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Determinants of health expenditures: income level countries analysis

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Abstract

A global health phenomenon, in particular, there is a significant difference between health spending in developed and developing countries. This study focuses on modeling health expenditures in short-term and long-term schemes in three categories of countries: low-income countries, moderate-income, and high income from 2000 to 2019. The health expenditure scheme is analyzed using the panel data regression approach as a model of determinants of health expenditures. The results showed relatively significant differences between the determinants of health expenditure variables, including populations variable in low-middle-income countries. The positive and significant influences on middle-income countries, whereas high-income countries have a negative and significant influence. As for the overall GDP variable, low-income, lower-middle, and advanced countries negatively and significantly influence health care. For middle-income countries have a positive and significant influence on health spending.

Keywords: *Covid-19, Health expenditure, Income level, Wagner law*

JEL Classification: H50, H510, H110

INTRODUCTION

Global health expenditures in 2018 totaled US$ 7.5 trillion, or over 10% of the world's GDP. Trend where health spending is growing faster than the global economy as a whole, and most nations, especially in low- and middle-income countries, most countries in the world spend less than $350 per person on health care on average. The disparity across state-income categories persists despite development in low-income nations. Differences in the number of health expenditures issued by some countries are significantly dominated by countries with high incomes (Fabiana, 2019). Health expenditure at the global level is contributed by high-income countries 81%, and the rest is contributed by low- and upper-middle-income countries (Buracom, 2016; Xu et al., 2019). This shows an increase because, previously, middle-income countries only represented 13% of total health spending. The largest increase in spending occurred in upper-middle-income countries, whose populations increased more than twofold during the period (due to China's large population joining the group), while the share of health spending in those countries increased globally almost twice as much (WHO, 2019).

Long-term and short-term scheme model approaches are presented in the literature. Some previous literature relied on cross-sectional techniques, while others used panel techniques. The findings often differ based on the study of static and dynamic models. Long-term modeling was studied by (Oliveira & Maisonneuve, 2015), who, using cost control scenarios and cost pressures, predicted that between 2010 and 2060, total long-term health expenditures would rise by 3.3 and 7.7 percent of total GDP. The latest scenario was studied by Raghupathi & Raghupathi (2020) & Sfakianakis et al. (2021) with the results of studies that increased health expenditure has a positive relationship with economic performance with policy implications including that good citizens' health does result in a better economy overall. The whole study supports the argument about the structure of the healthcare system in most limited countries (Ndaguba & Hlotywa, 2021; Piabuo & Tieguhong, 2017).

The main determinants of health expenditure are inseparable from the conditions of income per capita, demographics and epidemic conditions, and the character of the health system (Atilgan et al., 2017; Bloom et al., 2018; Erçelik, 2018; Halıcı-Tülüce et al., 2016; Ke et al., 2011; Obrizan & Wehby, 2018; Piabuo & Tieguhong, 2017). Based on a long-term scheme by predicting the condition of the Covid 19 pandemic, it will have a significant cost reduction on health expenditures in several countries, especially low-income countries (Eissa, 2020; Ozawa et al., 2016; Rengin, 2012) emphasizes the restructuring of public expenditures to expand the absorption of health institutions, which ultimately leads to sustainability and universal health insurance.

Based on the background above, this study examined the novelty and contribution of modeling health expenditures in short-term and long-term schemes in three categories: low-income countries, moderate-income, and high-income. Research is expected to be used to determine public policy strategies related to health expenditures and modeling health expenditures.

METHODS

In this study, health expenditures were based on population and health expenditure conditions based on government health schemes, and GDP revenues from 120 countries measured income. The income categories are low, medium, and high from 2000-2019.

The data type used is quantitative data in numbers, symbols, or statistics, either dug directly or obtained through results. Qualitative data processing to quantitative (Gujarati, 2011). This study used panel data, a combination of time series and cross-section data.

This research uses secondary data from the publications of other parties, such as the World Health Organization and the world bank, in the form of books, journals, and others that can support research. The data used is health expenditure per capita, population, health schemes, and consumption in 120 countries based on income categories: low, medium, and high from 2000 to 2019.

The method of collecting data in this study is carried out by observing the need for data, collecting and studying data as well as available (Gujarati, 2011). This study's data observed, collected, and studied included health expenditures, population structures, and income per capita in 196 countries based on low-income categories, medium and high, from 2000 to 2018.

The health expenditure scheme is analyzed using the panel data regression

approach as a model of determinants of health expenditures with a model of health expenditure schemes and health expenditure schemes based on sustainability and macroeconomic variables, including population, GDP, and Consumption with the following general model:

$$CHE = F(POP,GDP,GS,CON) \quad (1)$$

Explanation:

CHE : Current Health Expenditure per Capita
POP : Population
GDP : Gross Domestic Product
GS : Domestic Health Expenditure Scheme
SF : Current Health Expenditure by Financing Schemes
CON : Final Consumption Expenditure

The panel's data approach is used by classifying countries based on the classification of income per capita, namely low-income countries (Low), Lower Middle-Income Countries (Middle-Low), High-Income Countries (High), and Middle-Up Middle-Income Countries

$$CHELow_{it} = \beta_0 + \beta_1 POP_{it} + \beta_2 \Delta GDP_{it} + \beta_2 GS_{it} + SF_{it} + \beta_2 CON_{it} + \varepsilon_t \quad (2)$$

$$CHEM - Low_{it} = \beta_0 + \beta_1 POP_{it} + \beta_2 \Delta GDP_{it} + \beta_2 GS_{it} + SF_{it} + \beta_2 CON_{it} + \varepsilon_t \quad (3)$$

$$CHEM - up_{it} = \beta_0 + \beta_1 POP_{it} + \beta_2 \Delta GDP_{it} + \beta_2 GS_{it} + SF_{it} + \beta_2 CON_{it} + \varepsilon_t \quad (4)$$

$$CHEHigh_{it} = \beta_0 + \beta_1 POP_{it} + \beta_2 \Delta GDP_{it} + \beta_2 GS_{it} + SF_{it} + \beta_2 CON_{it} + \varepsilon_t \quad (5)$$

RESULTS AND DISCUSSION

The data used in this article is the health spending scheme analyzed using the panel data regression approach as the determinant model of health spending (CHE) as the dependent variable, with the Domestic health spending (GS) scheme model and the financing-based health spending scheme (SF) and economic variables. The macro includes population (POP), Gross Domestic Product (GDP), and Consumption (CON) as independent variables.

The results of the estimated panel data are used to analyze the determinants of health expenditures. The analysis models to be selected are the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model. The following comparison between models is presented in Table 1.

Table 1. Low-income country health expenditure

Variable	Common		Fixed		Random	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
LNPOP	0.000005	0.92040	0.0015290	0.00000	0.00067	0.00000
LNGDP	-0.000001	0.00260	-0.0000015	0.00000	-0.000001	0.00820
LNGS	-0.000036	0.00130	-0.0000171	0.00000	-0.000018	0.05570
LNSF	0.000028	0.00000	0.0000274	0.00000	0.000029	0.00000
LNCONS	0.000001	0.25320	0.0000006	0.03380	0.000000	0.54740
C	34.190320	0.00000	5.0821330	0.00730	20.576200	0.00000

Table 1 shows that, in comparison, the statistically best model is the Fixed Effect Model (FEM). The model can be categorized as the best model because all variables,

including LNPOP, LNGDP, LNGS, LNSF, and LNCONS, have a smaller probability value than the significance level of α. In contrast, the common effect model shows one expressed insignificant variable, namely the LNCONS variable, with a probability of 0.2530. Statistically, the Random Effect Model (FEM) shows the LNGS and LNCONS variables are insignificant with a probability greater than the significance level. Next analyzed is the comparison of the model of estimated health expenditure in middle-income countries. The comparison results can be seen in Table 2:

Table 2. Health expenditure models of middle-income countries down

Variable	Common		Fixed		Random	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
LNPOP	-0.159439	0.0000	0.333485	0.0071	-0.417010	0.0000
LNGDP	-0.215882	0.0457	-0.215947	0.0203	-0.121109	0.1988
LNGS	0.933512	0.0000	0.881090	0.0000	0.757706	0.0000
LNSF	0.203272	0.0053	0.097751	0.0195	0.211887	0.0000
LNCONS	-0.826470	0.0000	-0.319197	0.0000	-0.330436	0.0000
C	7.669734	0.0000	-1.917901	0.0212	3.845296	0.0000

Table 2 shows that, in comparison, the statistically best model is the Fixed Effect Model (FEM). The model can be the best because all variables, including LNPOP, LNGDP, LNGS, LNSF, and LNCONS, have a smaller probability value than the significance level α. In contrast, the common effect model shows one variable that is said to be significant. One variable contrasts with the theory; the LNPOP variable has a negative and significant influence on LNCHE with a probability of 0.000. Statistically, the Random Effect Model (FEM) shows the LNGDP variable is insignificant with a probability more than the level of significance.

These results do not align with model testing for high-income or developed countries, with results that differ from comparisons in low-income and lower-middle-income countries. The results show that statistically, the best model is the Random Effect Model (REM), which can be seen in Table 3.

Table 3. Health expenditure models of high-income countries

Variable	Common		Fixed		Random	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
LNPOP	-0.499468	0.0000	-0.362366	0.0009	-0.855425	0.0000
LNGDP	-0.022003	0.0351	0.430439	0.0021	-0.189397	0.0003
LNGS	1.087251	0.0000	1.215829	0.0000	1.462059	0.0000
LNSF	-0.005267	0.7879	0.047471	0.0005	0.105943	0.0000
LNCONS	-0.563351	0.0000	-0.404215	0.0000	-0.501876	0.0003
C	8.378651	0.0000	-0.752465	0.2052	8.969852	0.0000

Table 3 shows that statistically, the best model is the Random Effect Model (REM), which shows that all variables are significant. Meanwhile, based on the Common Effect Model (CEM) and Fixed Effect Model (FEM) models show that two variables are declared insignificant in health expenditure per capita. The next model comparison is based on the model of health expenditure in middle-income countries and above. A detailed comparison of models can be seen in Table 4.

Table 4. Health expenditure models of middle-income countries and above

Variable	Common		Fixed		Random	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
LNPOP	-1.332423	0.0000	-1.022553	0.0000	6.687000	0.0000
LNGDP	-0.091566	0.1783	0.020466	0.0365	-1.068832	0.0000
LNGS	1.441608	0.0000	0.965469	0.0000	0.028192	0.5292
LNSF	0.006080	0.7425	0.032771	0.0015	1.029602	0.0000
LNCONS	-1.271146	0.0000	-0.008214	0.3705	0.058373	0.0120
C	18.72182	0.0000	6.090122	0.0000	-0.116418	0.0033

Table 4. explains that statistically, the best models are the Random Effect Model (REM) and Fixed Effect Model (FEM), in which statistically, almost all variables are expressed as significant to health expenditure per capita.

Three tests—the Chow, Hausman, and multiplier Lagrange—are also run to evaluate the best model. The Chow, Hausman, and Lagrange multiplier tests are three of the tests used to choose the model. The model's test findings are shown in Table 5:

Table 5. Model test results

Testing	Low		Middle-Low		High		Middle-Up	
	Statistics	Prob.	Statistics	Prob.	Statistics	Prob.	Statistics	Prob.
Chow Test	40.706	0.0000	218.09	0.0000	175.6345	0.0000	358.399	0.0000
Hausman Test	44.3355	0.0000	127.545	0.0000	0.0000	1.0000	433.6	0.0000
LM TEST					28.012	0.0000		

Before creating an estimate, it is required to choose a regression approach. First, perform a Chow test to compare a Fixed Effect Model (FEM) and Pooled Least Square (PLS). According to the results of the Chow test, the probability value for the health expenditure model in low-income nations is 0.0000, which indicates that the Fixed Effect Model is the best option because its probability value is less than the actual amount of 5%. The next test is to choose the best model between the fixed and random effect models by doing Hausman Test. Based on the results of the Hausman test, the probability value of the Chi-Square on the model is 0.000, meaning the best model is the Fixed Effect Model.

In line with this, the results of the Chow test on the health expenditure model of the lower middle countries show the probability value < the significant level (0.05); thus, the best model is the Fixed Effect Model (FEM). The same result was also shown in Hausman testing, which showed the probability value < the significance level (0.05). Thus the best model is the Fixed Effect Model (FEM).

Different results were found in testing health spending models in high-income countries. The Fixed Effect Model (FEM) was chosen for the model based on Chow testing findings that showed the probability value at the significance level (0.05). As opposed to Hausman testing results that showed a probability value greater than the threshold of 1.00; hence the Random Effect Model (REM) was chosen. The Lagrange Multiplier test using the Breusch-Pagan test showed that the probability value of "both" was smaller than the true level of 5% (0.0000 0.05); hence the selected model was the Random Effect Model (REM). This was because of the difference in the selection results in each test. The last test was conducted on the health expenditure model in middle-income countries and above, with Chow test results showing a probability value (0.0000) < a level of significance (0.05) so that the selected model is the Fixed Effect

Model (FEM). In line with this, the results of Hausman testing show a probability value (0.000) < a level of significance (0.05) so that the model selected is a Fixed Effect Model (FEM).

Overall, the selection of models based on model testing is analyzed in detail based on the classification of countries on the level of income per capita that is breakout into model equations that can be seen in Table 6.

Table 6. Results of the panel data regression model estimate

Variable	Low (FEM)		Middle-low (FEM)		High (REM)		Middle-Up (FEM)	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
LNPOP	0.0015290	0.0000	0.333485	0.0071	-0.290719	0.0002	-1.022553	0.0000
LNGDP	-0.0000015	0.0000	-0.215947	0.0203	-0.100776	0.0000	0.020466	0.0365
LNGS	-0.0000171	0.0000	0.88109	0.0000	0.955946	0.0000	0.965469	0.0000
LNSF	0.0000274	0.0000	0.097751	0.0195	-0.071397	0.0000	0.032771	0.0015
LNCONS	0.0000006	0.0338	-0.319197	0.0000	-0.54566	0.0000	-0.008214	0.3705
C	5.0821330	0.0073	-1.917901	0.0212	8.059763	0.0000	6.090122	0.0000
Adj R2	0.772746		0.9468		0.8216		0.999	
Prob F	0.0000		0.000		0.000		0.000	
Obs	510		360		1057		1223	

Based on partial analysis shows that in the equation model in low-income countries, all variables partially have a significant effect on health expenditure per capita. In line with the model of equality in lower-middle-income countries, partially all variables are expressed as significant to health expenditure per capita. Despite differences in model selection results, the same results partially showed all variables expressed significance to health expenditure in high-income or developed countries. Meanwhile, the equation model in middle-income countries and above shows that the consumption variable has no significant effect on health expenditure per capita with a probability value > a significance level (0.370).

Low-income countries

The coefficient value (β1) = 0.0015290 indicates a number of population variables that positively affect health expenditure per capita; for example, if the population grows by 1%, health expenditure will grow by 0.001529 percent. The GDP variable positively impacts health spending, as indicated by the coefficient value of (β2) = -0.00000015, which means that a 1% increase in GDP will result in a 0.0000015 reduction in health spending per capita.

The domestic health expenditure scheme variable has a negative impact on per capita health expenditure, as indicated by the coefficient value (β3) = -0.0000171, which means that a 1% rise in the domestic health expenditure scheme will result in a 0.0000171 percent decrease in per capita health expenditure.

The coefficient value (β 4) = 0.0000274 can be interpreted as the health expenditure financing scheme variable positively affecting health expenditure per capita. If there is an increase in the health expenditure reduction scheme by 1%, it will increase per capita health expenditure by 0.0000274 per capita.

The coefficient value (β 5) = 0.0000006 can be interpreted as the consumption variable having a negative effect on health expenditure per capita. If there is an increase in consumption by 1%, it will reduce per capita health expenditure by 0.0000006 percent.

Lower-middle income countries

The coefficient value (β1) = 0.333 can be interpreted as a number of population variables positively affecting health expenditure per capita. If there is an increase in the population by 1%, it will increase health expenditure by 0.333 percent.

The coefficient value (β2) = -0.21694 can be interpreted as the GDP variable having a negative effect on health expenditure. If there is an increase in GDP by 1%, it will reduce per capita health expenditure by 0.88109 percent.

The coefficient value (β3) = 0.88109 can be interpreted as the domestic expenditure scheme variable positively affecting health expenditure per capita. If there is an increase in the domestic health expenditure scheme by 1%, it will increase per capita health expenditure by 0.88109 percent.

The coefficient value (β4) = 0.097751 can be interpreted as health expenditure financing scheme variables positively affecting health expenditure per capita. If there is an increase in the health expenditure financing scheme by 1%, it will increase per capita health expenditure by 0.097551 per capita.

The coefficient value (β5) = -0.319 can be interpreted as a consumption variable having a negative effect on health expenditure per capita. If there is an increase in consumption by 1%, it will reduce per capita health expenditure by 0.0000006 percent.

High-income countries

The coefficient value (β1) = -0.290719 indicates that a variety of population variables have a negative impact on health spending per capita; for example, a 1% increase in population will result in a 0.297 percent decrease in health expenditure.

The coefficient value (β2) = -0.100 can be interpreted as the GDP variable positively affecting health expenditure. If there is an increase in GDP by 1%, it will reduce health expenditure per capita by 0.1007%.

The coefficient value (β3) = 0.995 can be interpreted as the domestic expenditure scheme variable positively affecting health expenditure per capita. If there is an increase in the domestic health expenditure scheme by 1%, it will increase per capita health expenditure by 0.995 percent.

The coefficient value (β 4) = -0.071397 can be interpreted as the health expenditure financing scheme variable having a negative effect on health expenditure per capita. If there is an increase in the health expenditure management scheme by 1%, it will reduce health expenditure per capita by 0.0713 percent.

The coefficient value (β 5) = -0.5456 can be interpreted as the consumption variable having a negative effect on health expenditure per capita. If there is an increase in consumption by 1%, it will reduce per capita health expenditure by 0.5456 percent.

Middle-income countries and above

The coefficient value (β1) = 0.0204 indicates that a number of population variables positively impact health spending per capita; for example, if the population grows by 1%, health expenditure will grow by 0.0204 percent. The coefficient value (β2) = 0.965 indicates that the GDP variable positively impacts health spending; if GDP increases by 1%, health spending per capita will rise by 0.965%.

The coefficient value (β3) = 0.965 can be seen as domestic spending scheme variables having a positive effect on health expenditure per capita; if the domestic health expenditure scheme is increased by 1%, health expenditure per capita will also grow by 0.965 percent.

According to the coefficient value (β4) = 0.32771, the health expenditure financing scheme variable positively impacts per capita health expenditure. For example, if the health expenditure management scheme is increased by 1%, per capita health expenditure will rise by 0.32771 percent.

The coefficient value (β 5) = -0.000214 can be interpreted as the consumption variable having a negative effect on health expenditure per capita. If there is an increase

in consumption by 1%, it will reduce per capita health expenditure by 0.00214 percent.

The coefficient value (β5) = -0.000214 indicates that the consumption variable has a negative impact on per capita health expenditure; for example, a 1% increase in consumption will result in a 0.00214 reduction in per capita health cost.

Discussion

The results of the estimates show that there are differences in the results of the analysis based on the classification of countries with different coefficient values. The number of populations in developed countries has a significant negative effect. This is due to demographic factors where countries with high income tend to be in demographic traps where fertility rates are low, high dependency ratios, and population aging where there is an increase in the number of residents.

The trend of an increasing population aged more than 65 in developed countries significantly impacts the decline in health expenditure. Population aging and decreased fertility will have an increased impact on the dependency ratio, so it impacts increasing health budgets. But the opposite condition occurs in developed countries. The increase in the elderly population reduces health expenditure per capita. This condition cannot be separated from health services in high-income countries and health infrastructure, so the risk of health decline can be reduced. In addition, although the dependency ratio is high, with high-income per capita conditions, it does not burden their health budgets (Vande Maele et al., 2019).

This condition can be seen from the average health expenditure in countries with high incomes and high middle incomes. Those countries have regulations on the efficiency of health expenditures. This is not in line with the catechism in low- and lower-middle-income countries; significantly, the number of residents in some low-income countries responded positively where the increase in health expenditure is in line with the increase in the number of residents (Martin et al., 2021).

This impact can be explained by the increased health budget due to low life expectancy in areas of the country with low income, low access to health facilities, and an increase in the number of children under five, which is quite high. Although the increase in fertility in some low-income countries, this condition is not absorbed, or in this context, an increase in the number of young people has not been able to keep up with the growth rate of the labor force, increasing disruption (Kalleberg, 2020).

Poor health conditions impact the swelling of health budgets in some countries. The condition is getting worse when viewed from the condition of a high dependency ratio, especially in countries in the African region. The phenomenon of increasing the number of elderly people and increasing the number of toddlers will increase total healthcare spending, and an increase in the number of elderly residents will burden the "burden" of this condition by increasing taxes to pay for their healthcare (Buracom, 2016; Yang, 2020). Thus because individual healthcare spending generally increases with age, healthcare per capita spending can be predicted to increase with an aging population.

Literature studies related to increasing population aging have various impacts on health expenditures. This evidence is in line with statistical results that explain that increasing population aging will significantly impact care spending, as revealed by (de Meijer et al., 2013; Hanushek, 2013; Naidu & Chand, 2013). In the scenario of estimated population aging, which provides the analysis results, the population's aging does not directly increase healthcare spending. Differences in analysis proved that an increase in older people would increase the dependency and health budget ratios (Bloom

et al., 2010; Wang, 2011; Carreras et al., 2018).

The difference in GDP is a benchmark for a country that will determine the amount of health expenditure, considering that developed countries have a higher allocation of health budgets (Piatti-Funfkirchen et al., 2018). Health budgets in lower-income countries have a significant impact on declining healthcare quality. The country's high national income and good economic conditions will improve health quality. Estimates show that low- and middle-income countries and lower-income health spending are significantly negative overall.

Empirical results prove that economic growth reduces the proportion of health expenditures, whereas increased economic growth will reduce health expenditures. This condition is explained by the condition of the health budget in one country, especially in most developing countries that, on average, have a relatively low proportion of health expenditure to GDP; this condition generally affects the amount of health expenditure allocated (Dreger & Reimers, 2021; Grigoli & Kapsoli, 2013).

Variable economic growth is dynamic where the state of increased output also has not determined the amount of allocation of health expenditures budgeted by most countries. This is in line with empirical results in income countries that result in economic growth lowering health expenditures (Cima & Almeida, 2018; Paitoon Kraipornsak, 2017). This proves that high-income countries prioritize smaller health budget allocations over other budgets.

In contrast with the results of estimates in countries with middle incomes and above, which proved GDP has a positive and significant effect on health expenditure per capita. In general, this condition is explained by the phase of economic development where countries that experience development will prioritize infrastructure improvement, especially in the health sector (Bayar et al., 2021).

Empirical studies prove that economic growth has a good relationship in the short and long term to Baltagi et al. (2016) and Esen & Çelik (2022), with the approval results showing the unidirectional causality of health expenditures to economic growth in the short term. The long-term relationship between related variables and the short-term relationship between health spending and economic growth demonstrates the importance of investment in health care services. This economic growth can be regarded as a driver of investment in the health sector, so the government's allocation of health expenditures from the budget must be increased.

Government spending schemes are categorized into two, namely, based on domestic schemes and financing. Empirically it shows that low- and middle-income countries emphasize health spending schemes based on financing. This settlement is generally done due to the need for private financing to increase health expenditures (Kouassi et al., 2018). Government policies related to health expenditure financing schemes vary by country. This condition is inseparable from every individual or group of residents obtaining health services through various financing arrangements. It involves various third-party schemes, but also, according to the agreement, payments are made directly by the household (Dreger & Reimers, 2021; Xu et al., 2019).

Government funding programs, whether at the national or subnational level or for certain population groups, provide access to health care based on domicile and serve as the main payment method for medical expenses in practically all low- and middle-income nations. Some mandatory health insurance (administered through a public or private agency) is another important financing strategy. A significant portion of total health spending may be made up of out-of-pocket expenses, both at the consumer's

complete choice and due to various co-payment plans. Last but not least, optional health insurance can also be a significant source of revenue in some nations (Ndaguba & Hlotywa, 2021; Obrizan & Wehby, 2018; Piabuo & Tieguhong, 2017).

Unlike high-income countries that consequently emphasize domestic financing, this is supported by the state of the country's economy to increase the health budget proportion. Utilizing a domestic spending plan, the health expenditure plan is dependent on the level of priority, with the domestic plan being the main priority in relation to public health services, the supervision and management of non-communicable diseases, administration, examination, operation, or support of public health services such as blood bank operations (collection, processing, storage, delivery), disease detection (cancer, tuberculosis, venereal disease), prevention (immunization, inoculation, vector control), monitoring (infant nutrition, child health) information gathering and birth control services preparation and dissemination concerning issues with public health (De La Maisonneuve & Martins, 2014) as well as public health services that are not provided by medically qualified doctors and public health service laboratories.

The difference in the estimation results based on the country classification in the regression analysis above shows that the probability of developed countries in determining the priority level of determinants of health spending place more emphasis on the level of health services as a whole. In comparison, developing countries emphasize improving health services internally, focusing on control, monitoring, and improving epidemic detection and control.

Consumption is one of the determinants of a country's health expenditure. The higher the consumption of a country will impact increasing health expenditure. But in comparison, the results found that the tendency of low-income countries is in line with the increase in consumption where the increase in their consumption is used to increase the proportion of health expenditures; thus, health expenditure per capita increases (Çelik et al., 2022; Nghiem & Connelly, 2017). In other country classifications such as middle and low, high and middle countries, and above, the increase in consumption has the opposite response, where the increase in overall consumption decreases health expenditure per capita. This condition is explained based on the consumption of each country which can be said to vary and depends on the income characteristics of the country (Panopoulou & Pantelidis, 2012).

This phenomenon can be explained empirically based on the country's health expenditure heterogeneity determined by the community's purchasing power. Consumption of people such as low-income countries with lifestyles tends to be consumptive and unhealthy. In addition, in the context of macroeconomics (Amiri et al., 2021), the increase in consumption was driven by demographic factors such as infant mortality (health outcomes), dependency ratio, the labor participation rate for women (demographic indicators), and alcohol consumption (lifestyle indicator).

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The research explicitly discusses health expenditure schemes from the domestic side and financing and macroeconomic variables such as population, GDP, and consumption of health expenditures claimed by the country's income level. Panel data regression divides it into low-income, lower-middle-income, high-income, and upper-middle-income countries. The results showed relatively significant differences between the determinants of health expenditure variables, including variable populations in low-

middle-income countries. The positive and significant influences on middle-income countries, whereas high-income countries have a negative and significant influence. As for the overall GDP variable, low-income, lower-middle, and advanced countries negatively and significantly influence health care.

For middle-income countries have a positive and significant influence on health spending. Variable consumption in low-income countries was shown to determine an increase in health spending, while in other countries classification, increased consumption determined a decrease in health spending. The classification of schemes from the analysis results proves differences in the findings that low and lower-middle-income countries emphasize moderate financing schemes for countries. At the same time, countries with upper-middle and high incomes emphasize domestic spending schemes.

Recommendations

Differences in health expenditure between countries are due to the differences in macroeconomic indicators of each country's classification. The analysis shows a high gap in each regional classification, especially in low-income countries with a high population, low GDP, and high government consumption. Thus, a priority policy is needed to allocate health budgets prioritizing health services with high categories rather than increasing health insurance and guarantees. In addition, the focus on each country emphasizes more policies on financing schemes based on expenditure priorities. Thus health expenditures can be more suppressed and on target so that the increase in health expenditure is in line with improving health care quality. In the future, in looking at the tension of the factors that make up the difference in spending on health variables with different country classification conditions, we can update research methods using long and short-term schemes with the VCEM or VAR approach. We can see the relationship between the two of each variable in the factors that affect Health Expenditure because this article only reveals a unidirectional relationship and does not clarify the long-term scheme of the results of this article.

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