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The Export Potential of Kosovo's Natural Resources and their Impact on the Kosovo Economy

Arif Hoti

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Submitted to A.U.K. as part of requirement for graduation

The Export Potential of Kosovo's Natural Resources and Their
Possible Impact on the Kosovar Economy

An Honors Society Project

Presented to

The Academic Faculty

By

Arif Hoti

In Partial Fulfillment

of the Requirements for Membership in the
Honors Society of the American University in Kosovo

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1. Methodology

This paper has been composed by collecting and interpreting mostly secondary research data. Since there was enough material that could be found online, there was no vital need of conducting extensive primary research. Fortunately, most of the relevant Kosovar ministries and agencies provide enough important and related information about Kosovo's natural resources and mining in general.

Nonetheless, in order to support and verify the findings of this research paper, I also conducted an interview with the Kosovar deputy minister of Environment and Spatial Planning. The interview was conducted in a semi-structured way and the deputy minister's responses basically confirmed the validity of the findings I had come to.

Since this paper is about natural resources and their economic potential, it was essential to find the significance of the respective endowments and their economic values. In case that there were no explicit figures stating the economic value of a resource, I simply multiplied the quantity of the entire endowments of that resource with a recent market price for that particular resource. In addition to simply finding and estimating the market value of important resources, I also attempted to find information about relevant demand factors and trends about each resource. In other words, the focus was not merely on Kosovo's ability to supply and export a resource; the focus was also on Kosovo's ability to find prospective buyers for its resources.

These resulting estimates were then used to analyze their probable impact on certain economic variables such as the unemployment rate, tax revenues, or social transfers. At this point, it has to be noted that the Computable General Equilibrium Model (CGE Model) was of essential importance. The calculations that were done in order to estimate the effects of more natural resource exports were based on the CGE Model. In addition to that, I also attempted to assess the impact of export revenues on qualitative factors such as investment climate or level of informality, for instance. After reading this paper, readers should have a better picture of the mineral and mining sector in Kosovo, its export and economic potential, and the benefits the Kosovar economy might derive from utilizing that potential.

2. Introduction

Kosovo is a young country with many acute problems from a political, economic, and social perspective. Its economy represents one of its many current struggles. Kosovo's unemployment rate is extremely high ("Assessment of the Employment Strategy: the need for a concrete strategy," 2013) and its trade deficit is enormous ("External Trade Statistics 2011," 2012). Accordingly, most of the money in Kosovo leaves the country for imported goods from other countries. Therefore, the country's economy is unable to benefit from the multiplier effect and thus loses the opportunity of creating new jobs within the country's borders. Consequently, if the country shall make faster economic progress, then Kosovo must find a way to keep the money within its borders. By doing so, Kosovo's economy will be able to benefit from the aforementioned multiplier effect and thus support the creation and development of domestic industries, which in turn will increase employment. However, how can Kosovo increase its exports and as a result of that improve its current tremendous trade deficit? After a thorough review of material regarding Kosovo's economic sectors that may have a significant export and growth potential, it is worthwhile to note that the following three sectors have been mentioned repeatedly: natural resources (minerals and metals), land, and labor (USAID, 2013). However, continuous research suggests that out of these three vital sectors, it is Kosovo's natural resources like coal and lead-zinc which appear to be the most promising sectors for exports. Therefore, this paper will search for the economic potential of Kosovo's natural resource sectors and attempt to estimate their potential in monetary terms as well. As mentioned before, in addition to assessing the monetary value of the resources, this paper will also aim to analyze the export prospects of the particular endowments by actively searching for demand factors in countries and industries that might become important purchasers of such industrial goods.

a) Background Information

In order to have a clearer view of Kosovo's export potential, a more detailed look at Kosovo's trade statistics for the year 2011 is presented. According to the Kosovo Agency of Statistics, Kosovo had a trade deficit of €2,173.1 million in 2011 only. This deficit was the result of €319.1 million worth of exports and €2,492.3 million worth of imports. In comparative terms, Kosovo's exports covered only 12.8% of its imports for the year 2011. In other words, for every euro worth of goods and services Kosovo exported in 2011, it imported €7.81 worth of goods and services.

Alternatively, every of Kosovo's approximately 2 million citizens spent €1,246.15 on imported goods in 2011, as compared to Kosovar businesses that exported only €159.55 worth of goods per capita. These figures seem even more remarkable when one considers the fact that the average wage in Kosovo's public sector is only €368 (Krasniqi-Veseli, 2012a).

Another problem arises due to the fact that approximately 70% of the government's budget depends on the income from customs ("Të ardhurat nga dogana, tregues pasigurie ekonomike," 2013). Even though this means that imports also bring a lot of income to the government, one has to consider that such a form of financing is not sustainable in the long run. Bearing in mind that Kosovo aspires for EU integration and has a positive approach towards free trade, one can deduce that improving the trade deficit by increasing exports is a crucial component of sustainable growth. In order for Kosovo to be prepared to lose all those revenues from the borders as a consequence of EU integration, it has to find other ways of creating revenues. Therefore, Kosovo has to find its comparative advantage in order to become an exporting country. The following section will highlight why it will be natural resources which are more likely than any other sector to significantly increase the country's exports and thus bring economic and social prosperity to the Kosovar society.

b) Composition of Kosovo's Exports

In order to emphasize the export potential of natural resources, this section will analyze the composition of Kosovo's recent exports. According to the statistics provided by the Kosovo Statistics Agency for the year 2011 (p. 11), Kosovo exported mostly manufactured goods classified chiefly by material (52.9%); crude materials, inedible, except fuels 25.4%; food and live animals (5.5%); mineral fuels, lubricants and related materials (5.1%); machinery and transport equipment (5.1%); beverages and tobacco (2.5%); miscellaneous manufactured articles (2.2%); and chemicals and related products, not specified somewhere else (1.3%). As one can deduce from the figures, three fourth of Kosovo's exports for the year 2011 were just manufactured goods classified chiefly by material and crude materials, inedible, except fuels. In other words, 78.3% of Kosovo's exports in 2011 were goods which are classified mainly by material (not labor) and crude (not processed) materials.

This means that it is not the labor and craftsmanship of Kosovar citizens that is so demanded by the importing countries but mainly the materials as such – preferably raw and unprocessed. These statistics basically give the first hints where Kosovo’s real export and growth potential might lie. Consequently, one can conclude that Kosovo’s natural resources are in such high demand as compared to other goods and services that it might even become a problem due to the lack of diversification (Economic Initiative for Kosovo [ECIKS], 2013). A lack of diversification is undesirable because that will make Kosovo more vulnerable to price shocks in the market and other unexpected market or even political influences. Nevertheless, the figures emphasize that Kosovo can make economic progress if it focuses its efforts on the production and export of natural resources. In support of this claim, it has to be noted that approximately half of Kosovo’s exports are realized by one single mining company, *NewCo Ferronikeli*, or simply *Ferronikeli* (World Bank, 2010). Table 1 will highlight once more how significant the share of raw materials appears to be in the export side of Kosovo’s trading account (Ministry of Trade and Industry, 2014).

Table 1 – Structure of the most exported products, January – September 2012

Designation	2011	2012	Difference in %	Share in the total exp. % 2012
Ferro-alloys:	108,569,284	63,359,495	-41.6	31.4
Ferrous waste and scrap; remelting scrap ingots of iron or steel:	20,026,215	17,639,854	-11.9	8.7
Lead ores and concentrate	10,105,476	11,164,171	10.5	5.5
Copper waste and scrap	11,648,123	8,991,461	-22.8	4.5
Electricity	15,284,692	8,324,415	-45.5	4.1
Raw hides and skins of bovine (including buffalo) or equine animals (fresh, or salted, dried, limed, pickled or otherwise pre- served)	7,526,657	7,829,624	4.0	3.9

In other words, Table 1 summarizes the apparent demand for Kosovo’s natural resources and, more importantly, Kosovo’s ability to meet that demand at least partially. Even though there has been an apparent decline in quantity demanded from 2011 to 2012, the figures indicate that natural resources seem to have considerable export potential. Consequently, if the government of

Kosovo desires immediate and significant economic development, this is the sector where investments should be focused. Since the mineral and mining sector seems to already have a solid consumer base abroad, it can reasonably be argued that investing in other sectors would take longer to provide comparable results.

3. Kosovo's Mining and Mineral Potential

Apparently, minerals and mining seem to have a huge export and economic potential which might ease Kosovo's development in the near and distant future. Interestingly, it is assumed that even the Romans extracted minerals in different places in Kosovo more than 2000 years ago (Féraud, Maliqi, & Meha, 2007; ECIKS, 2013, Independent Commission for Mines and Minerals [ICMM], 2014). Modern base-metal mining, on the other hand, began during the fourth decade of the last century (ECIKS, 2014). It is for this reason that the Ministry of Economic Development states in the Mining Strategy of the Republic of Kosovo for the years 2012 to 2025,

The Republic of Kosovo is rich in natural mining resources, among which energy and colored metal resources represent the most significant potential for overall development. In this aspect, it is worth to explicitly make note of lignite, lead, zinc, silver and gold, silicate mines of nickel and cobalt, iron – nickel, bauxite, manganese, and a considerable number of non-metallic minerals, industrial and construction geological materials. Rational and well-managed use of these resources can provide for a prompt and sustainable economic and social development of Kosovo (2012, p. 10).

Moreover, the list of natural resources that are available in Kosovo seems to be neverending. Zinc, lead, silver, nickel, iron, bauxite, chrome, cobalt, magnesium, gold, copper, cadmium, bismuth, and industrial minerals are only the main minerals that can be found in the soil of Kosovo (ECIKS, 2013; Ministry of Economic Development, 2012).

Kosovo's natural resource endowments are of such importance that they have been many times at the heart of ongoing political disputes between Kosovo and Serbia (Hedges, 1998). Before liberation from Serbia, the Albanian population in Kosovo even used to say "Trepça is producing. Belgrade is building." (Gecaj, 2014). However, in contrast to prewar times, as of

2012, only four mines were operating “with limited capacity” (Ministry of Economic Development, 2012). Accordingly, the current problem with Kosovo’s natural resources and the mines is the fact that Kosovo’s mineral industry needs to reach its prewar level of production. For these reasons, in order to determine the growth and export potential of the mining sector, one has to simply analyze Kosovo’s recent past. According to USAID,

The Trepça mining complex operated at one-fifth of capacity in 2012. Sharrcem cement factory produced 535,000 tons of cement in 2012 out of an overall capacity of 835,000 tons. The Newco Ferronikeli Complex currently only runs one of two kilns, limiting its potential production. The trend of deindustrialization marks a fall in the share of industry in the total economy from 47% in 1988 to only 21% in 1994 (2013, p. 11).

The mineral and mining sector also employed a vast number of people, as compared to postwar years, especially Trepça, which even played a crucial industrial role during Yugoslav times. “It is widely known that in 1989, Trepça mines employed some 7 thousand employees, whereas the entire Corporation employed over 22,000 employees” (Ministry of Economic Development, 2012). This finding is also supported by another source that states that at the end of the 1980s, when Yugoslavia’s end was near, the four Trepça mines alone employed 23,000 employees (Hedges, 1998). In other words, Trepça has the potential to employ approximately 1% of Kosovo’s entire population. Regarding Trepça’s number of employees, the ministry also adds in its strategy that 2,500 of the former miners are presently employed and another 2,500 do live on social schemes, thus negatively affecting the budget of the Republic of Kosovo. To sum up, the number of people that lived from jobs related to natural resources before 1999 was quite significant.

Added together, according to Shyqri Kelmendi (as cited in USAID, 2013), “In terms of economic impact, Kosovo’s annual exports from mineral industry could reach 300-500 million (\$420-700 million), with the mining industry creating over 7,000 direct jobs and another 14,000-21,000 indirect ones, which is comparable to the former number of Trepça employees mentioned above. Taking into consideration that Kosovo’s yearly exports reach approximately only 200 million euro, one can deduce that Kosovo’s true export potential is not even closely utilized at the moment. In other words, Kosovo might increase its exports by as much as 150% only by

utilizing its natural resources. Kelmendi's estimate about new jobs is also supported by the Deputy Minister of Environment and Spatial Planning, Ferat Shala, who has been CEO of Trepça before entering the government. He declared in an interview conducted exclusively for this study that, hypothetically speaking, for every new mining position, three to four other jobs might be created indirectly. So if the mineral industry alone can export up to two times the current amount of exports and probably employ approximately 20,000 people, then the entire Kosovar economy has to have a much larger potential in total.

Furthermore, according to ECIKS, "Some rather conservative valuations of the proven natural resources of Kosovo estimate their value between EUR 13.5bn and 25bn" (2013). Once more, taking into account the evidence that Kosovo exports every year approximately €200 million worth of goods, one can follow that these "rather conservative valuations," too, imply that Kosovo is not utilizing an export potential which is roughly hundred times as large as the current level of yearly exports. In order to find out how significant the potential of the aforementioned endowments really is, the following sections will provide data on each relevant natural resource sector that suggests significant export potential, especially lignite, lead and zinc, and ferronickel.

In fact, after extensively reviewing literature about Kosovo's economic potential, it becomes clear that there is no short-term alternative for the Kosovar economy but the mineral and mining sector. It has to be noted that according to deputy minister Shala, there are three resources in particular that might bring economic development to Kosovo: Lignite, lead and zinc, which are found jointly, and ferronickel (2014). To sum up, many dependable sources emphasize the economic potential of Kosovo's natural resources. There simply seems to be no growth option that excludes natural resources at all.

a) Coal (Lignite)

Coal is apparently the quantitatively most significant resource Kosovo can produce and export. It is remarkable to note that even though it is a relatively small country, Kosovo has with approximately 14,700 million tons, the fifth largest lignite reserves of the entire planet (Ministry of Foreign Affairs, 2014; ECIKS, 2013; Kosovo's Coal, 2012; Shank, 2013). Figure 1 will

graphically showcase Kosovo’s coal reserves as compared to the reserves of other important coal producers (Economic Initiative for Kosovo, 2014).

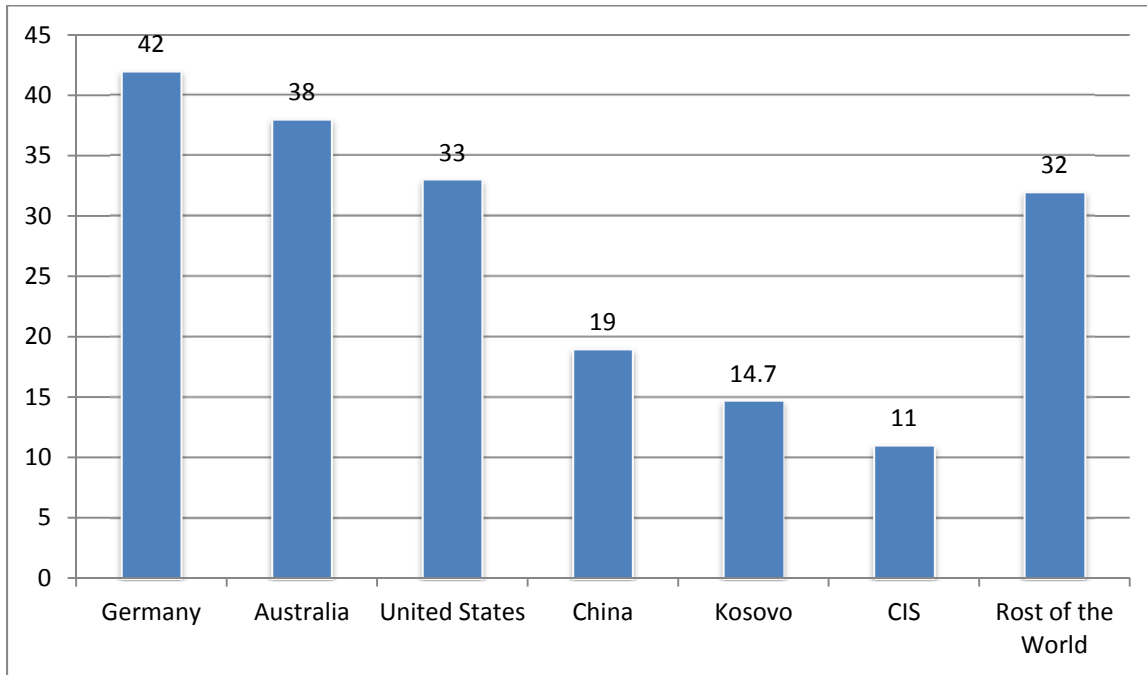


Figure 1 - Kosovo Lignite Reserves Compared to the World (in billions)

Since coal is an important energy mineral, Kosovo might become a very important supplier of coal itself or of electrical power generated by its sufficient coal resources. In alignment with this assumption, according to ECIKS, it is supposed that Kosovo’s “fairly easily accessible” lignite reserves suffice to produce electricity for at least another 200 years (2013). *The Guardian* goes even further and claims that consumption might continue for another 1,500 years at the current pace (Salem, 2013). According to experts cited in the renowned German newspaper *Die Welt*, Kosovo has so much coal that it could supply the entire region with power (Beutelsbacher, 2014). They argue that Kosovo simply needs to exploit more of it. Oxford professor James Pettifer goes even further and claims that “Kosovo could become within one generation the energy supplier for entire South-East Europe” (my translation, cited in Beutelsbacher, 2014). However, he also adds that it will take time for Kosovo to benefit from its coal reserves. In addition to that, he also claims that the Kosovar government has to make “gigantic” investments in that particular sector.

Apparently impressed by the abundance of Kosovo's coal endowments, *Die Welt* adds that Kosovo is so rich in coal that coal beds seem to cross the small country like veins a human body. Mining engineer Rainer Hengstmann assumes that 35,000 jobs could be created in the country's energy sector only, which is approximately 2% of Kosovo's entire population (Beutelsbacher, 2014). This estimate even exceeds by far the estimate made by mining professor Shyqri Kelmendi about the mining sector in particular.

However, in order to have a clearer portrait of Kosovo's coal endowments, a comparison between Kosovo's coal reserves and the annual US coal exports during the last years will be done. Based on the fact that the United States had been exporting more than 100 million tons of coal for the third consecutive year in 2012, one can conclude that Kosovo could export lignite for approximately 147 years at the US pace (Shank, 2013). According to a World Bank report from the year 2010, which also assesses Kosovo's lignite reserves to be larger than 10 billion tons, Kosovo's lignite reserves might enable the creation of a lignite sector which in turn might support exports and consequently benefit Kosovo's economic wellbeing. The World Bank further elaborates on the economic potential of the lignite with the following words,

Even though urban sprawl and other land uses have blocked exploitation, a significant part of these resources, the accessible quantities, could provide electricity generation for decades. Developing the lignite sector would stimulate employment and its accompanying economic activity, as well as possibly export (if the capacity of the new power plant is higher than the domestic demand)(2010).

In other words, if Kosovo wants to solve its economic problems such as the huge trade deficit in a relatively short period of time, it cannot afford avoiding the potential of its coal reserves, whether as a means for producing electricity or as mere coal.

Even though the environmental consequences of using coal are not desirable at all, especially when considering the state of technology of the current power plants in Kosovo, one cannot deny the possible economic benefits that the coal reserves may provide in a short term future. In alignment with this claim, based on the fact that Kosovo produces 97% of its electricity by combusting lignite (Independent Commission for Mines and Minerals [ICMM], 2014), it is very

unlikely that Kosovo will be able to acquire independence from the coal sector in the short term. The reserves are simply too large to be disregarded by any scenario that has in mind economic growth for Kosovo. In addition to that, having in mind Kosovo's small surface of only 10,908 km², one has to come automatically to the finding that, from an economic point of view, coal resources represent an indispensable pillar of growth for the relatively small Kosovar economy. Table 2 will summarize some of the most important figures related to Kosovo's coal potential. This exclusively for this resource customized table will be used in the analysis at the end of the paper.¹ The analysis will use the figures provided by similar tables in order to assess the combined effects of an improvement or revitalization of certain natural resource sectors on the Kosovar economy.

Table 2 – Important Figures about Kosovo's Coal Sector

Capacity per year	Price per ton	Costs for extraction per ton	Former number of employees	Expert employment estimates	Most recent number of employees
17,000,000 tons ²	\$19.38 ²	€7.8 - €11 ²	5,600 ²	35,000 ³	3,600 ²

Furthermore, it is worthwhile to note that, according to the *Guardian*, the total value of Kosovo's coal, might even be as high as \$1 trillion (Salem, 2013, par. 5). However, this estimate will not be used for the analysis at the end because it simply appears too optimistic.

i. Demand Factors for Coal

In addition to all aforementioned encouraging findings, the International Energy Agency considers that global demand for lignite will increase up to 5.4% by the year 2020 (Bauerova & Nicola, 2014). Even though the EU is increasingly concerned about the environmental consequences of burning coal, it seems that at least in the near future it will be unavoidable to rely on the cheap electricity that comes from burning coal. In agreement with this idea, Bauerova

¹ It has to be noted that the tables are not necessarily consistent in appearance because of the availability of information for each resource.

² Mining Strategy of the Republic of Kosovo 2012 - 2025

³ (Beutelsbacher, 2014)

and Nicola argue, “Alarmed that energy prices in Europe are about double what they are in the U.S., governments in the Czech Republic, Poland, and Germany are green-lighting the expansion of mines that produce lignite, a moist, brown coal used to fuel power plants” (2014, par. 2). In other words, it will not be that easy for Europe to simply give up on coal. Therefore, in order to enhance the value of the above statements, Figure 2 will visualize how important coal will be in the near future (Bauerova & Nicola, 2014):

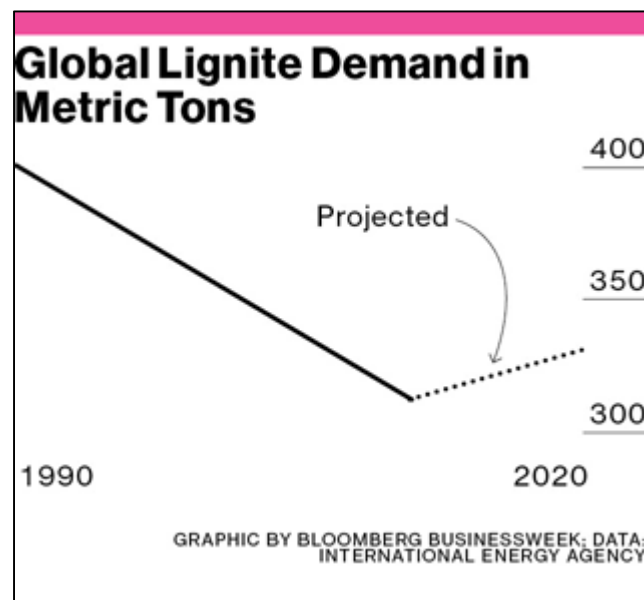


Figure 2 – Global Demand for Lignite in the Near Future

This projected increase in quantity demanded may help Kosovo’s economy to make use of its vast coal resources. Contrary to popular belief that the end of coal combustion is near, Bloomberg BusinessWeek and the accompanying graph suggest that Kosovo might even face a positive shift in demand for its coal. Consequently, there is not only the possibility of supplying coal; there will apparently also be countries which might be willing to demand coal from Kosovo.

ii. Obstacles in the Coal Sector

Despite the large potential in the coal industry, in order to become a coal exporting country, Kosovo has to invest in its ailing technology. The electronic newspaper *BalkanInsight* reports in an article about the inability of the public company KEK (Kosovo Energy Corporation) to supply one of Kosovo’s largest companies – *Ferronikeli* – with brown coal (Xharra, 2009). Even

though *Ferronikeli* reportedly used KEK's lignite before the war, nowadays, due to "organizational problems," the company has to import coal from distant Malaysia and Indonesia (Xharra, 2009). This example demonstrates how urgent the need for investments in this particular sector appears to be. Besiana Xharra also reports that in order to produce enough coal for domestic companies like *Ferronikeli*, new coal mines will have to be opened since the coal mines in Bardh and Mirash are almost depleted.

However, the findings also suggest that a positive consequence of being able to produce so much energy for such a long time might be the political independence Kosovo could gain. Considering the fact that many countries in the world are constantly preoccupied with the safeguard of energy supplies, one has to point out that at least in this aspect, Kosovo can allow itself to focus on other more urgent economic and social problems. In other words, coal and the resulting electricity capacities might benefit Kosovo also from noneconomic viewpoints.

b) Lead and Zinc

Lead and zinc represent two other very important metals that can be found in the Republic of Kosovo. The most important sources for both these metals are the mines that belong to Trepça. In fact, lead and zinc represent Trepça's most important resources (Shala, 2014). In compliance with that, the World Bank declares in a report, "Lead, zinc and magnesium resources are also abundant and restarting these mines could make a valuable contribution to employment and growth." Lead and zinc appear to be so important that the Ministry of Economic Development declares in the Mining Strategy of the Republic of Kosovo 2012-2025 "Valorization of mineral resources/reserves encompasses the placement of Kosovo's mineral resources, especially lignite and Pb-Zn ores, in the center of its economic development" (2012, p. 8).

Before minerals became the responsibility of the Ministry of Economic Development, the Ministry of Energy and Mining even claimed that Trepça's lead, zinc, and silver district would be of world class quality (Nahi, 2010). The Kosovar deputy minister of Environment and Spatial Planning even claims that the lead and zinc reserves which are mainly found in the Trepça mines "have been and still are the catalyst of the Kosovar economy" (my translation, Shala, 2014).

However, the deputy minister also adds that, unfortunately, Trepça is operating at 15% of its real capacity. In other words, many sources of expertise believe that there is a very high potential in

the lead and zinc sector in particular. The following table, as found in the Mining Strategy of the Republic of Kosovo 2012 – 2025, depicts the known zinc and lead reserves of Kosovo.

Table 3 – Important Figures about Kosovo’s Lead and Zinc Sector

Location	Ore (t)	Lead (t)	Zinc (t)	Former number of employees	Most recent number of employees
Stanterg	35,081,000	1,349,579 (3.85%)	1,080,504 (3.85%)	n/a	n/a
Cernac/BB/Gom	7,544,227	516,645 (6.85%)	382,373 (5.07%)	n/a	n/a
Compl. Artane/ÇB	16,037,227	749,354 (4.67%)	1,045,444 (6.52%)	n/a	n/a
Total	58,662,569	2,615,578 (4.46%)	2,508,321 (4.28%)	22,000 ⁴	2,500 ²

As with Table 2, the figures of Table 3 will be used in the analysis to assess the possible impact on some crucial economic indicators of the Kosovar economy. Since lead and zinc appear to be the most important resources of the Trepça mines, the final analysis will simply use relevant Trepça figures to represent the potential of lead and zinc.

i. Obstacles and Problems in the Lead and Zinc Sector

As with most other natural resources elaborated in this paper, the main problem of this sector has been the apparent lack of legislation and the absence of investments since prewar time (Shala, 2014). Shala also claimed that with the new legislation that intends to regulate the mining sector and the establishment of relevant institutions, there have been recent improvements in the mineral and mining sector, which in turn should enable an increase of exports in this particular field. He claimed that the preferred judicial form of Trepça would be the Public Private Partnership (PPP) concept. He also added that it will need approximately €200 million euros in order to bring Trepça to its full potential, which he supposed would need 3-5 years to be achieved. According to the deputy minister, Trepça’s endowments are so substantial that based

⁴ Mining Strategy of the Republic of Kosovo 2012 – 2025 (The entire Trepça Corporation employed 22,000 people)

on the current estimates, the Kosovar economy might enjoy extracting those resources for at least another 40 years.

ii. Demand Factors for Lead and Zinc

The interview with the deputy minister also brought to light that Kosovo is a regional power when it comes to lead and zinc. However, Kosovo has to built up its capacities in order to compete with other regional powers such as Bulgaria, for instance (Shala, 2014). He added that once Kosovo reaches its maximum capacities, it will not have to fear a lack of demand for lead and zinc since countries like China have a significant need for these metals which they cannot fulfill themselves. The deputy minister argued, “The market [for lead and zinc] is guaranteed” (my translation, 2014). Figure 3 will summarize graphically how the price course of lead and zinc might be in the near future (Burns, 2012). Since Kosovo has significant amounts of both those resources, it might be concluded that Kosovo may be one of the countries that might benefit from such positive price movements.

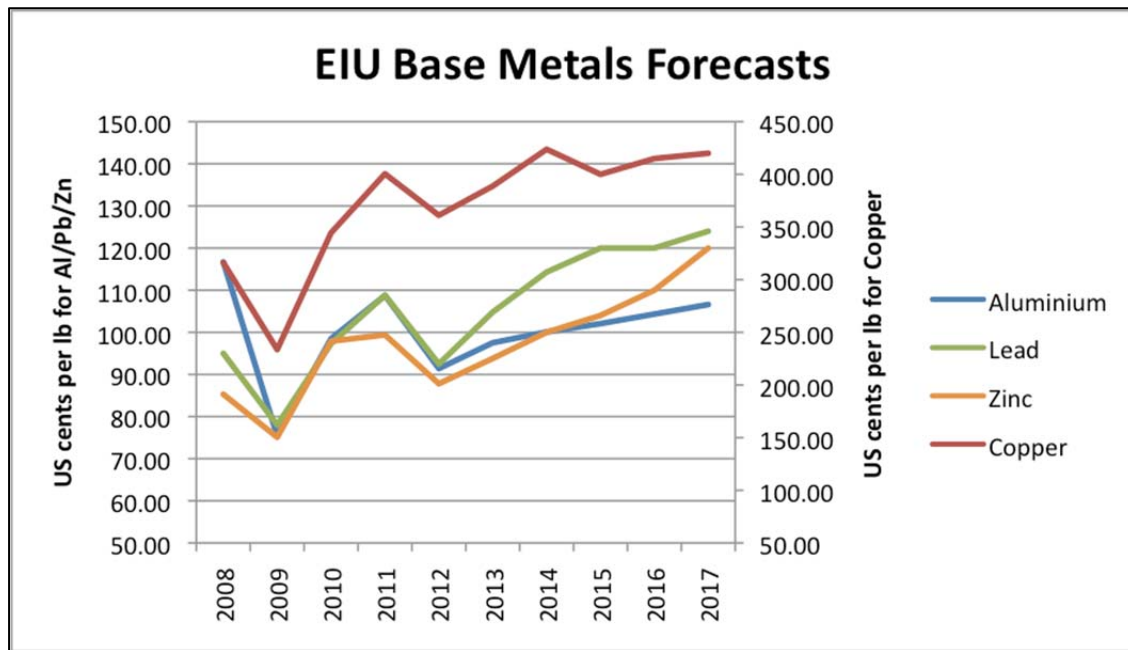


Figure 3 - EIU Base Metals Forecast

c) Ferronickel

Based on the export statistics provided at the beginning of this paper, one could reasonably say that the ferronickel sector is currently one of the most important export sectors in general. Along with *Trepça*, *Ferronikeli* is currently the most significant metal exporter in Kosovo (Krasniqi-Veseli, 2012b). The World Bank reveals in one of its publications, “By 2008, the company employed over 1,000 workers and exported almost €100 million, which accounted for almost half of total exports” (World Bank, 2010). Subsequently, the ferronickel endowments probably exemplify best what might become of Kosovo if it used its natural resources to their full potential. At this point it is interesting to point out the current state of the ferronickel sector, which, according to the World Bank (2010), is “the only sector in which production has been approaching pre-1990 levels.” The World Bank document highlights that the *Ferronikeli ore and mining complex* was actually established in order to produce ferronickel exclusively for export reasons (2010). Based on the facts that this complex produced and exported 6,800 tons nickel per year prior to 1990 and that the current nickel price for one ton of nickel lies at approximately \$14,550, one can follow that Kosovo might be able to reach annual export revenues from nickel which are close to \$100 million. Interestingly, based on the facts that have already been provided, this calculation seems to be quite dependable. So, if one single mining company produces half of Kosovo’s exports, one might be able to grasp the real potential of Kosovo’s natural resource sector once all mines are utilized. Table 4 will present some important data about the ferronickel sector in Kosovo.

Table 4 – Important Figures about Kosovo’s Ferronickel Sector

Capacity per year	Price per ton	Former number of employees	Most recent number of employees
6,800t	\$18,180.00 ⁵	1,944 ²	1,000 ²

⁵ <http://www.lme.com/en-gb/metals/non-ferrous/nickel/>

d) Bauxites

According to the mining strategy, the only bauxite mine in Kosovo produced up to 100,000 tons every year before being closed in the year 1990 (2012). Based on the fact that in 1989 this single mine employed 596 employees, one can come to the conclusion that bauxites, too, seem to represent a noteworthy economic potential. However, in order to utilize these resources and benefit from them economically, Kosovar authorities will have to make sure that the privatization of this mine will finish in an ordinary way. The Ministry of Economic Development (2012) makes clear that privatization is the main obstacle towards a revival in this particular sector. Table 5 will summarize the economic potential of Kosovo's bauxites.

Table 5 – Important Figures about Kosovo's Bauxite Capacities

Capacity per year	Price per ton	Former number of employees	Most recent number of employees
100,000 ² tons	\$56 ⁶	596 ²	none ⁷

e) Gold

Even though Kosovo's gold reserves are not as significant as its lead and zinc reserves, for instance, they still represent an important potential for such a small country. According to the Ministry of Economic Development, gold in Kosovo is usually found in combination with copper, lead, and zinc (2014). Supposedly, gold concentration is high in the mine of Artana, where it is assumed that 2,700 kg of gold can be found in the lead-zinc ores, which have a gold concentration of 0.8 grams per ton.

f) Silver

As compared to gold, silver seems to be more abundant. According to the Mining Strategy of the Republic of Kosovo 2012-2025, the total amount of silver in the Stanterg, Cernac, and Artana mines is 4,447,359 kg (2012). Considering that the current price for silver is approximately €600 per kg⁸, one can calculate that Kosovo's silver alone is more valuable than € billion. It is also

⁶ <http://www.abc.net.au/news/2013-12-19/wa-miners-opened-up-to-new-bauxite-market/5168362>

⁷ According to the Mining Strategy of the Republic of Kosovo 2012 – 2025, this sector is undergoing privatization

⁸ <http://www.hardassetsalliance.com/charts/silver-price/eur/kg>

important to point out that it is not only Kosovo's large endowments of resources which suggest an important economic potential; it is also such relatively less important endowments which might be able to significantly increase Kosovo's exports and the number of jobs within the country.

g) Manganese

According to the Mining Strategy of the Republic of Kosovo 2012 – 2025, manganese is also considered to be one of the most important natural resources in Kosovo. The strategy claims, "The assessed manganese resources in [Artana] source reach 5 million tons of minerals with contents of [Manganese] amounting to 22%." A simple calculation suffices to come to the conclusion that Kosovo has 1.1 million tons of refined manganese.

h) Magnesium

Magnesium in Kosovo can be found in the form of magnesite, also known as magnesium carbonate, in two localities (Independent Commission for Mines and Minerals, 2014). The more important one is the locality in the mountain of Golesh, which is very close to the airport of Pristina. The Ministry of Economic Development states on its website that it is assumed that the magnesium endowments in Golesh are of the most qualitative magnesium endowments in the Balkan Peninsula. The Independent Commission for Mines and Minerals discloses that before the 1990s, the mine in Golesh, "produced 110,000 t of magnesite, 22,000 t of sintered magnesia and 10,000 t of caustic calcined magnesia per annum" (2014). Having in mind that Kosovo has 4.1 billion tons of magnesium endowments (Ministry of Economic Development, 2012) and that the demand for magnesium might increase because of car producers' increasing reliance on lighter metals (Cowden, 2014), one can follow that this sector too has significant export potential which might benefit Kosovo's economy in the coming years. In other words, a higher demand for automobiles will have a positive effect on the demand for magnesium. This finding is also supported by the following passage, "The strength in both the European and UK car markets is good news for magnesium, whose lightness and strength make it ideal for use in automobile manufacturing. Theoretically, more vehicle sales should translate into higher demand for the metal" (Topf, 2014). Such future expectations only add value to the importance of Kosovo's magnesium reserves.

i) Rare Minerals

According to ECIKS (2014) Kosovo also possess endowments with rare minerals such as indium, germanium, thallium, and gallium; however, further explorations are necessary to get a more precise picture of their significance. Nonetheless, the potential economic activities that might emerge as a result of the extraction of these minerals are of a sophisticated nature.

According to ECIKS (2014), such enterprises would include semiconductors, LCDs, infrared optics materials, electronics, and biomedical applications. Assuming that further explorations provide positive results, one can conclude that the aforementioned rare mineral endowments might enable Kosovo to take advantage of the increasing role of technology around the world.

j) Halloysites

It is supposed that Kosovo has a number of other rare minerals as well. Besides the aforementioned minerals that can be used in LCDs and semiconductor, 3 megatons (3 million tons) of a rare mineral called halloysite have been discovered in the municipality of Artana (House, 2005; ICMM, 2014). It has to be emphasized that Kosovo is one of only five countries which have halloysite endowments. For more details, the website of the ICMM reveals, “This is only one of five known exploitable deposits of this very high-value (US\$140-450/t) clay, the other four being in New Zealand, Turkey, China and Utah, US.

Current world production is estimated at 150,000 t/y” (ICMM, 2014). Furthermore, the ICMM also announces that the deposits in Artana are of a high quality. From a practical perspective, according to mindat.org, this mineral can be used for “high-strength cements and high-quality ceramics (“Halloysite,” 2014). Lastly, the global market for halloysites is expected to “rise dramatically” in the near future due to the creation of new applications (West, 2013).

k) Others

It has to be noted that Kosovo might also have significant endowments of copper, chrome, uranium, and platinum (Ministry of Economic Development, 2012). However, additional explorations have to be conducted in order to determine whether noteworthy reserves are present in Kosovo.

1) Summary

Table 6 will summarize the extent of the resource endowments of Kosovo. In addition to mere quantitative information, it also includes the current market price of each of the minerals and metals. The values of the total endowments are the mathematical product of the relevant quantities and their respective unit prices. Since the aim of this paper is to provide results that appear as realistic and reasonable as possible, it has to be noted that in case of two different quantities or prices, the least optimistic value was used for calculation.

Table 6 - Kosovo's Endowments and Their Respective Market Values

Type of resource	Significance of endowment	Nominal market price per unit	Total endowment value
Coal (Lignite)	14,700 million tons ⁹	\$19.38 ^{Error! Bookmark not defined.}	\$284,886,000
Lead	2,615,578 tons ²	\$2,088.00 ¹⁰	\$5,461,326,864
Zinc	2,508,321 tons ²	\$2,109.50 ¹¹	\$5,291,303,150
Gold	2,700 kg ²	\$41,246.19 ¹²	\$111,364,200
Silver	800 tons ¹³ 4,447,359 kg ²	\$607.97/kg ¹⁴	\$2,703,860,851
Bauxites	13.2 million tons ¹⁵	\$56/ton ⁶	\$739,200,000
Nickel	13 million tons ² of ore 170,300 tons of refined nickel (1.31% content)	\$18,180.00 ⁵	\$3,096,054,000
Manganese	1.1 million tons ²	\$2,200.00 ¹⁶	\$2,420,000,000
Magnesium	4.1 billion tons ¹⁷ of ore	\$2,730 - \$2,780 ¹⁸	n/a ¹⁹

⁹ http://www.eciks.org/english/publications/investing_in_kosovo_2010/investorsguide3.html

¹⁰ <https://www.lme.com/en-gb/metals/non-ferrous/lead/>

¹¹ <http://www.lme.com/en-gb/metals/non-ferrous/zinc/>

¹² <http://www.goldpriceoz.com/gold-price-per-kilo/>

¹³ The Influence of Kosovo's Independence on the Stability of the Region (Book)

¹⁴ <http://www.silverpriceoz.com/silver-price-per-kilo/>

¹⁵ http://www.eciks.org/english/publications/investing_in_kosovo/content/iguide_3.html

¹⁶ <http://www.mineralprices.com/>

Chrome	89 million tons ²⁰	\$9,519.82 ²¹	n/a ²²
Halloysites	3,000,000 tons ²³	\$600 (for fracking) - \$3,000 (for medical and cosmetic applications) ²⁴	\$1,800,000,000
Cobalt	6,500 tons ¹³	\$29,550.00 ²⁵	\$192,075,000

Based on table 6, one can conclude that the sum of all the total endowment combined is \$22,100,070,065. It is remarkable to note that this number fits exactly into the aforementioned “rather conservative evaluations” provided by the Economic Initiative for Kosovo (2013). Nevertheless, it has to be mentioned that Table 6 does not include all of Kosovo’s resources. Accordingly, the abovementioned sum is a conservative estimate which certainly has upward potential. The next section will demonstrate why those \$22.1 billion do have even more potential if one considers the concept of value adding.

4. Value Adding

Familiarity with mineral and mining suggests that in order to benefit from its reserves, a country should process its natural resources before exporting them instead of simply exporting them in their raw form. Therefore, Table 6 might be even more valuable. For demonstration purposes, in February 2014, the prices for carbon steel and stainless steel were \$719 and \$2,643, respectively (“Steel rates from around the world,” 2014). In contrast, as of March 2014, the spot price for a ton of iron ore would be only \$110 (Sedgman, 2014). Therefore, in order for Kosovo to make the most of its existing potential, it needs to include value adding into any sound economic development strategy. It has to be noted that the above-mentioned deputy minister also pointed

¹⁷ <http://mzhe.rks-gov.net/?page=2,251>

¹⁸ <http://resourceinvestingnews.com/65221-european-car-market-could-drive-magnesium-growth.html>

¹⁹ Since it needs chemical processes to distill the magnesium from magnesite, no calculations were made.

²⁰ http://www.eciks.org/english/publications/investing_in_kosovo/content/iguide_3.html

²¹ <http://www.metalprices.com/metal/chrome/chrome-chromium-99-20-china>

²² Since there are no guaranteed figures about chrome, no calculations were done for this particular resource.

²³ <http://www.kosovo-mining.org/kosovoweb/en/downloads/publications/basicContentParagraphs/08/document/article.pdf>

²⁴ <http://www.midastletter.com/2013/12/halloysite-prices-explode-growing-application-use/>

²⁵ <https://www.lme.com/en-gb/metals/minor-metals/cobalt/>

out this issue. He claimed that the Kosovar mineral and mining industry needs to reach its former levels of production and also add value to the products, instead of selling them in their raw form, which is the current practice.

It has also to be noted that there is even more potential if one includes other less important resources such as carbon rocks or sand and gravel, for instance. However, in order to remain as concise as possible, this paper focused only on the most important resources. Figure 4 exemplifies the general potential of value adding (Burns, 2012). It demonstrates how much difference there is between mere ore and its final form. Taking into consideration that Kosovo has been exporting mainly raw and unprocessed materials, it is reasonable to conclude that there is even more potential in the mineral and mining sector by simply adding value and processing the resources available in Kosovo. The example with iron ore and steel highlights that there can be an immense increase in revenues if one focuses on processing and adding value to raw materials. For that reason, the entire potential of Kosovo's resources will never be fully utilized without producing the end products within the country's borders. Only by taking the next step in the hierarchy of value adding, will Kosovo be able to maximize utility from its available natural resources.

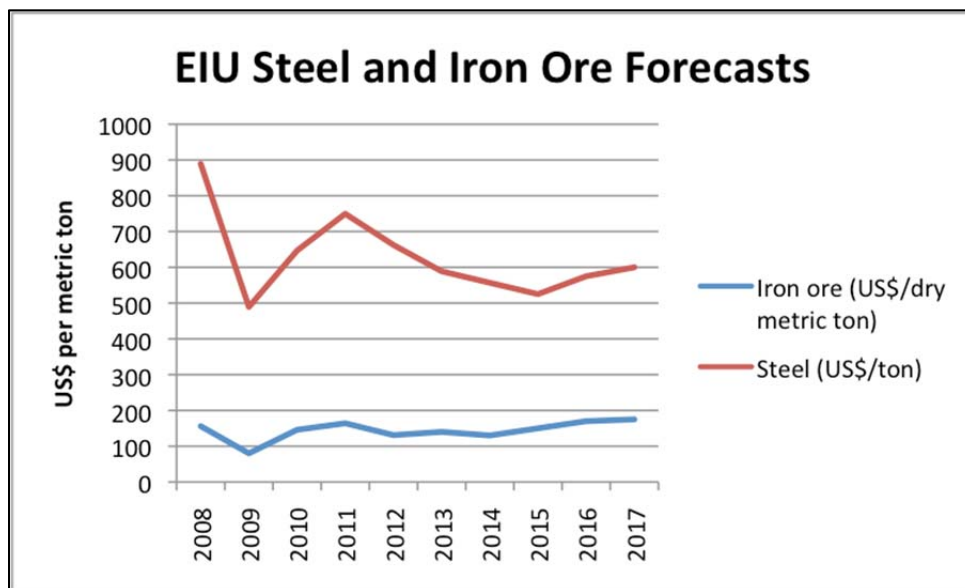


Figure 4 - Illustration of value adding

5. Analysis of Impacts

It has been repeatedly implied that Kosovo may enjoy significant economic benefits from the extraction and exportation of its natural resources. In order to find out how these economic benefits might look like, one should take a look at the CGE model. This model considers the economy as a whole and provides a tool which eases the prediction of the impacts of certain factors on other economic variables (“Understanding a Computable General Equilibrium Model,” 2014).

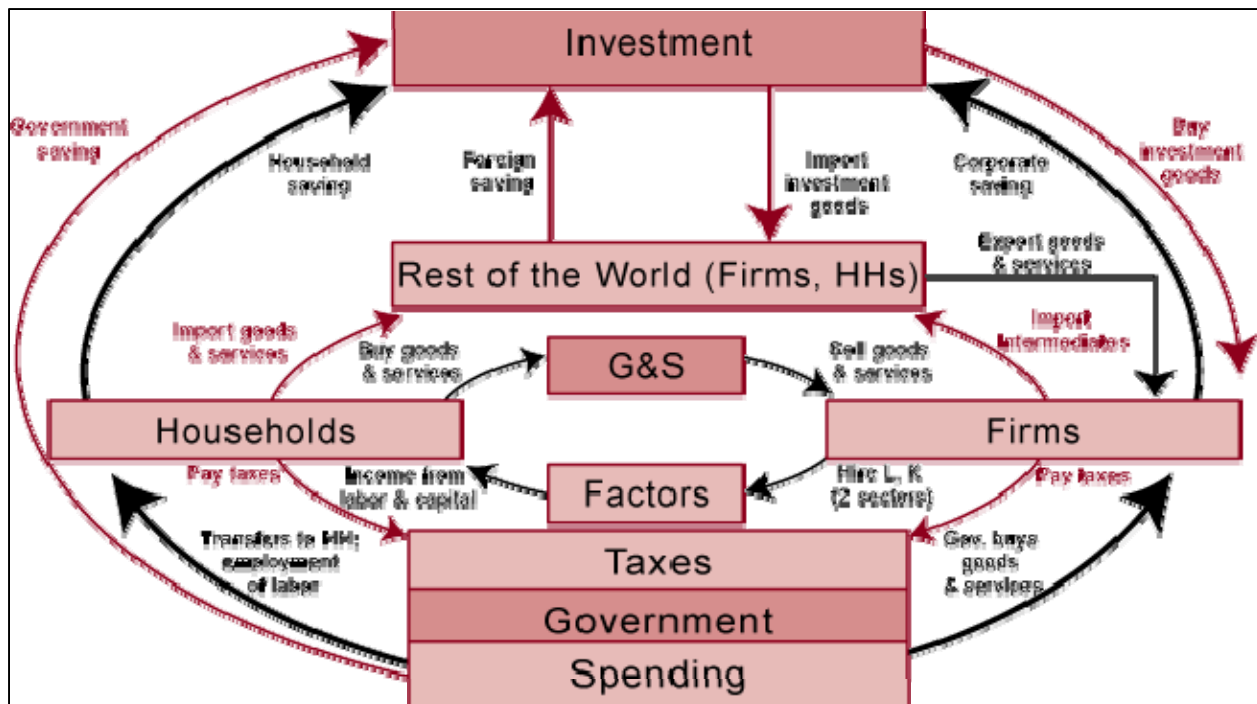


Figure 5 – Graphical Illustration of Computable Equilibrium Model

By considering the CGE model, it should be easier to estimate the economic effects on the economy as a total that arise from a revival of the mineral and mining sector. This model will be used to realize how beneficial exporting mineral and mining products might be towards key economic variables such as unemployment, taxation, and social transfers. However, in order to do specific calculations, it needs certain predetermined assumption. The next subsection will give more details about the assumptions used in this paper.

a) Assumptions

- i. No estimates about secondary jobs that might be created as a result of a revitalization of the mineral and mining sector will be done. Only direct jobs will be considered.
- ii. Only the potential jobs that might arise from the three most important sectors (lignite, lead and zinc, and ferronickel) will be considered for the calculation of total jobs that might be created in the mineral and mining sector.
- iii. The average wage of the prospective jobs will be considered to be €368, which is the average wage in the public sector in Kosovo (ECIKS, 2014).
- iv. The estimates that will be done in order to determine the number of potential jobs will either be based on expert projections or on former employment figures in a particular sector.
- v. The tax rates that will be used to calculate an increase in taxes from job provided by the aforementioned sectors will be in compliance with the current legal tax rates.
- vi. Corporation taxes will be excluded for the sake of simplicity
- vii. Taxes were not included in the income and GDP projections.
- viii. The projections for the increase in GDP assume that all additional income will be spent on domestic goods.
- ix. Marginal propensity to consume is 0.8
Marginal propensity to save is 0.2

b) Effect on Labor and Income

Based on Rainer Hengstmann's assumption that 35,000 jobs could eventually be created in the energy sector (coal) and the facts that *Trepça* once employed 22,000 people (lead and zinc) and *Ferronikeli* 1,944 (ferronickel), it can be deduced that approximately 60,000 jobs might be created in the mineral and mining sector (including the energy sector in this case). Interestingly,

this number is almost as high as the number of public servants that work for Kosovo's public administration, which amounts to 70,000 ("BTI 2012 - Kosovo Country Report," 2012). Having in mind that the public sector is one of Kosovo's most important employers, it might be concluded that Kosovo's minerals and mines may become one of Kosovo's top employers. Assuming that all of these employees would earn €368 per month, it can be followed that Kosovo's citizens would have each month €2,080,000 more to use for consumption and savings. Even though an additional €2 million per month would not make a huge difference in a developed economy, in Kosovo that amount might help increase the GDP, which was \$6,445,201,981 in 2011, considerably.

c) Effects on GDP

In order to find out how significantly the additional income from the mineral and mining sector might affect the GDP, the Keynesian multiplier will be considered.

$$M = \frac{1}{1 - MPC}$$

Based on this formula and the abovementioned assumptions, it follows that those additional wages might have a fivefold effect on the GDP, as compared to their cumulative value.

$$5 \times €264,960,000 = €1,324,800,000$$

This simple calculation would assume that no euro of the additional incomes is spent on foreign goods. However, having in mind the enormous amounts of imports that enter Kosovo every year, it will be unrealistic to achieve such a significant increase in GDP. Nevertheless, it can be argued that income revenues from the mineral and mining sector might increase the GDP of Kosovo significantly; however, this increase is inversely related to the Kosovar consumers' propensity to import.

d) Effects on Tax Revenues

60,000 more employed people would also mean that there are 60,000 more sources of income for the government. Assuming that all of them would earn €368 per month and pay the legally required income taxes for incomes ranging from €3,001 - €5,400, which is "€1.6 + 8% of the

amount over €3,000” (ECIKS, 2014), one can come to the conclusion that the Government of Kosovo might enjoy under the defined assumptions approximately an additional €12 million of increased tax revenues per year. It has also to be noted that these revenues would come from personal income taxes only. In other words, corporate income tax and other taxes are being excluded from this calculation for simplicity reasons. In a country where most of the budget is based on customs revenues, an additional €6 million in tax revenues might significantly improve the Kosovar economy, especially after considering the multiplier effect of money in the economy.

e) Effects on Social Transfers

However, positive effects on the unemployment figures are not the entire benefits. Furthermore, the mere fact that approximately 60,000 more people would have a job also means that it is likely that the government would have to pay less on social spending because people who qualify for the work as miners tend to have a higher likelihood of being in social schemes. Therefore, assuming that 7,000 direct jobs will be created in the mining sector, and that most of these jobs will belong to miners, it might be possible that thousands of Kosovar families could leave the social assistance schemes that are being provided by the government. In 2013, for instance, there were 31,580 Kosovar families living on social assistance (Ballazhi, 2013). Consequently, supposing that prospective wages for miners would suffice for one family to leave social assistance, even 3,000 new jobs for miners might be enough to reduce the number of families on social schemes by as much as 10%.

f) Nonmonetary Benefits

A revitalization of the three aforementioned sectors might also have other important benefits such as improving the political image of Kosovo. It is known that investments in mining require a certain degree of stability and a positive investment climate in general. Consequently, other sectors of the Kosovar economy might benefit as well when foreign investors witness that international companies invest huge amounts into the Kosovar economy.

Lastly, since it should be difficult to operate in the mining sector without authorizations and licenses, it may also be that industries which have a considerable presence of informality would have to enter the formal economy in order to be able to cooperate with the mining industry.

6. Conclusion and Further Insights

Kosovo has undeniably a significant export potential when it comes to natural resources. Lignite, lead, zinc, and ferronickel are only four sources which might aid Kosovo's development in the near and distant future. The best thing about the current situation is that it appears to be in Kosovo's hand to make the best of all these endowments. USAID claims, "Unleashing this potential is within the country's own grasp, because most of the current obstacles are of a policy nature" (2013).

However, as a matter of fact, abundance of natural resources does not guarantee economic prosperity. According to Sachs and Warner (2001), possessing an abundance of natural resources and exporting them in large amounts is statistically more likely to implicate low economic growth rates than high growth rates. Therefore, Kosovo has to find a way to avoid the "curse of natural resources." In order to turn its natural resources into a blessing instead of a curse, Kosovo officials should consider models such as the Norwegian one, which emphasizes financial prudence and only rational amounts of investments (*Avoiding the Oil Curse*, 2013). Furthermore, Kosovo will also need to improve its current infrastructure. *Die Welt* points out that Kosovo will need a functioning railway system that will enable the transportation of its minerals and also implies that more engineers are necessary in order to move economically forward in this sector (par. 18, 2014).

Moreover, ECIKS emphasizes that in order to really enjoy benefits from the huge potential that comes from extracting minerals, Kosovar authorities need to consider these two principles:

1. Efficiency – Using resources sustainably with a minimal impact on the environment
2. Sustainable development – Necessities of the current generation do not endanger the fulfillment of the necessities of new generations

If the Kosovar government takes these suggestions into consideration, Kosovo might be able to prosper as a result of its abundant natural resources. By utilizing the potential of its natural resources in a reasonable and prudent manner, Kosovo might be able to surpass its current state of poverty and become an example of a resource blessing.

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