), ii) They generally have a lower GDP relatively (in number), iii) They generally have a high labour force relatively(in number), iv) Their serviced air passengers number is relatively high (in number), v) They generally import more fuel and fuel (mineral fuels, lubricants and related materials) relatively.

5. Discussion and Suggestions

If it is concentrated on the European Air Space Map, it is so easy to understand the main causes of the results of this analysis. The European countries can be described with several variables in terms of macroeconomic conditions such as developed-undeveloped, industrialized and non-industrialized. Although some countries severely suffer from these conditions, some others do not talk even about it, nevertheless, it can be said easily that the fossil fuel dependency of the region. Yahya (2022) and Bluszcz (2017) underline the crude oil dependence of the region. Christie (2007) explains this oil dependence as an import dependence. Of course, there is a significant oil importer in the region, Norway (Rapaic & Novakovic, 2013), nevertheless, its airspace utilization and profitability scores are low. The existence of Russia as an oil importer can be determinative for the European Union (Becker, 2016) and renewable energy resources can be a solution (Vieira et al., 2021). Our findings show similarities with this research. This research can be counted as the first example of its class with its three methodologies, which include financial performance analysis, MABAC analysis and a panel data method.

Further research can offer the same methodology with different variables such as high technology variables, sustainability variables and foreign trade variables. To understand the main features of the European Air Zone, it can realize also spatial econometric analyses in terms of geography and geography-dependent variables.

Conceptual Map:

ANSP: Air Navigation Service Providers,

GDP: Gross Domestic Products,

CAPEX: Capital expenditures. The expenditures for fixed assets or a company entity.

OPEX: Operational expenditures. The expenditures to sustain business

ROA: Return on Assets. The financial return (earning) per asset.

ROE: Return on Equity. The financial return (earning) per equity.

ROD: Return on Debt. The financial return (earning) per debt.

References

Ball, M., Donohue, G. & Hoffman, K. (2006). Auctions for the safe, efficient, and equitable allocation of airspace system resources. *Combinatorial Auctions*, 1.

Bauranov, A. & Rakas, J. (2021). Designing airspace for urban air mobility: A review of concepts and approaches. *Progress in Aerospace Sciences*, 125, 100726.

Becker, T. (2016). Russia's oil dependence and the EU (No. 38). SITE Working paper.

Berdysheva, S. & Ikonnikova, S. (2021). The energy transition and shifts in fossil fuel use: the study of international energy trade and energy security dynamics. *Energies*, 14(17), 5396.

Bernstein, J., Richter, A. W. & Throckmorton, N. A. (2020). Covid-19: A view from the labor market (April 2020). FRB of Dallas Working Paper No. 2010. http://dx.doi.org/10.24149/wp2010

Bluszcz, A. (2017). European economies in terms of energy dependence. Quality & Quantity, 51, 1531-1548.

Button, K. & Neiva, R. (2013). Single European Sky and the functional airspace blocks: Will they improve economic efficiency?. *Journal of Air Transport Management*, 33, 73-80.

Button, K. & Neiva, R. (2014). Economic efficiency of European air traffic control systems. *Journal of Transport Economics and Policy* (*JTEP*), 48(1), 65-80.

Chen, J., Xie, Q., Shahbaz, M., Song, M. & Wu, Y. (2021). The fossil energy trade relations among BRICS countries. Energy, 217, 119383.

Christie, E. (2007). *Oil and gas dependence of EU-15 countries* (No. 343). wiiw Research Report. https://www.econstor.eu/bitstream/10419/204115/1/wiiw-research-rep-343.pdf, Access time: 19.12.2024.

Gaxiola, C. A. N., Barrado, C., Royo, P. & Pastor, E. (2018). Assessment of the North European free route airspace deployment. *Journal of Air Transport Management*, 73, 113-119.

Ge, F. & Fan, Y. (2013). Quantifying the risk to crude oil imports in China: An improved portfolio approach. *Energy Economics*, 40, 72-80.

Ghosh, S. (2009). Import demand of crude oil and economic growth: Evidence from India. Energy Policy, 37(2), 699-702.

Habibi, Z., Habibi, H. & Mohammadi, M. A. (2022). The potential impact of COVID-19 on the Chinese GDP, trade, and economy. *Economies*, 10(4), 73.

Havrlant, D., Darandary, A. & Muhsen, A. (2021). Early estimates of the impact of the COVID-19 pandemic on GDP: A case study of Saudi Arabia. *Applied Economics*, 53(12), 1317-1325.

Hoekstra, J. M., Maas, J., Tra, M. & Sunil, E. (2016, June). How do layered airspace design parameters affect airspace capacity and safety? *Proceedings of the 7th International Conference on Research in Air Transportation* (1-8). ICRAT Philadelphia, USA.

Jena, P. R., Majhi, R., Kalli, R., Managi, S. & Majhi, B. (2021). Impact of COVID-19 on GDP of major economies: Application of the artificial neural network forecaster. *Economic Analysis and Policy*, 69, 324-339.

Kim, H. S. & Baek, J. (2013). Assessing dynamics of crude oil import demand in Korea. Economic Modelling, 35, 260-263.

Kopardekar, P., Bilimoria, K. & Sridhar, B. (2007, September). Initial concepts for dynamic airspace configuration. 7th AIAA ATIO Conf, 2nd CEIAT Int'l Conf on Innov and Integr in Aero Sciences, 17th LTA Systems Tech Conf; followed by the 2nd TEOS Forum (7763).

Krozel, J., Penny, S., Prete, J. & Mitchell, J. S. (2007). Automated route generation for avoiding deterministic weather in transition airspace. *Journal of Guidance, Control, and Dynamics*, 30(1), 144-153.

Lin, B. & Bai, R. (2021). Oil prices and economic policy uncertainty: Evidence from global, oil importers, and exporters' perspective. *Research in International Business and Finance*, *56*, 101357.

Liu, L. J., Jiang, H. D., Liang, Q. M., Creutzig, F., Liao, H., Yao, Y. F., ... & Wei, Y. M. (2023). Carbon emissions and economic impacts of an EU embargo on Russian fossil fuels. *Nature Climate Change*, *13*(3), 290-296.

Mitchell, J., Polishchuk, V. & Krozel, J. (2006, August). Airspace throughput analysis considering stochastic weather. *AIAA Guidance, Navigation, and Control conference and exhibit* (6770).

Ölçen, O. & Alnıpak, S. (2023). A profitability analysis of air navigation service providers in European Zone: COVID-19 crisis. *Journal of Aviation*, 7(1), 110-122.

Oster, C. V. & Strong, J. F. (2009). Managing the skies-public policy, organization and financing of air traffic management. *Journal of Policy Analysis and Management*, 28(1), 182-185.

Ostroumov, I., Kharchenko, V. & Kuzmenko, N. (2019). An airspace analysis according to area navigation requirements. *Aviation*, 23(2), 36-42.

Pickering, B., Lombardi, F. & Pfenninger, S. (2022). Diversity of options to eliminate fossil fuels and reach carbon neutrality across the entire European energy system. *Joule*, *6*(*6*), 1253-1276.

Raffarin, M. (2004). Congestion in European airspace. Journal of Transport Economics and Policy (JTEP), 38(1), 109-125.

Rapaić, S. & Novaković, M. (2013). Dependence of the EU energy market on Russian oil and gas. *Institute of International Politics and Economics*. http://repozitorijum.diplomacy.bg.ac.rs/328/, Access time: 19.12.2024.

Rezaei Sadr, N., Bahrdo, T. & Taghizadeh, R. (2022). Impacts of Paris Agreement, fossil fuel consumption, and net energy imports on CO2 emissions: a panel data approach for three West European countries. *Clean Technologies and Environmental Policy*, 24(5), 1521-1534.

Salisu, A. A., Adediran, I. A. & Gupta, R. (2022). A note on the COVID-19 shock and real GDP in emerging economies. *Emerging Markets Finance and Trade*, 58(1), 93-101.

Schönsteiner, K., Massier, T. & Hamacher, T. (2016). Sustainable transport by use of alternative marine and aviation fuels—A well-to-tank analysis to assess interactions with Singapore's energy system. *Renewable and Sustainable Energy Reviews*, 65, 853-871.

Skorup, B. (2019). Auctioning airspace. NCJL & Tech., 21, 79.

Sun, M., Gao, C. & Shen, B. (2014). Quantifying China's oil import risks and the impact on the national economy. *Energy Policy*, 67, 605-611.

Sun, X., Liu, C., Chen, X. & Li, J. (2017). Modelling systemic risk of crude oil imports: Case of China's global oil supply chain. *Energy*, 121, 449-465.

Sunil, E., Hoekstra, J., Ellerbroek, J., Bussink, F., Vidosavljevic, A., Delahaye, D. & Aalmoes, R. (2016, June). The influence of traffic structure on airspace capacity. In 7th International Conference on Research in Air Transportation (Vol. 4).

Tatoğlu, F. (2020). Econometrics of panel data (5. Version 2020).

Vieira, L. C., Longo, M. & Mura, M. (2023). From carbon dependence to renewables: The European oil majors' strategies to face climate change. *Business Strategy and the Environment*, 32(4), 1248-1259.

Villard, P. & De La Cámara, J. (2012). 'Case studies on commercialization, privatization and economic oversight of airports and air navigation services providers'–A tool for policy-makers, policy analysts and practitioners. *Journal of Airport Management*, 6(2), 133-140.

Vivoda, V. (2009). Diversification of oil import sources and energy security: a key strategy or an elusive objective?. *Energy Policy*, *37*(11), 4615-4623.

Wang, D., Ding, R., Gong, Y., Wang, R., Wang, J. & Huang, X. (2020). Feasibility of the Northern Sea Route for oil shipping from the economic and environmental perspective and its influence on China's oil imports. *Marine Policy*, 118, 104006.

Wang, W., Fan, L. W. & Zhou, P. (2022). Evolution of global fossil fuel trade dependencies. Energy, 238, 121924.

Wu, G., Liu, L. C. & Wei, Y. M. (2009). Comparison of China's oil import risk: Results based on portfolio theory and a diversification index approach. *Energy Policy*, *37*(9), 3557-3565.

Wu, G., Wei, Y. M., Fan, Y. & Liu, L. C. (2007). An empirical analysis of the risk of crude oil imports in China using an improved portfolio approach. *Energy policy*, 35(8), 4190-4199.

Yahya, M., Dutta, A., Bouri, E., Wadström, C. & Uddin, G. S. (2022). Dependence structure between the international crude oil market and the European markets of biodiesel and rapeseed oil. *Renewable Energy*, 197, 594-605.

Zelinski, S. & Lai, C. F. (2011). Comparing methods for dynamic airspace configuration. 2011 IEEE/AIAA 30th Digital Avionics Systems Conference (3A1-1). IEEE.

Zhang, H. Y., Ji, Q. & Fan, Y. (2013). An evaluation framework for oil import security based on the supply chain with a case study focused on China. *Energy Economics*, *38*, 87-95.

Zhao, X. & Wu, Y. (2007). Determinants of China's energy imports: an empirical analysis. Energy Policy, 35(8), 4235-4246.

Conflict of Interest: None. Funding: None. Ethical Approval: None. Author Contributions: Olcay ÖLÇEN (50%), Serdar ALNIPAK (50%)

Çıkar Çatışması: Yoktur. **Finansal Destek:** Yoktur. **Etik Onay:** Yoktur. **Yazar Katkısı:** Olcay ÖLÇEN (%50), Serdar ALNIPAK (%50)

APPENDIX

ANSP COMPANY	COUNTRY	
Albcontrol	Albania	
ANS CR	Czech	
Fintraffic	Finland	
ARMATS	Armenia	
Austro Control	Austria	
Avinor Flysikring	Norway	
BULATSA	Bulgaria	
Croatia Control	Croatia	
DFS	Germany	
DHMI	Türkiye	
DSNA	France	
EANS	Estonia	
ENAIRE	Spain	
ENAV	Italy	
Hungaro Control	Hungary	
IAA	Ireland	
LFV	Sweden	
LGS	Latvia	
LPS	Slovak republic	
LVNL	Netherlands	
MATS	Malta	
M-NAV	North Macedonia	
MOLDATSA	Moldova	
NATS	United Kingdom	
NAV Portugal	Portugal	
NAVIAIR	Denmark	
Oro Navigacija	Lithuania	
PANSA	Poland	
ROMATSA	Romania	
Sakaeronavigatsia	Georgia	
Skyguide	Switzerland	
Slovenia Control	Slovenia	
SMATSA	Serbia and Montenegro	
UKSATSE	Ukraine	