The relationship between government health expenditure and economic growth: Evidence from western Balkan countries

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Abstract

This paper aims to investigate the effect of government expenditure on health and other relevant factors like health insurance, longevity, average age and death rate on economic growth in Western Balkan countries. Countries with higher levels of government expenditure on health tend to have higher levels of economic growth. Investment in healthcare may result in a greater supply of health incentives which may help human capital and enhance productivity and the economy's performance. This paper uses annual data from 2000-2020 for the following Western Balkan countries: Albania, Bosnia, Herzegovina, Kosovo, Montenegro, Northern Macedonia and Serbia. This region represents a diverse set of countries at different stages of development with varying government expenditures on health. This provides an opportunity to study the impact of health on economic growth in an environment with a lot of "real-world" variation. The data is collected from the World Bank, National Statistical Offices and Eurostat. The dependent variable is economic growth, measured as Gross Domestic Product (GDP) per capita growth. The independent variables are government expenditure on health as a percentage of GDP, health insurance, longevity, the average age of the population, health expenditure per capita and the death rate. In order to measure the impact of individual factors, the study uses econometric models with fixed effects and random effects. The regression analysis results show that government expenditure on health has a positive and significant impact on economic growth in Western Balkans countries.

1. Introduction

A growing economy requires both physical and human capital. As Romer (1990) emphasized, human capital accumulation promotes economic growth. The components of human capital formation include education, health and training. When examining the details of the endogenous growth hypothesis, health and education expenditures are seen as means of increasing human capital which would stimulate internal technological advancement and accelerate economic growth.

Government Expenditure on Health (GEH) as a percentage of GDP indicates how much a government devotes to health from its total resources. It includes all current and capital expenditures on health at all levels of government including primary, secondary and tertiary care as well as public health on (i) the provision of health services (preventive and curative), including spending on public health and environmental protection activities, (ii) medical products, vaccines and medical equipment, (iii) the training and education (GEH) of health personnel, (iv) government subsidies or reimbursements to private entities for healthcare services.

The Western Balkan (WB) is a region in Southeastern Europe that comprises Albania, Bosnia, Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia. Over the course of the past two decades, the region has been subjected to several changes. The most notable are the collapse of Yugoslavia and the war in Kosovo. Despite the challenges, these countries have made significant progress in their economic growth and integration into the European Union having a population of 17.5 million and a GDP per capita of $6,164 (World Bank, 2022c).

According to the findings, low and middle income countries are more affected by GEH's than in high-income countries (Bustamante & Shimoga, 2018; Rhee, 2014). Since low- and middle-income countries have lower levels of health care as a result, they need more enhancement. However, the amount spent on health care should be spent efficiently so that resources are not wasted and to enhance the macroeconomic effects. Medeiros and Schwierz (2015) highlight four main causes of the non-optimal use of resources that are applicable to most European Countries (EU) : inefficient delivery of healthcare services, inefficient provision of health care, corruption and inefficient distribution of preventive and curative care.

While the evidence on the relationship between GEH and economic growth is relatively clear, the mechanisms through which this relationship operates, and the direction of causality are less well understood. The first mechanism is the direct effect of health on labor productivity (Santiago, Joseph, & Tubayan, 2016; Sengupta, 2017). One possibility is that good health allows workers to be more productive and thus earn higher incomes. This ultimately results in higher economic growth. Another possibility is that GEH promotes economic growth by providing insurance against health risks (Ihori, Kato, Kawade, & Bessho, 2011; Plianbangchang, 2018; Welfens, 2020; Zhao, Jia, & Chen, 2020; Zheng, 2019). This is because people ensured against health risks can invest more in productive activities, such as education and training without worrying about the costs of potential illnesses. A second mechanism is the indirect effect of health on human capital formation due to better nutrition and health care (Gumbau, 2021; Kotschy, 2021; Sokolskaya et al., 2019). Third, GEH may lead to economies of scale in producing health care goods and services. Fourth, GEH may improve the allocation of resources across sectors, leading to higher productivity in the economy as a whole (Aladejare 2022; Althawaini, Elmulthum, & Morsi, 2022; Behera & Dash, 2019; Jakovljevic, 2013). Finally, good health can also lead to increased savings and investment. Healthy individuals are less likely to need to spend their income on medical care and are more likely to be able to save for retirement or other investments (Fioroni, 2010; Wang, Wang, & Ma, 2019).

Establishing the direction of causality is likely to be complex and multi-directional (Boussalem, Boussalem, & Taiba, 2014; Rana, Alam, & Gow, 2020). Some studies suggest that economic growth causes GEH while others find evidence for the opposite. For example, higher levels of GEH may lead to higher levels of economic growth. However, it is also possible that higher levels of economic growth may lead to higher levels of GEH. This is because countries with better health outcomes may also have other characteristics that promote economic growth, such as higher levels of education or more effective institutions.

Several studies have used instrumental variable (IV) techniques to estimate the direction of causality. Instrumental variable estimation aim is to find a variable that affects health but not economic growth (or vice versa) and use it to "instrument" health in the growth equation. One of the most commonly used IVs is climate which has a direct impact on health but is unlikely to affect economic growth directly. Another option is to use measures of historical mortality rates which are likely to be correlated with current health outcomes but not with current economic conditions. A number of studies have used IVs, such as military spending, and found evidence that improvements in health lead to higher economic growth (Adams, Hurd, McFadden, Merrill, & Ribeiro, 2003; Alsan, Bloom, & Canning, 2006; Cooper & Robert, 2004; Easterly & Rebelo, 1993; Ikegami & Wang, 2022). However, there are several problems with using IVs to estimate the direction of causality. First, it is often difficult to find valid IVs. Finally, even if valid IVs are found, there is often a problem of endogeneity, in which case the estimates may be biased (Arelleno & Bover, 1995).

Healthcare systems have been severely affected by the COVID-19 pandemic, resulting in an unprecedented demand for healthcare services and supplies. The pandemic has unprecedented impact on the health, social and economic systems throughout the WB, the European Union and the rest of the world. It has highlighted the interdependence of lives and livelihoods, society, the economy and the urgency of improving health, wellbeing and sustainable development within and beyond the current crisis context. A pandemic has shown the need of considering how to utilize limited resources to promote regional economies and support sustainable development. With this challenge, WB countries have been working together to reduce COVID-19 spread and protect their citizens.

The study continues with an analysis of health expenditure across WB countries followed by a review of literature in which theoretical and empirical studies are discussed. The paper will then test this relationship using data from the World Bank Indicators database, national statistical offices and Eurostat. The analysis results will be discussed and outlined followed by a section that includes the study's conclusion and limitations.

2. Health Expenditures in WB Countries

WB countries have made considerable progress in recent years regarding access to health status and health care although the indicators are still low compared to other European countries. There are differences among the six WB countries. Per capita health spending ranges from a low of 270 United States dollar (USD) for

Albania to a high of 693 USD in Serbia or 683 USD in Montenegro. The average per capita health spending in the Balkan countries is USD 484 which is still low compared to the Organisation for Economic Co-operation and Development (OECD) with above USD 5000 or the EU average with above USD 3500 (World Bank, 2022b).

In addition, the GDP spent on health care varies significantly across the Balkan countries (Table 1). The Balkan countries spend between 5.15% and 9.36% of their GDP on health. However, there is a continuing discussion over the forms of healthcare expenditure and the ideal amount of investment for economic growth (Agénor, 2008; Boucekkine, Diene, & Azomahou, 2008; Guo & Meei, 2015). According to Mcintyre, Meheus, and Røttingen (2017) 5% of GDP is commonly mentioned as the minimum level of public health spending required for universal coverage. GEH levels in all WB countries exceed the 5% threshold.

Several countries spend at levels observed in the universal coverage systems of high-income countries which typically spend between 7% to 10% of their GDP on health. However, higher levels of public spending on health are associated with lower out-of-pocket expenditures and related financial hardship and impoverishment. For example, the total spending in Kosovo and Albania is driven by large shares of out-of-pocket and private voluntary insurance expenditures, whereas publicly mandated and supported financing in Serbia, Montenegro and Northern Macedonia (World Bank, 2022c).

Another essential factor that can impact economic growth is health insurance coverage. Kosovo is the only country in the region that does not provide public health insurance as illustrated in Table 1. In all six countries, the percentage of the population with health insurance coverage increased between 2000 and 2020. The increase in health insurance coverage is attributable to several factors, including the expansion of government-sponsored health insurance programs and the growth of the private health insurance market. In 2020, the average percentage of the WB population covered by health insurance was 77% compared to 93% in the EU. The smallest increase was in Kosovo, where population health insurance coverage rose from 72.8% in 2000 to 75.6% in 2020. The largest increase was in Northern Macedonia, where health insurance coverage rose from 50.8% in 2000 to 67.2% in 2020 (World Bank, 2022a).

There is significant variation in how the health budgets of WB countries are financed. The mix of sources varies considerably across nations with a few exceptions. On the one hand, Kosovo and Albania rely mainly on out-of-pocket payments (57% and 41%, respectively) and private voluntary insurance (19% and 20%) to finance their health care systems. On the other hand, Serbia (80%), Montenegro (67%), Bosnia and Herzegovina (62%) and Northern Macedonia (61%) have a higher reliance on mandatory social insurance contributions as their main source of financing. This finding is consistent with evidence from earlier studies which found that tax-based systems are associated with more equitable access to health care (Stuckler & Basu, 2009).

Another factor that can impact the relationship between GEH and economic growth is longevity. Generally, countries with higher life expectancies tend to have higher levels of economic development. This is because a longer lifespan indicates that citizens are healthy and productive. In all six countries, life expectancy at birth increased between 2000 and 2020. The smallest increase was in Kosovo, where life expectancy at birth rose from 68 years in 2000 to 71.1 years in 2020. The most significant increase was in Northern Macedonia, where life expectancy at birth rose from 72.9 years in 2000 to 75.7 years in 2020. The increase in life expectancy is attributable to a reduction in mortality rates and several factors, including improved access to healthcare, medical technology advances and lifestyle and diet changes (World Bank, 2022d).

The death rate is another factor that can impact the relationship between GEH and economic growth. The death rate has been increasing in WB in recent years (Table 1). A lower death rate indicates that citizens are healthy and productive for longer. Generally, countries with lower death rates tend to have higher levels of economic development.

The average age is another factor that can impact the relationship between GEH and economic growth. Generally, countries with higher average ages tend to have higher levels of economic development. This is because older citizens are typically more experienced and productive than younger citizens. The average age in WB has been increasing in recent years. The increase in average age is attributable to several factors, including an aging population and improvements in life expectancy.

Despite all these developments, health outcomes in the WB remain relatively poor compared to other European countries. For example, life expectancy at birth in the region is lower than the EU average of 80 years. In addition, infant mortality rates in the WB are higher than the EU average of 3.0 deaths per 1,000 live births. These findings suggest that the WB region faces significant challenges in terms of health outcomes. Other important factors for poor health outcomes in the WB region include the health workforce, distribution of the health workforce, number of hospital beds per 10,000 people, health care facilities, immunization rates and disease prevalence.

Table 1. Percentage of population with health insurance coverage, 2000-2020.

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
GDP per capita (USD)	Albania	1127	1282	1425	1846	2374	2674	2973	3595	4371	4114	4094	4437	4248	4413	4579	3953	4124	4531	5288	5396	5246
	Bosnia and H.	1484	1545	1790	2259	2698	2981	3417	4193	5091	4715	4636	5093	4777	5130	5330	4730	4995	5394	6070	6120	6080
	Kosovo	2845	2765	2678	2678	2897	2789	2789	2897	2965	2848	3010	3541	3411	3705	3903	3521	3760	4009	4384	4416	4347
	Montenegro	1627	1910	2107	2789	3380	3675	4426	5976	7368	6727	6688	7329	6587	7186	7378	6514	7029	7784	8846	8911	7677
	N. Macedonia	1862	1823	1989	2440	2796	3073	3363	4079	4841	4585	4578	5098	4728	5241	5496	4862	5150	5450	6109	6070	5917
	Serbia	915	1727	2284	3005	3503	3720	4383	5848	7101	6169	5735	6809	6016	6755	6600	5589	5765	6293	7252	7417	7721
Government expenditure on health per capita (USD)	Albania	81	90	96	126	157	165	175	222	220	186	192	211	214	237	251	193	202	226	275	269	270
	Bosnia and H.	113	112	127	181	245	263	304	388	483	425	418	467	453	484	505	442	462	482	540	554	432
	Kosovo	91	94	110	147	177	199	210	218	236	218	242	288	290	327	352	301	336	326	361	359	407
	Montenegro	83	99	116	162	206	286	353	479	592	548	551	578	542	604	586	583	602	616	731	735	683
	N. Macedonia	164	152	175	217	234	233	246	265	314	297	305	330	311	350	344	307	327	358	399	437	417
	Serbia	57	112	173	230	274	308	372	547	672	575	545	619	560	628	609	491	486	516	617	641	693
Government expenditure on health as a percentage of GDP	Albania	4	5	4	4	5	6	6	6	5	5	5	5	5	5	6	5	5	5	5	5	5
	Bosnia and H.	5	5	4	5	5	5	5	5	5,5	6	6	6	7	6	6	7	7	7	7	7	7
	Kosovo	3	3	4	6	6	7	8	8	8	8	8	8	9	9	9	9	9	8	8	8	9
	Montenegro	5	5	6	6	6	8	8	8	8	8	8	9	8	8	9	8	9	8	8	9	9
	N. Macedonia	6	6	6	6	7	8	7	7	7	7	7	7	7	7	6	6	6	7	7	7	7
	Serbia	7	7	7	7	7	8	8	9	9	9	10	9	9	9	9	9	8	8	9	9	9
Health insurance	Albania	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Bosnia and H.	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Kosovo	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	Montenegro	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	N. Macedonia	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Serbia	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Longevity	Albania	74	74	75	75	75	75	75	76	76	76	77	77	77	78	78	78	78	78	79	79	79
	Bosnia and H.	74	75	75	75	75	75	75	76	76	76	76	76	76	77	77	77	77	77	77	77	78
	Kosovo	68	68	68	68	69	69	69	69	69	70	70	70	71	71	71	71	72	72	73	73	71
	Montenegro	73	73	73	73	73	74	74	74	75	75	76	76	76	77	76	76	76	77	77	77	76
	N. Macedonia	73	73	73	73	74	74	74	74	74	74	75	75	75	75	76	75	75	76	77	77	76
	Serbia	72	72	72	72	73	73	73	74	74	74	74	75	75	75	75	76	76	76	76	76	74
Average age	Albania	29	29	29	30	29	29	33	31	32	32	32	30	33	32	33	36	35	37	37	38	38
	Bosnia and H.	30	29	29	31	31	31	32	33	33	34	34	35	35	35	35	36	36	35	36	36	35
	Kosovo	22	22	23	24	25	25	26	26	26	27	26	27	27	27	28	27	27	27	26	27	29
	Montenegro	32	33	33	34	35	35	35	36	36	36	36	37	37	38	37	38	38	39	39	39	31
	N. Macedonia	32	33	34	34	34	34	34	35	35	36	36	36	36	37	37	37	38	38	38	39	39
	Serbia	35	35	36	36	37	37	38	38	38	38	39	39	39	39	40	40	40	41	41	40	41
Death rate per 1,000 population	Albania	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	8	8	8	8	8
	Bosnia and H.	8	8	8	9	9	9	9	9	9	10	10	10	10	10	10	10	10	11	11	11	11
	Kosovo	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	8
	Montenegro	9	9	9	9	9	10	10	10	9	10	9	9	10	10	10	10	10	11	11	11	12
	N. Macedonia	9	8	9	9	9	9	9	10	9	9	9	10	10	9	10	10	10	10	10	10	12
	Serbia	14	13	14	14	14	14	14	14	14	14	14	14	14	14	14	15	14	15	15	15	17

3. Literature Review

The relationship between GEH and economic growth is likely to be context-specific depending on factors like the level of development of the healthcare system, the structure of the economy and the government's fiscal and monetary policies, which may account for the conflicting findings. In addition, the contradictory results from the literature may be due to methodological differences, data quality, sample selection and econometric methods. Some studies use cross-country data, while others use panel data. Some studies include a limited number of countries, while others include a large number of countries. Some studies only take into account a few variables, while others take into account a lot more. These studies can be broadly classified into two groups. The first group of studies uses cross-country data and different econometric methods, such as ordinary least squares (OLS), panel data methods, instrumental variables (IV) estimation and Granger causality tests. The second group of studies uses time series data for a single country and employs autoregressive distributed lag (ARDL) models.

A large body of literature on the relationship between GEH and economic growth present. A review of the literature reveals several different perspectives on the topic. The literature on the relationship between GEH and economic growth can be divided into two main categories: empirical studies and theoretical studies. Empirical studies use data from countries worldwide to examine the relationship between GEH and economic growth. Theoretical studies develop models to explain how GEH affects economic growth.

3.1. Empirical Studies

Empirical evidence on the relationship between GEH and economic growth is contradictory with some studies finding a positive relationship between the two variables (Khan & Bashar, 2015; Mushkin, 1962; Pasara, Mutambirwa, & Diko, 2020; Sethi, Mohanty, Das, & Sahoo, 2020; Shen, Chang, Yin, & Wang, 2020; Zhao et al., 2020). Others found a negative relationship because GEH may crowd out private investment and reduce the economy's efficiency (Eggoh, Houeninvo, & Sossou, 2015; Tobing & Jeng, 2012; Yang, 2020). Several studies have also found no significant relationship between GEH and economic growth (Di Matteo, 2010; Giannoni & Hitiris, 2002; Mehrara, 2011; Tobing & Jeng, 2012).

Most empirical studies suggest that GEH has a positive impacts on economic growth. This is because investment in healthcare can lead to improved health outcomes which can lead to increased productivity and earnings. When a country invests more resources in healthcare, more people benefit from those investments. Mushkin (1962) proposed the "health-led growth hypothesis" which argues that a country's spending on healthcare is crucial to that country's economic development.

According to research conducted in the USA between 1980 and 2004, every one percent increase in GEH led to a 0.38% increase in GDP per capita (Moscone & Tosetti, 2010). Nghiem and Connelly (2017); Panopoulou and Pantelidis (2012) and Wang (2015) used data from 19 OECD countries and found a positive relationship between public expenditure on health and economic growth.

According to evidence from the South Asian countries, public expenditure on health has a positive and significant impact on economic growth (Sethi et al., 2020). The study found that an increase in GEH of 1% is associated with an increase in economic growth of 0.17%. The results also showed that the impact of GEH on economic growth is higher in low-income countries than in high-income countries. Sethi et al. (2020) examine the relationship between GEH and economic growth in China. They find a positive and significant relationship between these two variables. Evidence from China suggests that GEH has a positive and significant influence on economic growth. The study found that an increase in GEH of 1% is associated with an increase in economic growth of 0.13%. The results also showed that the impact of GEH on economic growth is higher in provinces with a higher level of development (Zhang, Zong, & Xiao, 2020).

Aboubacar and Xu (2017) study the impact of health expenditure on economic growth in sub-Saharan Africa. They discovered that health expenditure has a positive and significant impact on economic growth. Esen and Celik (2022) and Kurt (2015) provided data on health expenditure in Turkey. According to their research, health spending by the government has increased over the years. This increase in spending has coincided with an increase in life expectancy and a decrease in the death rate. These developments suggest that GEH has a positive impact on economic growth in Turkey.

Konatar, Kaštelan, Kaštelan, Đurašković, and Radović (2021) investigated the determinants of healthcare expenditure in Central and Eastern Europe countries. They found a positive and significant relationship between public expenditure on health and economic growth in Central and Eastern European countries.

However, several studies also find a negative relationship between GEH and economic growth (Baird, Hicks, & Kremer, 2016; Crivelli, Filippini, & Mosca, 2006; Yang, 2020). These writers generally find that GEH can crowd out private investment and lead to higher taxes, reducing economic growth. Yang (2020) explored the effects of GEH on economic growth in 21 developing countries from 2000 to 2016. He found a negative relationship between health expenditure and economic growth.

The literature on the relationship between public expenditure on health and economic growth in the WB is very limited. Writers have examined the relationship between GEH and economic growth in the WB have found a positive relationship between the two variables (Bredenkamp & Gragnolati, 2008; Bredenkamp, Mendola, &

Gragnolati, 2011; Jakovljevic, 2013; Rancic, Kovacevic, & Dragojevic-Simic, 2015; Stanculescu & Neculau, 2014; Stepovic et al., 2020; Stojic, Jevto, & Nela, 2021).

3.2. Theoretical Studies

Two main theoretical approaches have been used to examine the relationship between public expenditure on health and economic growth. The first approach is based on the neoclassical growth model while the second approach is based on the endogenous growth model. The neoclassical growth model assumes that economic growth is determined by exogenous factors, such as technological progress. This model implies that public expenditure on health does not have a direct impact on economic growth. In contrast, the endogenous growth model suggests that public expenditure on health can affect economic growth through its impact on human capital formation.

A substantial body of evidence connects health and economic growth at both the micro and macro levels (Bloom, Canning, Kotschy, Prettner, & Schünemann, 2021; Weil, 2007; Weil, 2014). At the microeconomic level, the empirical evidence suggests that there are fundamental relationship between health and various dimensions of economic performance such as earnings, job tenure or labor market participation rates. Several studies found a positive relationship between individual health status and earnings (Weil, 2007). The magnitude of this effect varies depending on the particular context but it is typically found to be large. For example, Weil (2014) estimates that a 10-percentage-point increase in adult survival rates raises labor productivity by 6.7 percent.

At the macroeconomic level, this relationship can be explained by the impact of health on the three main drivers of growth: labor productivity, human capital accumulation and total factor productivity (TFP). GEH can improve health outcomes and lead to higher labor productivity (Bucci, Carbonari, & Trovato, 2019; Rivera & Currais, 1999; Sengupta, 2017; Wahab & Kefeli, 2017). A study by Culyer and Wagstaff (1993) found that a 10% increase in GEH was associated with a 0.5% increase in labor productivity. The effect is often marginal but statistically significant. Another channel is human capital accumulation. According to Azarnert (2020); Grossman (1972) and Raghupathi and Wullianallur (2020), GEH can help in human capital development by increasing the supply of skilled workers. GEH has a positive impact on TFP (Du, Yaojun, & Xiang, 2021; Isreal, Kaliappan, & Hamzah, 2019).

4. Research Methodology

This paper is based on empirical research methodologies that analyze the impact of allocated health expenditures on economic growth per capita. We shall use total GEH as a percentage of GDP, health insurance, longevity, average age and mortality as independent variables due to their widespread use in measuring GEH and their ability to be compared across countries. We shall also employ a panel data method that considers country-specific fixed effects.

This paper focuses on the following 6 WB countries: Albania, Bosnia, Herzegovina, Kosovo, Montenegro, Northern Macedonia and Serbia from 2000 to 2020. Secondary data was collected by credible institutions that publish statistics annually, such as the World Bank, the National Statistical Offices of Western Balkan (WB) countries, Eurostat and others.

We used the following econometric model to measure the impact of independent factors on economic growth:

$$\text{GDP growth per Capita} = a + \beta_1(\text{GEH}) + \beta_2(\text{Health insurance}) + \beta_3(\text{life expectancy}) + \beta_4(\text{average age}) + \beta_5(\text{Mortality}) + \mu_i$$

The Statistical Package for the Social Sciences (SPSS) software will be used to assess the data. The econometric model's dependent variable is per capita economic growth, while the other variables are independent. The sophisticated element or standard error term is shown at the end of the equation (μ), whereas a and β are parameters estimated by the model's completion.

Table 2. Description of variables.

Nr.	Variables	Dep./Indep.	Shortcuts	Origin	The measure
1	GDP growth per capita	Depended	GDPG_C	World Bank	USD
2	Government expenditure on health	Independent	GS_H	World Bank	% of GDP
3	Health insurance	Independent	H_I	Eurostat	Dummy (1- state provides health insurance)
4	Average life expectancy	Independent	ALE_M	World Bank	Years
5	Average age	Independent	A_A	World Bank	Years
6	Mortality	Independent	MOR	World Bank	1000 residents

Table 2 presents the description of six variables (depended and independent) used in this research paper.

15

5. Research Results

The research findings are presented graphically and in tabular form.   The collected data first organised and filtered before being extracted using the SPSS program.

Table 3. Descriptive statistics of variables.

Variables	N	Minimum	Maximum	Mean	Std. deviation
GDP growth per capita	126	914.78	8,910.65	4,419.38	1,813.66
Government expenditure on health	126	3.2	9.53	6.83	1.56
Health insurance	126	0	1	0.42	0.49
Average life expectancy	126	67.94	78.69	74.42	2.5
Average age	126	22.1	41.2	33.64	4.55
Mortality	126	5.87	16.9	9.5	2.54

Table 3 presents the descriptive statistics of the six study variables. The average per capita income in the five study countries is USD 4,419.38, which is very low in comparison to developed or European countries. These six countries, on average, spend 6.83% of their gross output on health expenditures, while their population has an average life expectancy of 74.42 years. In comparison, these countries are characterized by a young population with an average age of 33.64 years. The final variable represents mortality, measured in units of 1000 inhabitants and we can see that the deaths in these five countries are 9.5 inhabitants on average (per 1000 inhabitants).

Montenegro has the highest per capita income with 8,910.65 dollars in 2019. Serbia had the highest health expenditures in 2010 with 9.53% of GDP spent on health. In the following, we will present the ratio between the variables through the correlation coefficient.

According to the correlation results in Table 4, there is a positive relationship between GEH and per capita income with a coefficient r = 0.396 which is significant at the 1% significance level. As a result, rising GEH leads to higher per capita income and vice versa. At the 1% significance level, we also find a perfect positive correlation (r = 0.637) between health insurance coverage and per capita income. Therefore, countries that are more likely to provide health insurance are also more likely to have a higher per capita income or standard of living. The correlation between average life expectancy and per capita income has a positive relationship between these two variables (r = 0.729, significant at the 1% level).

Table 4. Correlation analysis.

Variables		GDPG_C	GS_H	H_I	LE_M	A_A	MOR
GDP growth per capita	Pearson correlation	1	0.396**	0.637**	0.449**	0.729**	0.609**
	Sig. (2-tailed)		0	0	0	0	0
	N	77	77	77	77	75	77
Government expenditure on health	Pearson correlation	0.396**	1	−0.042	−0.469**	0.106	0.560**
	Sig. (2-tailed)	0		0.713	0	0.356	0
	N	77	80	80	80	78	80
Health insurance	Pearson correlation	0.637**	−0.042	1	0.670**	0.720**	0.434**
	Sig. (2-tailed)	0	0.713		0	0	0
	N	77	80	80	80	78	80
Average life expectancy	Pearson correlation	0.449**	−0.469**	0.670**	1	0.691**	0.164
	Sig. (2-tailed)	0	0	0		0	0.145
	N	77	80	80	80	78	80
Average age	Pearson correlation	0.729**	0.106	0.720**	0.691**	1	0.764**
	Sig. (2-tailed)	0	0.356	0	0		0
	N	75	78	78	78	78	78
Mortality	Pearson correlation	0.609**	0.560**	0.434**	0.164	0.764**	1
	Sig. (2-tailed)	0	0	0	0.145	0	
	N	77	80	80	80	78	80

Note: ** At the 1% level, correlation is significant.

Three econometric models, the ordinary least squares method (OLS), the fixed effects method (FEM) and the random effects method (REM) are summarized in Table 5. Assuming that the coefficients from the model with random effects are generally regarded as the most trustworthy, we will use them to interpret the results below.

16

Table 5. Results of econometric models.

Model	OLS		Fixed effect		Random effect	
	Coefficient	**P value**	**Coefficient**	**P value**	**Coefficient**	**p value**
Government expenditure on health	638.72	0	288.37	0.001	638.72	0.000
Health insurance	1330.93	0	565.39	0.015	1330.93	0.000
Average life expectancy	232.68	0.001	510.55	0	232.68	0.001
Average age	10.39	0.041	11.25	0.866	10.39	0.032
Mortality	-18.08	0.105	594.75	0	-18.08	0.891

Note: Dependent variable - GDP growth per capita.

For every 1% increase in GEH, we estimate that per capita income will increase by an average of USD 638.72. GEH has a positive impact on per capita income which is significant at the 1% level of importance (p = 0.000).

At the 1% importance level, health insurance raises per capita income and has a significant impact (p = 0.000). Compared to countries without health insurance, countries with health insurance have a higher per capita income of USD 1,330.93 on average.

The average life expectancy of the population has a positive impact on living standards and has a significant impact at the level of importance of 1% (P = 0.001). We estimate that for every 1-year increase in average life expectancy, per capita income will increase by USD 232 on average. In addition to life expectancy, the model was tested for average age and the results show a positive and significant impact at the significance level of 5% (P = 0.032), with an estimated increase in per capita income of USD 10.39 for every additional year in the average age.

The mortality rate is unfavorable to per capita income. According to random effects model estimations, per capita income would decrease by USD 18.08 for each extra unit of measurement rise in death rate.

6. Conclusion and Limitations

This paper has examined the relationship between GEH and economic growth in the WB. Because our data consists of observations about various cross sections across time, the ordinary least squares (OLS) model, econometric models with fixed effects and random effects are used in this research. According to this research, GEH has a positive impact on economic growth in WB countries during the last two decades. These results are consistent with previous studies on both developed and developing countries.

The relationship between GEH and economic growth is complex and context-specific. Several factors, such as health insurance coverage, longevity, average age and death rate can impact this relationship. The regression analysis results show that healthy life expectancy at birth and total expenditure on health per capita positively and significantly affect economic growth. This means that investment in healthcare leads to an increase in human capital and productivity which leads to an increase in economic growth. The regression analysis results also show that the infant mortality rate negatively and significantly affects economic growth. The increase in GEH is expected to continue, albeit slower, in line with economic growth and the expansion of social protection systems.

Many researchers have investigated the relationship between public expenditure on health and economic development but most focus on developed countries. Few studies have been conducted in developing countries and even fewer in transition economies. Therefore, this research fills an important gap in the literature. The study's findings contribute to a better understanding of GEH's impact on WB countries' economic growth. This research is important and relevant to the current global pandemic of COVID-19 which has a profound effect on economies worldwide.

The WB region has significantly improved health outcomes in recent years. However, much work still needs to be done to close the gap with other European countries. The WB region faces many challenges when it comes to health care. These include ensuring access to quality healthcare for all, reducing inequalities in health care and improving health outcomes. Addressing these challenges will require a sustained commitment from all stakeholders, including governments, health care providers, civil society organizations and the private sector. Improving health outcomes in the WB region will require a holistic and multi-sectoral approach, focusing on prevention and treatment. It is also important to note that health outcomes are determined by the health care system and various other factors, such as education, nutrition, housing and the environment. Addressing the WB region's health care system's challenges will require a comprehensive and integrated approach.

The COVID-19 pandemic has shown how urgent it is to improve health and how important it is to be smart about how to use limited resources to stimulate economies and promote sustainable development in the region.

This study has several limitations. Our research relies on secondary data which has limitations regarding availability and factuality. Statistics from the 2000s may be inaccurate due to a lack of national statistical entities, particularly in Kosovo which was a fledgling country after the war and the Kosovo Statistics Agency (KSA) was

17

not established until 2008. A study with a larger number of observations would yield more qualitative results and we could provide a comparative basis with the results presented in this study. The data only includes information on GEH and does not include private expenditures. This study excludes variables expected to be determinants of economic growth, such as the rule of law index, the democracy index and the corruption index. Finally, the effects of healthcare spending on different groups within a country (such as different age groups) were not studied. Despite these limitations, the study shed light on the relationship   between GEH and economic growth.

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19

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