Effects of Health Factors on GDP Growth

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It is indicated that the existence of a long-run equilibrium relationship between the health factors and GDP growth; however, in the short term, the variables are found to be in a state of disequilibrium.

Keywords: sustainable economic growth ; health factors ; Johansen cointegration test

1. Introduction

The primary objective of macroeconomics is to increase and maintain the gross domestic product (GDP) of a country. Therefore, economists are continually exploring microeconomic and macroeconomic factors that affect and sustain economic growth over time. Despite numerous empirical and theoretical studies conducted to investigate the various links between GDP growth and health factors, the final determinants contributing to increasing or hindering GDP growth have not yet been identified. Previous research findings make it challenging to determine the weights of the variables in economic relations. For instance, Acemoglu and Johnson [1] found strong negative effects of health on GDP growth, while Lorentzen et al. [2] found strong positive effects despite using similar specifications. Furthermore, while mortality rates (such as infant mortality rates [IMR], road traffic mortality [RTM], and maternal mortality ratio [MMR]) have been decreasing and life expectancy increasing globally in recent decades, it remains unclear theoretically and empirically to what extent health progress has causally impacted positive GDP growth. Lucas [3] and Bloom and Prettner [4] suggested that better health can improve GDP per capita, lower mortality, and lead to longer lives, leading to investment in physical and human capital and sustainable GDP growth. However, Acemoglu and Johnson [1] proposed that mortality reduction drives population growth and can reduce GDP per capita. Thus, it is crucial to assess the impact of changes in mortality rates (IMR, MMR, and RTM) and healthcare expenditures (HCE) on GDP growth to help policymakers formulate policies that foster or prevent these effects. Furthermore, Rocco et al. [5] suggested that the direction and levels of the effects of health on GDP growth vary across countries with their income levels, and the effect varies nonlinearly depending on the stage of demographic change at the beginning of the study period. Therefore, further studies are necessary to produce more specific and robust empirical evidence in a country's context.

Saudi Arabia is one of the largest economies in the Middle East and North Africa region, with a GDP of $833.54 billion in 2021, up from $164.54 billion in 1980 [6]. This country is very well known for its oil and gas reserves [6]. The economy of Saudi Arabia is heavily reliant on oil, which accounts for around 95% of total export earnings and contributes approximately 40% to the country’s GDP. As a result, fluctuations in the price of oil have a significant impact on economic growth, and this country has faced irregular economic growth for the last few decades, like the overall world economy. In recent years, Saudi Arabia has implemented several initiatives under the banner of “Saudi Vision 2030” to achieve sustainable and robust GDP growth [8]. The main goals of Vision 2030 are: increasing the contribution of non-oil products and services (of GDP) from 16% to 50%; enhancing the country’s global ranking in the Logistics Performance Index from 49th to 25th position; and increasing the private sector’s contribution from 40% to 65% of total GDP [7]. The country is increasingly diversifying its economy by boosting the contribution of non-oil products and services. As a result, the private sector’s contribution to the total GDP has increased from 40% in 2014 to 51.7% in 2021 [8]. Saudi Arabia is also making notable progress in social and environmental development, including gender equality, improved education, higher living standards, enhanced well-being, and environmental laws.

The Government of Saudi Arabia has been working hard to achieve higher economic growth, resulting in a 7.3% increase in real GDP in 2021 compared with the previous year [9]. However, sustainable GDP growth remains a challenge due to a lack of understanding of the determinants of GDP growth. To achieve the objectives of the ‘Saudi Vision 2030’ effectively, it is important to investigate both the positive (prospects) and negative (challenges) determinants of GDP growth. Sustainable GDP growth is an important global indicator, and in recent years, it has become apparent that health-related factors play a vital role in achieving higher and more sustainable GDP growth in Saudi Arabia. However, the existing literature has provided conflicting evidence regarding the relationships between health factors and GDP growth. The lack
of a comprehensive and consistent theory on the relationship between health factors and GDP growth has made it difficult for policymakers, the government, and other relevant authorities to address this issue effectively. This study aims to examine the direct and indirect links between health factors (infant mortality rate, maternal mortality ratio, road traffic mortality rate, and healthcare expenditure) and sustainable GDP growth in Saudi Arabia, which has been identified as one of the country's most vulnerable to changes in health factors \[10\]. The specific objectives of the study are (i) to determine whether GDP growth and health factors have a long-run equilibrium relationship; (ii) to test for any causal relationship between the variables; and (iii) to provide recommendations to policymakers on formulating effective policies that consider health factors to achieve sustainable GDP growth in Saudi Arabia. It is hoped that the findings of this study will contribute to a better understanding of the relationship between health factors and GDP growth in Saudi Arabia and provide valuable guidance for policymakers.

### 2. Mortality, Healthcare Spending, and GDP in Saudi Arabia

The impact of mortality and healthcare spending on individual income is well established. However, at the national level, while it is evident that poorer countries generally have a lower health status, the connection between changes in income and health outcomes is unclear. The death of an infant is a tragic event for both the family and the community \[11\]. In 2022, Saudi Arabia’s infant mortality rate (IMR) was 5.497 per 1000 live births, showing a 3.54% reduction from the previous year, and the trend is gradually declining \[12\]. Despite this decline, the IMR remains a significant issue, and there are no straightforward solutions. One question that arises is whether better child health leads to higher GDP growth outcomes in Saudi Arabia, whether such a relationship exists for infant mortality in Saudi Arabia, and, if so, what the causal effect may be. The study's findings indicated a significant negative relationship between the infant mortality rate (IMR) and GDP growth in Saudi Arabia. Therefore, the second hypothesis (H2), proposing an inverse association between IMR and GDP growth in Saudi Arabia, was supported and accepted. This finding is consistent with previous studies \[13\,14\,15\,16\,17\,18\,19\,20\,21\,22\,23\], which have also reported a detrimental impact of IMR on economic growth. For example, Klobodu et al. \[24\] discovered that child health causes GDP growth in six sub-Saharan African countries (Burkina Faso, Togo, Ghana, Ivory Coast, Botswana, and South Africa). In addition, Lawal et al. \[25\] identified significant positive effects of infant and maternal mortality on GDP growth. Furthermore, Ogunjimi and Adebayo’s study \[26\] found no causal relationship between real GDP and IMR. Instead, they identified a unidirectional causal relationship between GDP and health expenditure.

Maternal mortality continues to be the primary cause of death and disability among women of reproductive age, with potentially significant but inadequately documented economic implications \[5\]. In Saudi Arabia, the MMR was 16.80 per 100,000 live births in 2019, down from 17.00 in 2013 \[12\]. Interestingly, the relationship between MMR and GDP growth during economic booms in Saudi Arabia was found to be unstable. Although there is no significant relationship between MMR and GDP growth at a 5% level, it is significant at 10% levels, and the direction of the relationship is interestingly positive. The first hypothesis (H1) posited that there would be a negative relationship between the maternal mortality rate (MMR) and GDP growth in Saudi Arabia. However, the results of the study led to the rejection of this hypothesis, contradicting the findings of earlier research \[13\,14\,15\,16\,17\,18\,19\,20\,21\,22\,23\], which reported a negative association between MMR and GDP growth. There are several reasons why there may be a positive relationship between the maternal mortality ratio (MMR) and GDP growth in Saudi Arabia. One contributing factor to the increase in GDP despite the rise in maternal mortality may be the fact that the rate of increase in maternal mortality is lower than the rate of increase in female labor force participation. During the earlier part of the study period, women’s participation in the labor force was minimal, so the impact of maternal mortality on the country’s GDP growth was insignificant. However, the Saudi government launched Vision 2030, which includes various programs and policies aimed at promoting women’s participation in the workforce. As a result, women’s labor force participation has increased to 30%, despite the increase in maternal mortality. This may have contributed to the overall increase in GDP. Another reason could be the recent increase in oil prices, which has had a significant impact on eliminating the negative effect of the MMR on GDP growth. Additionally, the new projects that Saudi Arabia is investing in are also boosting GDP growth. In conclusion, although the MMR has a low level of significant positive relationship with GDP, it is important for policymakers to still consider lowering the MMR as the Saudi Arabian government has a strategy to transform the economy from a factor-driven nation that heavily depends on oil exports to an efficiency-driven nation that produces standard products and services. Lowering the MMR is essential to sustain GDP growth in an efficiency-driven economy, promote economic development, and achieve sustainable development goals. This can be achieved by investing in healthcare systems, increasing access to maternal healthcare services, and implementing policies that support maternal and child health.

Accidents, while unexpected, have become a significant social and economic burden worldwide. The study findings indicated a strong negative relationship between road traffic mortality (RTM) and GDP growth in Saudi Arabia, thereby providing support for the third hypothesis (H3) that a significant inverse association exists between RTM and GDP growth...
in the country. This finding is consistent with earlier studies that have also reported similar results, highlighting the detrimental impact of RTM on economic growth. These studies have demonstrated that road traffic accidents (RTAs) not only result in the loss of human lives and disabilities but also hinder the performance of economies. In Saudi Arabia, RTAs are considered an epidemic issue, with one of the highest death rates caused by road accidents. The consequences of RTAs include injuries, deaths, property damage, congestion, disruptions, and delays to public transportation systems. Globally, RTAs result in the deaths of approximately 130,000 people each year, which accounts for about 5% of total deaths in Saudi Arabia. The RTM (road traffic mortality) in 2019 was 3.9 per 100,000 people. The impact of RTAs also leads to increased hospitalization and healthcare expenses, significantly affecting the Saudi economy and contributing to health problems.

The healthcare expenditure of a country or region is crucial in determining its GDP growth rate. Health-related expenditure is on the rise worldwide, posing a challenge to the stability of national health systems’ GDP growth even in high-income countries. In Saudi Arabia, the healthcare sector is a top priority, and there are significant opportunities for growth in this high-potential occupational sector. The relationship between healthcare expenditure and GDP growth rate is an important concern. At the national level, healthcare expenditure contributes to multi-factor productivity, indicators of labor productivity, personal spending, GDP, and other factors. Most previous studies have shown that an increase in healthcare expenditure has a positive relationship with the GDP growth rate. However, researchers identified a significant negative relationship between healthcare expenditure and GDP growth in Saudi Arabia. The study findings did not provide support for the fourth hypothesis (H4) that posited a significant positive relationship between healthcare expenditure (HCE) and GDP growth in Saudi Arabia. This finding contradicts the results of earlier studies conducted in other countries, which reported a positive association between HCE and GDP growth. Halıcı-Tülüce et al. found that higher healthcare expenditure had a statistically significant negative effect on GDP growth.

The negative association between healthcare expenditure and GDP growth in Saudi Arabia may be due to several factors. One possible reason is the high mortality rate and the need to become a healthy nation by 2030, which require increased healthcare spending and ultimately decrease GDP growth. Saudi Arabia invests a large portion of the government's budget in healthcare, with less funding available for infrastructure development or education, which could have a more direct impact on GDP growth. A second potential reason could be inefficiencies in the healthcare system, such as a lack of coordination between different healthcare providers and excessive use of expensive medical technologies. Inefficient allocation of healthcare funds and a lack of effective policies to optimize healthcare spending can have a negative impact on GDP growth. Another potential reason could be overinvestment in healthcare relative to actual demand, leading to a negative impact on GDP growth. Saudi Arabia has a relatively young population, which means that the demand for healthcare services may not be as high as in other countries with older populations. Additionally, inadequate regulation of the healthcare sector, low productivity, and limited technological advancement can have a negative effect on the economy. Furthermore, Saudi Arabia's economy is heavily dependent on oil exports, which means that fluctuations in oil prices can have a significant impact on the country's GDP. Healthcare expenditures may not have as direct an impact on the economy as the oil industry and thus may not contribute as much to overall GDP growth. Finally, the COVID-19 pandemic has had a significant impact on healthcare expenditure in Saudi Arabia, which has affected the country's economic growth. It is worth noting that there may be other factors at play as well, and the relationship between healthcare expenditure and GDP growth can be complex and multifaceted. However, these are some potential reasons why healthcare spending may have a negative effect on GDP growth in Saudi Arabia. Overall, the negative effect of healthcare expenditure on GDP growth in Saudi Arabia is likely the result of a combination of factors.

References


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