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The effect of investment incentives for mining sector on the economic growth of Turkey

Introduction

The Mining Contribution Index (MCI) prepared by International Council on Mining & Metals (ICMM 2018) to evaluate the role of mining in national economies can reveal the relative importance of mining in a country's economic life. According to MCI, Turkey is 38th among the countries in the world ranking, but in terms of monetary value of metal and mineral production, its rank is 14 with a value of 2.17 billion USD. In this ranking, the contribution of the mining sector of Turkey to cement, iron and steel and electricity production is not considered. Turkey's total value of mineral exports for 2018 was 3.6 billion USD. Natural stones, zinc, chromium, natural borates and concentrates, feldspar, lead, magnesite, gold-silver and other mineral export constitutes 43.41, 10.35, 7.07, 6.35, 4.75, 4.49, 3.04, 2.90, 17.65% of this export (MTA 2018), respectively.

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Turkey ranks 5th in 2018 with 72.5 million tons of cement production in the world. 7.5 million tons of the cement produced in Turkey were exported and 614.4 million USD of income was obtained in 2018 (TMCB 2019). Turkey has a reserve of 1.30 billion tons of hard coal and 19.3 billion tons of lignite. In 2019, 1,804,663 tons of hard coal used in the iron and steel industry and 88,630,369 tons of lignite used for electricity generation were produced. The percentage of the coal-based thermal power plant in Turkey's annual electricity production is 28.8%, and about 50% of coal used in these plants came from the local lignite production.

Throughout history, communities have been involved in the extraction and processing of minerals and metals in the earth's crust to meet the goods and service requirements. For thousands of years, minerals and metals have retained the distinction of being the vital goods that serve to improve the quality of life of society. The economic and civilization development of societies and states has been dependent on the natural resources used and consumed by people throughout history, and the development of humanity has begun with mining (Dubiński 2013).

In our era, the purpose of mining activities is to supply a wide range of natural resources to humanity for energy, construction, chemistry, pharmaceutical, automotive, electronics and even space exploration (Dubiński 2013). In spite of the green environment and low carbon emission planning observed in the world in recent years, rapid population growth and the desire to increase urban, social and economic development has continued to contribute to the increase in demand for minerals and metals. However, meeting this demand and achieving the benefits sought brings cost to people and the environment (ICMM 2014).

In the economic development of today's industrialized countries, the mining activities in previous years have an important place. There are mining activities in the background of industrial development in many cities and regions. Since mining resources provide goods that promote local industrial production, mining also contributes to the creation of 'clusters' of industrial growth (Bond 2002). Eskisehir region of Turkey can be given as an example of this kind of clustering. The presence of industrial raw material deposits in Eskisehir led to the development of brick tile and ceramic industry and today the ceramic cluster has developed strategically in Eskisehir. The development of mining and related sectors triggers the development of national innovation capacity and knowledge production (Bond 2002). For example, research and development activities related to the production of boron end products along with boron production have also intensified.

Although mining has made significant contributions to economic growth in developing countries, slow economic growth becomes inevitable for the countries whose exports are mainly based on mineral products and natural resources in the case of poor management of the mining sector (Bond 2002). Economic growth probably slows down or regresses in these economies as a result of the negligence of more innovative sectors and allocation of revenues to inefficient sectors along with the drop in the natural resource prices.

In the literature, there are studies that investigate the effects of increasing mine production and exports on economic growth. For example, in the study of Fadil et al. (Fadil et al.

2016) investigating the contribution of Malaysian mining sector exports and imports to the Gross Domestic Product (GDP), it was determined that mining and quarrying sectors have significant contributions to economic growth and also mining will contribute to economic growth more if the export of non-metallic minerals is encouraged. However, Bardi (2014) states that even if the production of mineral resources for economic growth is increased rapidly, it may cause a slowdown in economic growth in the future due to the depletion of these resources over time and increase in the costs.

In mining related macroeconomic research, the contribution of the sector to the national economy is generally taken into consideration, and the contribution of mining to economic growth (Gross Domestic Product, GDP) and employment effect are also emphasized (Solomon 2000; Wright and Czelusta 2003; Bogdetsky et al. 2005; Hlavovan 2015). When the mining sector is well managed, these natural resources generally play a vital role in the growth and development of the national economy (Walser 2000). When the historical backgrounds of many of today's developed countries are examined, it can be said that the driving force behind their developments is the mining sector. In the study of Taušová et al. (Taušová et al. 2017) in which the impact of mining was analyzed on the regional socio-economic development in Slovakia, it was determined that there were increases in GDP, average labor wages and employment rate in the regions where mining activities were carried out.

The contribution of mining to the GDP is defined as the total net income generated by the mining sector. Income generated directly by mining includes labor income (wages and salaries), interest and financing costs (payable to lenders), and profits (operational redundancy before tax and depreciation expenses). In addition, mining generates indirect contributions through the value generated by the sector's input providers (e.g., goods and services) (ICMM 2014). Besides, in industrial economies, the overall GDP contribution of other sectors related with mining is also very important. For example, while one unit of income is generated from the economic activity in the mining sector, three or more unit of income is generated from economic activities from related sectors.

Major mining projects generally contribute to the development of infrastructure investments such as road construction, installation of irrigation facilities, laying of electricity lines and port construction (McMahon and Moreira 2014). When other industrial companies invested in mining regions along with the development of the infrastructure, there can be a significant increase in the country's GDP in the long term.

High investments in the mining sector in recent years have created long term increases in production capacity. This increase also enables the majority of the products produced by the mining industry to be exported. In the case of the fact that mining export exceeds import, it also contributes to the growth of GDP (DELOITTE 2013).

To meet the rising global demand in the last fifteen years, countries with mineral and natural resources have significantly increased their mineral search and exploration expenditures to expand their reserves. Although the success rate to find out large mine resources is very low, mining companies, which take into account the future demand trend, still conti-

nue to invest in mining exploration and exploration studies (EYG 2013). However, in many countries with natural resources, the lack of sufficient knowledge and funding for advanced natural resource exploration and the high risk of exploration that is not attractive for foreign investors necessitates the implementation of government incentives for mine and natural resource exploration.

Although it is well known that fixed investments will affect economic growth, De Long and Summers (De Long and Summers 1991), Podrecca and Carmeci (Podrecca and Carmeci 2001) state that the change in fixed investments and economic growth (GDP) can be caused by the interaction between them and can be under the effect of each other.

Although there are some studies on the effect of fixed capital investments on economic growth in the short and long term in Turkey (Teyyare 2018; Şahbaz 2014; Cetin 2012; Bayraktutan and Aslan 2008), the effect of fixed investments based on investment incentives to economic growth is not taken into consideration in these studies. In the study of Teyyare (Teyyare 2018), the impact of fixed capital investments on economic growth between the years of 1963 and 2014 in Turkey is analyzed by using the Least Squares Method for manufacturing, agriculture, health, transport, energy, tourism and other sectors, but, mining sector is included under other sectors group.

In this study, the effect of investment incentives applied to the mining sector in Turkey between the years of 2001 and 2017 on mine production index (MPI) and also indirect effect of these on the growth of gross domestic product (GDP) is investigated by Granger Causality Test and regression analysis.

1. Incentive practices in mining industry

1.1. Incentive practices in the world

Mining is generally considered as a high risk sector. Because, it requires to make investment during exploration stage where the probability of finding mineable mineral resources is low, and also the uncertainties in exploration stage continue to exist in production stage. To promote investments in the high risk mining sector, governments often prefer to offer carefully designed tax incentives. However, if the incentives for the mines are not carefully designed, this wealth cannot be utilized to reduce the poverty of the population as observed in many mineral rich African countries.

Local and foreign investors take into account the suitability of the investment environment with the risks arising from the nature of mining before making investment decisions about search and exploration of mineral resources in a country or region. In the evaluation of investment environment, the subjects such as who owns the mining property, what the license rights are, what rates and how mining taxes are applied, the functioning of the banking system and whether the profits can be taken out of the country, environmental protec-

tion and social responsibilities are taken into consideration by the investors of mining sector (Eggert 2010). Therefore, it is necessary to have incentives in order to improve the investment environment for the high risk mining sector to contribute positively to the development of a country.

The key factor in mining investment decisions in a country or region is the potential of natural resources, but the fiscal and socio-political concerns, including tax rates and the stability of the tax system, are also highly effective (Mitchell 2009). However, the ultimate goal of any government's mining tax system is to provide the greatest possible benefit for the public while promoting investment in the sector (Mitchell 2009). Increasing tax rates will increase government revenues in the short term. However, if the increase is too high, tax revenues and economic growth will be reduced in the long term, because it will discourage companies to invest to the exploration and production of the mineral resources. In cases where the mining sector is not encouraged, companies will avoid new investments or produce high grade ores and shorten the life of the mines and create economic inefficiencies due to higher risk perceptions.

In the countries where almost all mining activities are performed, except for the United States, the ownership rights of the mines belong to the state or public. Generally, states transfer the operation of the mines to real or legal (domestic and/or foreign) persons with the licenses they issue. Those who operate these mineral resources being the property of the public pay taxes applicable to all taxpayers such as corporate tax, income tax and value added tax if they make profit, and also pay the royalty fee at a certain rate of the income they derive from the sale of each unit or the profit they make. The mining rights owned by the principle of national sovereignty on mines and natural resources is an important source of income for the governments of the countries with mineral resources (for both national and local) and contributes to the development of the country and socio-economic change. In the case of very low royalty fee (indirect tax), the people will not benefit from this source. However, in the case of very high mine royalty fee, mining exploration and development investments will decline and tax revenues will decrease in the long term. Therefore, if the royalty fee is at incentive rates or compatible with the risks that the investor is prepared to accept, the mining sector will make significant contributions to the national development (Otto et al. 2006).

1.2. Mining sector incentive system in Turkey

Mineral resources are fully owned by the state in accordance with the constitution law of Turkey. For the benefit of the citizens of Turkey, the right to mine these resources are given to real and legal persons with a mining license issued in accordance with the Mining Law No 3213. Since the mines are operated under the state's control, the Turkish state has the responsibility to spend the income coming from the operation of mines for the development of the country.

Schemes to encourage mining investments in Turkey can be analyzed in two categories:

- ◆ Incentives or supports based on Mining Law,
- ◆ Incentives or supports provided under the Investment Incentive Program.

1.2.1. Incentives or supports based on Mining Law

According to Article 9 of Mining Law No. 3213, mining activities except for the production facilities of ready mixed concrete, asphalt and structural elements of construction can benefit from the incentives determined by the President. According to the related article of the law, 50% of the royalty fee is not taken from the mining companies which provide additional value added by processing the produced ore at their domestic facilities. Also, for the first ten years, no fee or 50% of the it, except forestation fee to be paid according to the Forest law No 6831, is not taken from the companies that produce mid and end products from the ore extracted from the sites licensed as Group IV and take over the sites from the government agencies.

1.2.2. Incentives or supports provided under the Investment Incentive Program

Companies can benefit from implementations of Investment Incentive Program in Turkey for their mining investments by providing the required conditions of the program. Within the scope of this program, there are four main types of incentive implementation given below.

- ◆ General incentive (VAT Exemption and Customs Duty Exemption),
- ◆ Regional incentive (VAT Exemption, Customs Duty Exemption, Tax Reduction, Support for employer's national insurance contribution, Support for Interest rate and Allocation of the Investment location in the provinces divided into 6 regions according to the level of development),
- ◆ Promotion of major priority investments (VAT Exemption, Customs Duty Exemption, Tax Reduction, Support for employer's national insurance contribution and Allocation of the Investment location),
- ◆ Encouragement of strategic investments (VAT Exemption, Customs Duty Exemption, Tax Reduction, Support for employer's national insurance contribution, Support for Interest rate, Allocation of the Investment location and VAT Refund).

In the incentive system applied in Turkey, mining investments for the operation of the mines and energy investments where some ores are used as input material are included in the priority investments, excluding the mines where the extracted ore is classified according to mining law as Group I (sand and gravel, brick and tile clay, cement, clay, marl, pozzolanic rock, rocks used in cement and ceramic industries and rocks not included in other groups). Mining investments, which are within the scope of priority investments, can benefit from the regional supports implemented in the 5th region regardless of whether they are in the 5th region or not, and they are also subject to the regional supports provided if they are located in the 6th region.

2. General outlook of Investment Incentives of Mining Sector

Information about the Investment Incentive Certificates issued each month for all sectors operating in Turkey are published in the notices section of the official gazette. In these Investment Incentive Certificates, there are information about companies, the type of capital of the investment (domestic and foreign), the sector and type of investment, projected support instruments, fixed investment amount and number of persons to be employed.

The number of active and completed incentive certificates issued to the firms operating in the Mining Sector between the years of 2001 and 2017 is obtained from the data provided by Ministry of Industry and Technology (2018) and is shown in Figure 1. As it can be seen from this figure, while the number of firms receiving incentive certificates in 2001 was 64, it was 260 in 2013 and 177 in 2017. Especially, the number of companies receiving incentive certificates in the mining sector increased rapidly between 2008 and 2013. The number of firms receiving incentive certificates between 2001 and 2017 is 2428, 4% of these firms belong to foreign companies and 96% to domestic companies. Within all sectors, 5.7% of the companies receiving incentive certificates are foreign and 94.3% of them are domestic companies. For this reason, it can be said that foreign capital companies are less interested in the mining sector than other sectors.

When the incentive certificates given to the mining sector are examined, it is observed that the incentive certificates are mostly taken for mining production and processing and also that these certificates are for expansion, new investment, modernization and integration investments. Moreover, it is determined that no incentive certificates were issued to mining exploration investments, occupational health and safety and environmental protection investments that have great importance in the development and sustainable production in the mining sector.

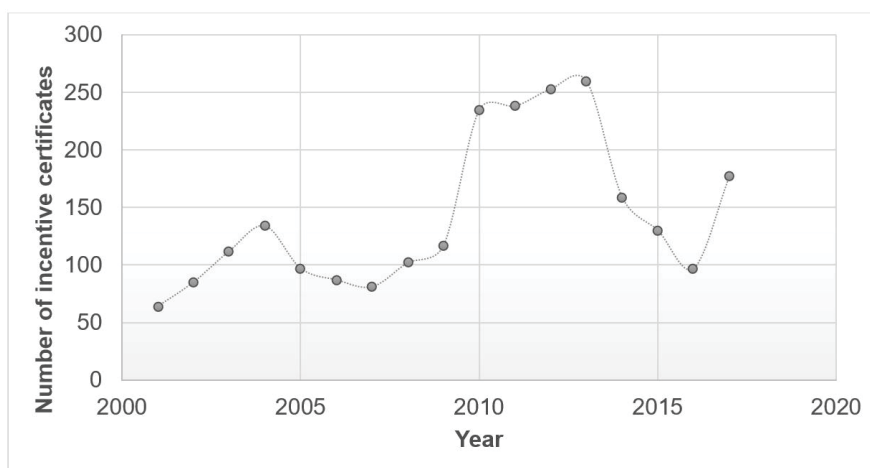


Fig. 1. The number of incentive certificates issued between 2001 and 2017

Rys. 1. Liczba certyfikatów motywacyjnych wydanych w latach 2001–2017

The total fixed investment amount of the mining companies to whom incentive certificates were issued between 2001 and 2017 are given in Figure 2 (Ministry of Industry and Technology 2018).

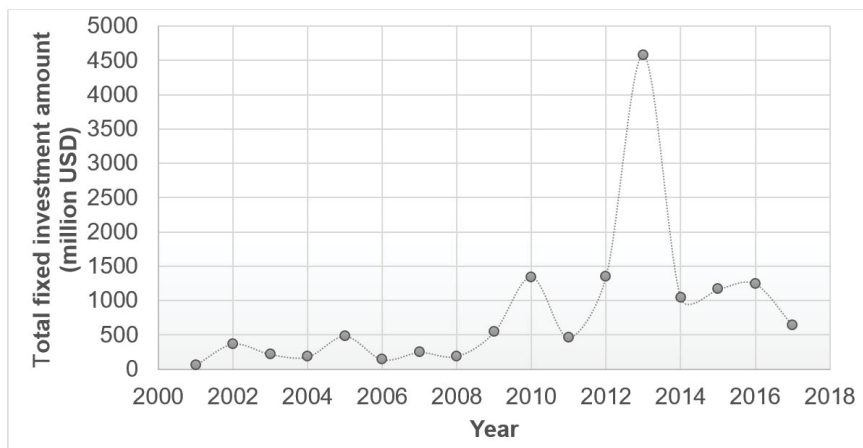


Fig. 2. The total fixed investment amount between 2001 and 2017

Rys. 2. Ustalona całkowita kwota inwestycji TFI (*Total Fixed Investment*) w latach 2001–2017

As shown in Figure 2, while the total fixed investment amount of the firms that received incentive certificates in 2001 was 79,000,000 USD, it was 8,715,000,000 USD in 2013 and 2,346,000,000 USD in 2017. As of 2008, the total fixed investment amount of the companies that received incentive certificates in the mining sector has tendency to increase. The total fixed investment amount of the companies that received incentive certificates between 2001 and 2017 is 28,967,000,000 USD, and 14% and 86% of this amount belong to foreign and the domestic companies, respectively.

Within all sectors, 29.3% and 70.7% of total fixed capital investments belong to foreign and domestic companies, respectively. Therefore, it can be said that foreign capital companies invest less in the mining sector than other sectors. However, between 2001 and 2017, the average fixed investment amount per incentive certificate of foreign companies in the Mining Sector was 40,400,000 USD, while it was 10,700,000 USD for domestic companies. As it can be understood from these figures, the companies with foreign capital receiving incentive certificates in the mining sector make 3.8 times more investment per incentive certificate than the domestic companies make.

3. Effect of investment incentives on the change in Mining Production Index

Industrial Production Index is calculated in order to measure the short-term effects of the developments in the economy and the applied economic policies. The Industry Sector, which is one of the most important sectors in the development of a country, is a component of GDP and is one of the most important driving forces of national income growth and economy. In the Industrial Production Index calculation, Mining and Quarrying, Manufacturing, Electricity, Gas, Steam and Air Conditioning Production and Distribution sectors are taken into account with different weights. Turkish Statistical Institute (TÜİK) publishes Calendar Adjusted Industrial Production Index together with the Mining and Quarrying (Mining) Production Index.

The Mining Production Index (MPI) of Turkey between the years of 2001 and 2017 was as given in Figure 3 (TÜİK 2019a). As it can be seen from Figure 3, while MPI of Turkey was 60.8 in 2001, it increased to 119.7 and 118.1 in 2015 and 2017, respectively (base year 2015 = 100). MPI of Turkey increased about 94.5% from 2001 to 2017.

Granger Causality Test is conducted to determine whether the total fixed investment (TFI) amount of firms receiving incentive certificates in the Mining Sector and MPI were affected by previous period values of each other and whether or not they were the cause of each other for the years between 2001 and 2017. The null and alternative hypothesis are listed as follow:

- ◆ H_0 : there is no causality between variables ($p > 0.01$),
- ◆ H_1 : there is no causality between variables ($p < 0.01$).

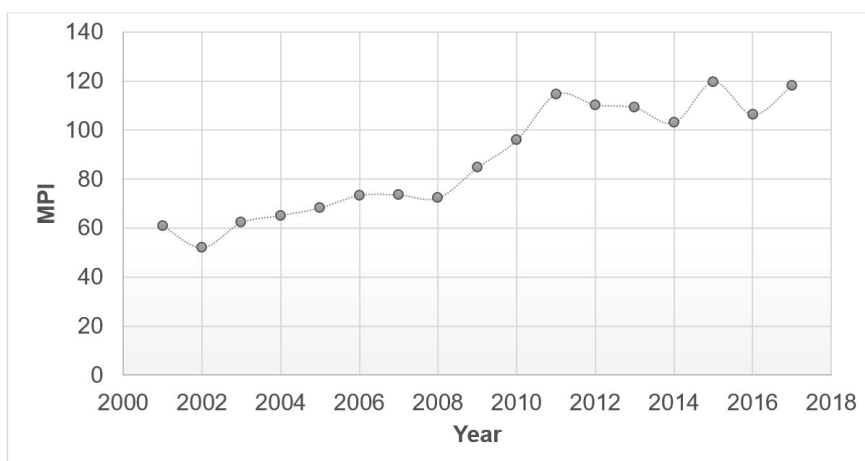


Fig. 3. The change in the MPI of Turkey between 2001 and 2017

Rys. 3. Zmiana wskaźnika produkcji górniczej MPI (*Mining Production Index*) Turcji w latach 2001–2017

The Granger Causality Test was carried out by taking into account the 4 year delay period (previous period value) for TFI, MPI and LnTFI, LnMPI (logarithmically transformed values of TFI and MPI). The test results are given in Table 1.

Table 1. Test results between TFI and MPI for the period of 2001–2017, number of delay = 1

Tabela 1. Wyniki testu między ustaloną całkowitą kwotą inwestycji TFI (*Total Fixed Investment*) i wskaźnikiem produkcji górniczej MPI (*Mining Production Index*) dla okresu 2001–2017, liczba opóźnień = 1

Causality direction	Number of observation	F Statistics	Prob.	Evaluation
LnTFI → LnMPI	16	47.44	0.000	accept H1
LnMPI → LnTFI	16	9.97	0.002	accept H1

According to test results, it can be concluded that both LnTFI and LnMPI were affected by each other because of the rejection H_0 hypothesis at confidence level of 1% for 1 year delay ($t - 1$). However, it is possible to say that the change of LnMPI is caused by LnTFI for a 1 year delay due to larger F statistics value. When the relationship between LnMPI and LnTFI is investigated by using regression analysis, the following relationship has established with a correlation coefficient of 0.811 ($R^2 = 0.658$, $F = 26.98$, $P = 0.000$) and is shown in Figure 4.

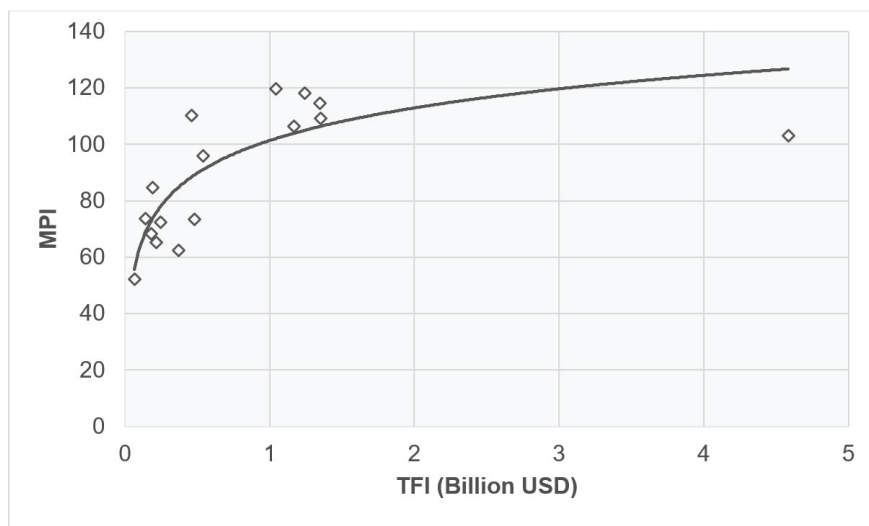


Fig. 4. The relationship between MPI and TFI

Rys. 4. Zależność między wskaźnikiem produkcji górniczej MPI (*Mining Production Index*) a ustaloną całkowitą kwotą inwestycji TFI (*Total Fixed Investment*)

According to the results of Granger Causality Test and regression analysis, if the firms operating in the Mining Sector will make fixed investments by taking incentive certificate, it is possible to say that these investments will cause an increase in the MPI with a probability of 0.658 in a year later.

4. The effect of investment incentive in mining sector on Turkey GDP growth

Gross Domestic Product (GDP) can be defined as the monetary value of total goods and services produced in a country within a certain year after deducting the value of the intermediate goods used for production. The change in GDP is one of the macroeconomic data that clearly demonstrates the growth or shrinkage in the national economy. The method of calculating the GDP, which aims to measure certain economic activities in a country, is an important indicator that gives an idea about the economic size and development of the countries as it is done in the same way in almost all countries of the world.

GDP of Turkey between the years 2001–2017 was as given in Figure 5 (TÜİK 2019b). The values of GDP in this Figure are calculated at current prices by expenditure approach (value, share, percentage change, 1998–2017), and converted to USD according to exchange rate.

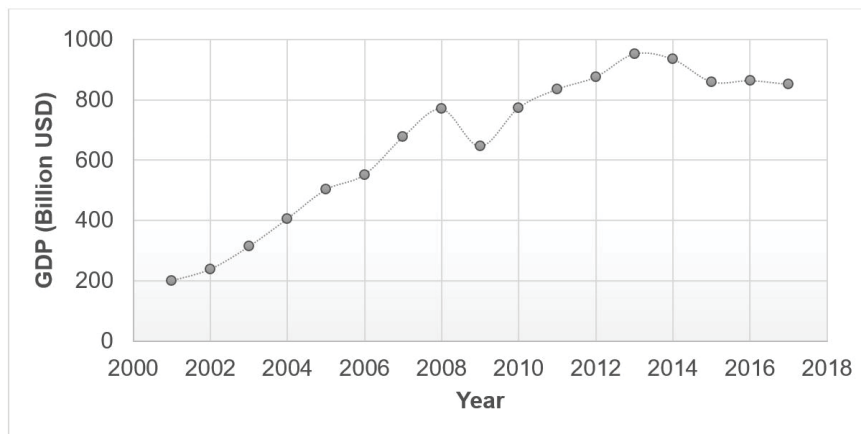


Fig. 5. The change in the GDP of Turkey between 2001 and 2017

Rys. 5. Zmiana Produktu Krajowego Brutto (PKB) Turcji w latach 2001–2017

As it can be seen from Figure 5, while Turkey's GDP was about 200 billion US dollars in 2001, it increased to 952 billion USD and 851 billion USD in 2013 and 2017, respectively. GDP of Turkey increased about 425% from 2001 to 2017.

Granger Causality Test is conducted to determine whether the total fixed investment (TFI) amount of firms receiving incentive certificates in the Mining Sector and GDP were affected by previous period values of each other and whether or not they were the cause of each other for the years between 2001 and 2017. The Granger Causality Test was performed by taking into account the 4 year delay period (previous period value) for TFI, GDP and LnTFI, LnGDP (logarithmically transformed values of TFI and GDP). The test results are given in Table 2.

Table 2. Test results between TFI and GDP for the period of 2001–2017, number of delay = 1

Tabela 2. Wyniki testu między ustaloną całkowitą kwotą inwestycji TFI (*Total Fixed Investment*) a PKB za okres 2001–2017, liczba opóźnień = 1

Causality Direction	Number of observation	F Statistics	Prob.	Evaluation
LnTFI → LnGDP	16	151.49	0.000	accept H1
LnGDP → LnTFI	16	4.35	0.036	accept H0

According to test results, it can be concluded that LnTFI affected LnGDP because of the rejection Ho hypothesis at confidence level of 1% for 1 year delay ($t - 1$), and it is determined that the change of LnGDP is caused by LnTFI for a 1 year delay. When the relationship between LnGDP and LnTFI is investigated by using regression analysis, the following relationship has established with a correlation coefficient of 0.717 ($R^2 = 0.514$, $F = 14.83$, $P = 0.002$) and is shown in Figure 6.

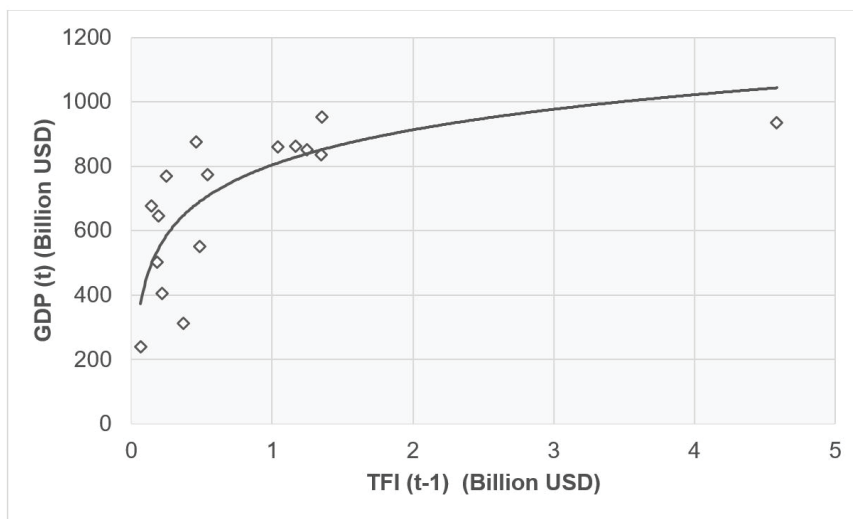


Fig. 6. The relationship between GDP and TFI

Rys. 6. Zależność między Produktem Krajowym Brutto (PKB) a ustaloną całkowitą kwotą inwestycji TFI (*Total Fixed Investment*)

According to the results of Granger Causality Test and regression analysis, if the firms operating in the Mining Sector will make fixed investments by taking incentive certificate, it is possible to say that these investments will cause an increase in the GDP with a probability of 0.511 in a year later.

Conclusions

In many countries aiming at development through mining activities, mining sector is being tried to be encouraged by tax and royalty fee reductions, loan interest supports, employment insurance expense reductions, infrastructure access, export supports, cheap energy and water use, depreciation and depletion supports.

In recent years, due to rapid population growth and urbanization, countries with mineral resources have made significant contributions to the development of their countries by increasing the export of industrial goods with the increase in prices of mineral products. However, in cases where new mining sites are not explored and significant increase in production capacity are not achieved, the contribution of mining to economic growth of the country is decreasing with the decrease in the prices of mineral products resulting from the recession of world economies.

In this study, the effect of investment incentives applied to the mining sector on the mining production and the indirect effect of these on GDP in Turkey was investigated. In the study, the data belonging to the number of investment incentive certificates received by firms operating in Mining Sector and the amount of total fixed investment were used. Investment incentives given to Mining Sector and fixed investments made by firms within the framework of the industrialization and development policies implemented in 2001 and later support the increase of mining production and GDP in a very short period of time like one year.

In this study, it is found that the number of incentives and fixed investments had a significant and positive effect on mining production and GDP. However, the incentives applied to the mining sector did not increase the production index of the mine in parallel with the increase in the GDP. The reason for this is considered to be the fact that the mining sector could not sufficiently benefit from the incentives applied.

When the amount of fixed investments made by foreign owned and domestic firms per certificate of incentives are compared, the amount of fixed investments of foreign owned companies is 3.8 times higher than that of domestic companies. However, the percentage of the foreign owned companies having incentive certificates is around 4%. Therefore, it can be concluded that these companies are reluctant to invest in Turkey mining sector. The reasons for the reluctance of foreign companies and the avoidance of domestic firms to invest large capitals in risky mining sector are considered to be as follows; the exclusion of mining exploration investments from the incentives, frequent increases in royalty fee, easy cancellation of the license rights with the amendments made to the Mining Law and frequently changing sanctions in environmental legislation.

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THE EFFECT OF INVESTMENT INCENTIVES FOR MINING SECTOR ON THE ECONOMIC GROWTH OF TURKEY

Keywords

economic growth, Granger causality test, investment incentives, mine production index

Abstract

The mining sector played an important role in the economic growth of the developed countries with rich natural resources in the past, and in recent years, it is important for the economic growth of developing countries. Also, it is generally supported by the incentives due to the fact that mining sector causes other related sectors to grow. Incentives have been the most important economic policy instrument imposed by governments to boost economic growth in developed and developing countries. Incentives or supports given by Turkish state in order to increase the mining investments can be

analyzed under two categories; incentives or supports based on the Turkish Mining Law, incentives or supports provided under the Investment Incentive Program. The effect of investment incentives applied to the mining sector in Turkey between the years of 2001 and 2017 on mining production index (MPI) and also the indirect effect of these on gross domestic product (GDP) are investigated by using Granger Causality Test and regression analysis. In this study, the data belonging to the number of investment incentive certificates received by firms operating in Mining Sector and the amount of total fixed investment were used. According to the findings obtained from this study, it has been determined that encouraging the fixed investments of the firms operating in the Mining Sector with incentives has a significant and positive impact on MPI and GDP in a short period of 1 year. However, the incentives applied to the mining sector did not increase the production index of the mine in parallel with the increase in the GDP.

WPLYW ZACHĘT INWESTYCYJNYCH DLA SEKTORA WYDOBYWCZEGO NA WZROST GOSPODARCZY TURCJI

Słowa kluczowe

wzrost gospodarczy, test przyczynowości Grangera,
zachęty inwestycyjne, wskaźnik produkcji kopalni

Streszczenie

Sektor wydobywczy odgrywał ważną rolę we wzroście gospodarczym krajów rozwiniętych w przeszłości o bogatych zasobach naturalnych w przeszłości, a w ostatnich latach jest ważny dla wzrostu gospodarczego krajów rozwijających się. Ponadto sektor wydobywczy jest ogólnie wspierany przez zachęty ze względu na fakt, że powoduje rozwój innych powiązanych z nim sektorów. Zachęty były najważniejszym instrumentem polityki gospodarczej narzucanym przez rządy w celu pobudzenia wzrostu gospodarczego w krajach rozwiniętych i rozwijających się. Zachęty lub wsparcie udzielane przez Turcję w celu zwiększenia inwestycji górniczych można analizować w dwóch kategoriach; zachęty lub wsparcie w oparciu o tureckie prawo górnicze (TML – *Turkish Mining Law*) oraz zachęty lub wsparcie zapewniane w ramach Programu Motywacyjnego dla Inwestycji (IIP – *Investment Incentive Program*). Wpływ zachęt inwestycyjnych stosowanych w sektorze wydobywczym w Turcji w latach 2001–2017 na wskaźnik wydobycia górniczego (MPI – *Mining Production Index*) i pośrednio produkt krajowy brutto (PKB) jest badany za pomocą testu przyczynowości Grangera i analizy regresji. W tym badaniu wykorzystano dane należące do liczby certyfikatów zachęty inwestycyjnej otrzymanych przez firmy działające w sektorze wydobywczym oraz ustalonej całkowitej kwoty inwestycji (TFI – *Total Fixed Investment*). W wyniku ustaleń uzyskanych w ramach tego badania uznano, że zachęcanie firm działających w sektorze wydobywczym do ustalonych inwestycji za pomocą zachęt ma znaczący i pozytywny wpływ na MPI i PKB w krótkim okresie 1 roku. Jednak zachęty zastosowane w sektorze wydobywczym nie podniosły wskaźnika wydobycia górniczego MPI równoległe ze wzrostem PKB.