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## CHANGES IN HEALTH EXPENDITURE RELATIVE TO INFLATION: PROSPECTIVE IMPLICATIONS FOR TÜRKİYE

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### Abstract

This study aims to examine how healthcare expenditures can be sustained during periods of high inflation in Türkiye. For this purpose, healthcare expenditure and inflation data from 2010 to 2019 were analyzed, and projections were developed for 2023. The methodology involves the evaluation of historical data using time series analysis and economic projections. The findings show that the healthcare expenditure growth rate, below 5%, is far lower than the expected 14.3%, placing significant financial pressure on the sector. The COVID-19 pandemic and the Ukraine war have directly impacted healthcare expenditures in Turkey. These events have exacerbated inflation and widened budget deficits, placing additional strain on the sustainability of public healthcare funding. As a result, it is projected that the share of the public budget allocated to healthcare needs to increase by approximately 7% by 2040. The study highlights the challenges of increasing public resources and recommends a greater contribution from the private sector. Developing innovative strategies is crucial for ensuring the sustainable financing of the healthcare sector.

**Keywords:** Inflation, Sustainability of Health Expenditures, Public Finance

**JEL Classification:** C53, F62, H55

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## SAĞLIK HARCIMALARININ ENFLASYON KARŞISINDAKİ DEĞİŞİMİ: TÜRKİYE İÇİN İLERİYE DÖNÜK ÇIKARIMLAR

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### Öz

Çalışmanın amacı, Türkiye'de sağlık harcamalarının yüksek enflasyon dönemlerinde nasıl sürdürülebileceğini kapsamlı bir şekilde incelemektir. Bu doğrultuda, 2010-2019 yıllarına ait sağlık harcamaları ve enflasyon verileri analiz edilmiş ve 2023 yılı için projeksiyonlar oluşturulmuştur. Çalışmanın yöntemi, geçmiş verilerin zaman serisi analizi ve ekonomik projeksiyonlarla değerlendirilmesi şeklinde yapılandırılmıştır. Bulgular, beklenen %14,3 oranına kıyasla, sağlık harcamalarının büyümeye oranının %5'in altında kaldığını ve bu durumun sağlık sektöründe ciddi finansal baskılar yarattığını göstermektedir. COVID-19 pandemisi ve Ukrayna savaşı, Türkiye'de sağlık harcamaları üzerinde doğrudan etkiler yaratmıştır. Bu olaylar, enflasyonu artırarak ve bütçe açıklarını genişleterek sağlık sektörünü zorlamış, kamu harcamalarının sürdürülebilirliğini tehlkeye sokmuştur. Sonuç olarak, 2040 yılına kadar kamu bütçesinden sağlığa ayrılan payın yaklaşık %7 oranında artırılması gerektiği öngörmektedir. Çalışma, kamu kaynaklarının artırılmasının zorluklarına dikkat çekmekte ve özel sektör katkısının artırılmasını önermektedir. Sağlık sektörünün sürdürülebilir finansmanı için yenilikçi stratejilerin geliştirilmesi büyük önem taşımaktadır.

**Anahtar Kelimeler:** Enflasyon, Sağlık Harcamalarının Sürdürülebilirliği, Kamu Finansmanı

**Jel Sınıflandırması:** C53, F62, H55

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### 1. Introduction

The current global economic environment presents significant challenges for healthcare systems worldwide. In particular, the COVID-19 pandemic has placed extraordinary strain on healthcare systems, economies, and other sectors. By the end of 2022, the pandemic had resulted in over 420 million confirmed cases and more than 3.2 million deaths globally (World Health Organization, 2023). Beyond its immediate effects, the pandemic indirectly disrupted healthcare services, leading to the cancellation of general practitioner and specialist appointments, delays in elective surgeries, and postponements of cancer screenings (Moynihan et al., 2021:190; Cancino et al., 2020). Simultaneously, a rise in mental health concerns was observed (Pfefferbaum and North, 2020:510). Expectations for economic recovery in 2022 were hindered by the onset of the Russia-Ukraine conflict, which compounded the lingering effects of COVID-19 and caused significant disruptions to global supply chains (Kilpatrick, 2022). This situation fueled a global surge in inflation, primarily driven by escalating energy and food prices (International Monetary Fund, 2023).

In Türkiye, COVID-19-related deaths in 2020 and 2021 rose by 14% compared to pre-pandemic levels (TÜİK, 2022). To strengthen the healthcare system, address the pandemic, and support vaccination efforts, an additional health budget equivalent to 1% of GDP was allocated during the pandemic (Ministry of Health, 2022). While healthcare expenditures constituted 4.3% of GDP in 2019, this ratio climbed to 5% in both 2020 and 2021 (OECD, 2022).

The pandemic caused a decline in both supply and demand in the Turkish economy. Infected individuals were forced to leave the labor force, and non-essential sectors were closed (World Health Organization, 2023). At the same time, consumer habits changed and people avoided shopping malls (Özyörük and Civelek, 2022:82). Economic uncertainties and income losses led to a decline in consumption and investment (OECD, 2022). Although Türkiye's growth recovered in the third quarter of 2022, inflation reached 64.8 % in the same year (TÜİK, 2023). These economic and geopolitical developments affected the available resources for public and private financing and increased the cost of providing health care services (International Monetary Fund, 2023).

This study explores the impact of unprecedented inflation levels on healthcare costs in Türkiye and investigates strategies to ensure sustainable healthcare expenditures in the future. The primary aim is to evaluate whether the growth in healthcare expenditures can be maintained during periods of high inflation and to propose financing mechanisms to achieve this. The study examines global trends in healthcare expenditures in OECD countries, evaluates Türkiye's current economic conditions and their impact on healthcare spending, and uses data from 2010-2019 to project healthcare expenditures for 2023. It further assesses the effects of extraordinary inflationary pressures from the pandemic and the Ukraine crisis on these projections, finding discrepancies between the projected and actual growth rates for 2023. Finally, the study highlights the need for an increase of approximately 7 % in public healthcare expenditure by 2040 to ensure the resilience of Türkiye's healthcare system against future crises.

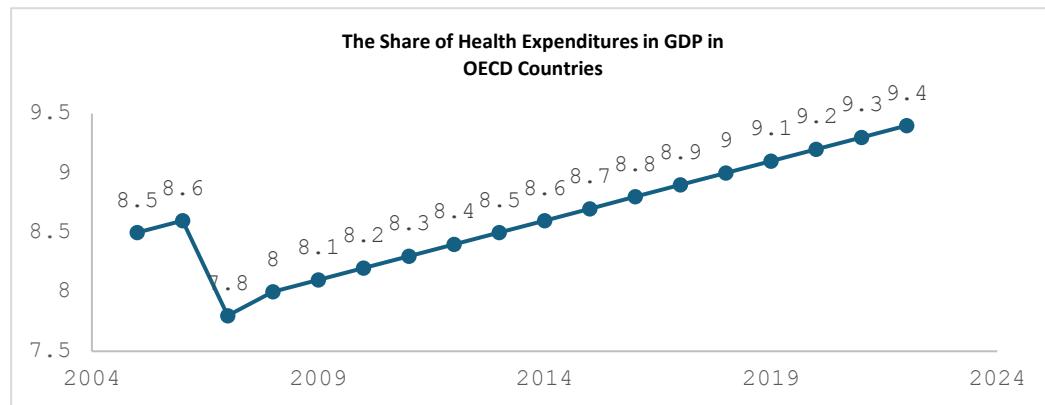
### 2. The Impact of Global Economic Conditions on Health Expenditures

Health expenditures constitute a substantial share of gross domestic product (GDP) in Organisation for Economic Co-operation and Development (OECD) countries and have shown a marked increase in recent decades (Nghiem and Connelly, 2017:2). For instance, median health spending in the OECD rose from 3.8% of GDP in 1960 to 7.9% in 1990 (Anderson et al., 2000:152-153). Between 1975 and 2004, OECD data indicate that the growth rate of per capita health expenditures consistently outpaced that of per capita GDP (Nghiem and Connelly, 2017:3). Notably, this growth has been more pronounced in developed economies, where the health sector accounts for a higher proportion of GDP compared to other regions (Figure 1).

At the national level, the ratio of health expenditures to GDP in 2022 remained highest in the United States at 16.6%, followed by Germany at 12.7% and France at 12.1%. Among 14 high-

income countries, including Canada and Japan, health spending exceeded 10% of GDP. While healthcare expenditures in 11 OECD countries were projected to fall below pre-pandemic levels in 2019, they remained above the pre-pandemic average of 8.8% in 2022. In Eastern and Central European and Latin American OECD countries, healthcare spending ranged from 6% to 9% of GDP. However, in Mexico, Luxembourg, and Türkiye, the share of GDP allocated to health expenditures remained below 6% (OECD, 2023).

Figure 1: Health Expenditure as a % Age of GDP in OECD Countries (2005-2022)



Source: (OECD, 2023).

Studies on the growth of health expenditures in OECD countries have identified inflation (McKinsey, 2020; OECD, 2021), income growth (Panopoulou and Pantelidis, 2011:3910), education (Hu and Wang, 2024), population aging (Jakovljevic et al., 2020; Bektas and Akman, 2018:141), technological progress (Nghiem and Connelly, 2017:2), and the prevalence of health insurance (Lorenzoni et al., 2014:84) as the main determinants.

According to a report by McKinsey (2020), inflation is having a transformative effect on the healthcare sector. Due to rising labor costs and increasing prices of medical supplies, healthcare spending has outpaced the general rate of inflation. One of the negative effects of rising inflation on health outcomes is that during periods of high inflation, individuals may be forced to cut back on healthcare spending, creating challenges for low-income households to access healthcare services (Venkataramani et al., 2020; Sousa, 2022). In addition, the American Hospital Association (2024) noted that general inflation rates have been rising faster than hospital prices. Rising labor, pharmaceutical, and medical supply costs threaten the financial stability of hospitals and increase the overall cost of health care services. The OECD report (2021) also showed that during periods of high inflation, health expenditures can decrease in real terms. Even if nominal health expenditures increase, inflation reduces their real value, threatening the sustainability of health systems.

According to projections by the OECD (2023) and McKinsey (2022), the annual average growth rate of health expenditures is expected to rise to 5.1% by 2030, with health spending as a share of GDP increasing to 19.6%. This growth is primarily driven by rising demand for healthcare services and an aging global population. However, the escalation of inflation and increasing labor costs are contributing to higher healthcare delivery expenses.

In this context, the U.S. Medicare program, which provides health coverage for individuals aged 65 and older as well as certain younger individuals with disabilities or chronic illnesses, is anticipated to experience an annual expenditure growth rate of 7.2%. Similarly, spending under the Medicaid system, which offers health insurance for low-income individuals and families, is projected to grow at an annual rate of 5.6%. These trends present significant challenges to the financial sustainability of healthcare systems (Keehan et al., 2023:888).

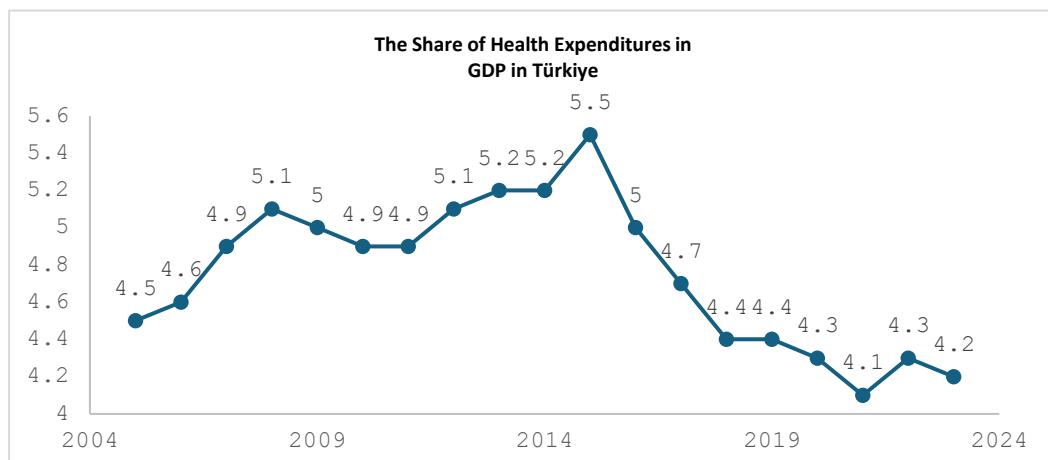
Beyond rising demographic and technological pressures, post-2020 global inflationary trends have introduced structural challenges that directly affect the financial sustainability of healthcare systems. In many OECD and middle-income countries, inflation-adjusted health expenditures declined despite nominal increases, leading to reduced service capacity and diminished access to care. Béland et al. (2024) emphasize that inflation shocks disproportionately burden low-income households, exacerbating inequities in healthcare utilization. Moreover, Munnell and Hubbard (2021) illustrate how even inflation-indexed welfare mechanisms, such as Social Security in the United States, fail to preserve real purchasing power when healthcare-specific costs (e.g., insurance premiums, out-of-pocket payments) rise faster than general consumer prices. These findings underline the importance of designing inflation-sensitive health financing strategies, particularly in periods of sustained economic instability, to preserve both equity and system resilience.

### 3. Economy and Health Expenditures in Türkiye

Türkiye has a national health system, where health expenditures account for a substantial share of government spending. According to current health indicators, the ratio of health expenditures to GDP rose from 4.6% in 2000 to 5.5% in 2009. However, following the 2008 social security reform, this ratio steadily declined, dropping below 5% in 2011 and reaching 4% in 2022, which is approximately half of the OECD average of 8.8% (TÜİK, 2023). Health expenditures have shown an upward trend during periods of increased demand, such as pandemics and outbreaks of infectious diseases (Atalan, 2020:9).

Various factors influence health expenditures, including inflation (Atalan, 2020:8), rising real per capita income (Bektaş and Akman, 2018:142), education levels (Koçyiğit and Çilhoroz, 2021:773), technological advancements (Özmen, 2017:89), urbanization (Altuntaş and Özyurt, 2020:892), increased access to health insurance (Beylik et al., 2022), and an aging population (Koçyiğit and Çilhoroz, 2021:773). Research by Beylik et al. (2022) highlighted the significant negative impacts of the economic crises of 1994, 2001, and 2009 on public health expenditures and health indicators. These crises resulted in decreased public funding for healthcare, reducing access to services and negatively affecting overall health outcomes. The study further emphasized that these adverse effects were not solely due to economic conditions but were also shaped by policy choices made during these periods. Similarly, Sparkes et al. (2019:184-185) argued that health financing reforms are inherently political and, while they may pose challenges by altering the distribution of resources among interest groups, they can lead to notable improvements in access to health services.

Figure 2: Health Expenditure as a Share of GDP in Türkiye (2005-2023)



Source: (OECD, 2023).

The inflation rate in Türkiye has a direct impact on health expenditures, as real health expenditures tend to decrease during periods of high inflation (Atalan, 2020:9-10). According to data from the Turkish Statistical Institute (TÜİK), the inflation rate reached 64.77% in 2023, while the share of health expenditures in GDP decreased to 4.2% (Figure 2).

Health expenditures are closely linked to economic growth and development (Beylik et al., 2022). In 2020, the economic growth of Türkiye fell to 1.8% due to the COVID-19 pandemic, but it recovered in 2021 and achieved a high growth rate of 11.0%. However, the growth rate is expected to be around 4.3 % in 2024 (World Health Organization, 2023). In addition, the unemployment rate, which was 12.2% in 2021, decreased to 9.6% in 2023. The increase in unemployment during the pandemic has shown some improvement with the economic recovery, but the unemployment rate remains high.

One of the key factors affecting health care spending is demographics. Türkiye's population is rapidly aging. As of 2023, the proportion of the population aged 65 years and older is 10.2 % (TÜİK, 2023), and this proportion is expected to exceed 20 % by 2050 (United Nations, 2022). The aging population increases the demand for health care services and contributes to the growth of health care expenditures. Therefore, strategic planning for the sustainability of healthcare services is of great importance.

#### 4. Growth Potential of Health Expenditures Amid Inflation

Over the past 15 years, growth in health spending has consistently outpaced general inflation. This difference was particularly evident during the global financial crisis (2008) and the pandemic (2020 and 2021) and was driven by increased public spending (OECD, 2021; McKinsey, 2020). During the global financial crisis, governments increased health spending to mitigate economic stagnation (OECD, 2010). During the pandemic, health expenditures increased significantly as health systems struggled to cope with COVID-19 (McKinsey, 2020). The key question is whether the growth in health expenditures is sustainable during periods of high inflation, and how the financing challenge can be addressed. To answer this, data from 2010-2019, the period after the 2008 global financial crisis and before the pandemic, were used and projections were made for 2022/2023. Two different scenarios were analyzed: one based on the average historical growth rate (Scenario 1), and the other based on the observed average growth rate (Scenario 2). For Scenario 1, the average growth rate of health spending between 2010 and 2019 was used and projected forward. For Scenario 2, the average growth rate of health expenditures over the past 15 years was used. The calculations were performed using Python 3.11, and the data were obtained from the Turkish Statistical Institute (TÜİK).

For Scenario 1, the average annual growth rate of health care expenditures between 2010 and 2019 was calculated and used for the 2023 projection. Then, the average inflation rate for the period 2010-2019 was determined. The growth rate of health expenditures was calculated by adding the determined inflation rate and projecting it to 2023, resulting in the total growth rate of health expenditures.

For scenario 2, the average annual growth rate of health expenditures for the past 15 years (2007-2022) was calculated. The determined average growth rate was used to project the future growth of health expenditures.

#### 5. Methodology

In this study, we analyze the trends in Türkiye's health expenditures, inflation, and GDP growth from 2010 to 2023, and project future changes through 2030. The data used covers health expenditures, inflation rates, and GDP figures for this period. To calculate health expenditures as a share of GDP, we divided annual health spending by GDP for each year using the following formula:

$$\text{Health Expenditure Share} = (\text{Health Expenditures} / \text{GDP}) * 100 \quad (1)$$

This calculation provides a clear view of how health spending has evolved in relation to Türkiye's overall economic growth. The result was plotted for the years 2010 to 2021, with an additional line representing the average health expenditure share from 2010 to 2019 for comparative purposes.

Calculating the share of health expenditures in GDP is a critical step in understanding the importance and priority of these expenditures within the country's economy. This analysis compares healthcare resources with the overall economy and helps assess the sustainability of health spending. Using data from 2010 to 2021, this analysis highlights the impact of the pandemic on health spending by referencing the average value of 2010–2019 as a baseline.

Next, to understand the growth of health expenditures over time, we calculated the annual growth rates using the following formula:

Annual Growth Rate =

$$((\text{Health Expenditures}_t - \text{Health Expenditures}_{t-1}) / \text{Health Expenditures}_{t-1}) * 100 \quad (2)$$

Here,  $t$  denotes the current year, and  $t-1$  represents the previous year. These growth rates were plotted for the years 2007 to 2023 to highlight year-to-year changes in health expenditures. To enhance our understanding of how these expenditures compare to other economic factors, inflation and GDP growth rates were plotted on a secondary y-axis.

Annual growth rates were calculated to understand the rate and trends of changes in health expenditures over time. This analysis expresses the year-on-year change in health spending as a percentage compared to the previous year, illustrating how expenditures have grown or decreased annually. Based on data from 2007 to 2023, the analysis evaluates the impact of significant events such as economic crises or pandemics on health expenditures and provides insights into their sustainability.

Additionally, we examined the changes in health expenditures, inflation, and GDP during the period 2019-2023, a time marked by significant economic shifts. The year-to-year change in health expenditures was calculated similarly to the annual growth rate formula mentioned above. For inflation and GDP, we calculated the percentage changes using the following formula:

$$\text{Change}_t = ((\text{Value}_t - \text{Value}_{t-1}) / \text{Value}_{t-1}) * 100 \quad (3)$$

By applying this formula, we were able to quantify how inflation and GDP evolved during these years. These values were plotted in a multi-line graph to show the relative changes in health expenditures, inflation, and GDP from 2019 to 2023. This allowed us to make clear comparisons between the three variables.

To place health expenditures in a broader economic context, these expenditures were compared with economic indicators such as inflation and GDP growth. Covering the period from 2019 to 2023, this analysis focuses on a time of significant economic disruptions to examine how health expenditures interacted with other economic variables. Multi-line graphs were used to visualize the relationship between health expenditures, inflation, and GDP growth, facilitating a clear understanding of how these variables relate to one another.

To project trends for 2030, we applied two methods: linear regression and the compound annual growth rate (CAGR). Linear regression was applied to the historical data from 2010 to 2023 to establish future projections based on observed trends. The CAGR method was used to estimate the average annual growth rate for each variable through the following formula:

$$\text{CAGR} = ((\text{Final Value} / \text{Initial Value})^{(1 / n)} - 1) \quad (4)$$

where the final value corresponds to 2023, the initial value corresponds to 2019, and  $\backslash(n\backslash)$  is the number of years. The projections assumed consistent growth and no major external shocks, allowing us to estimate future health expenditures, inflation, and GDP trends up to 2030.

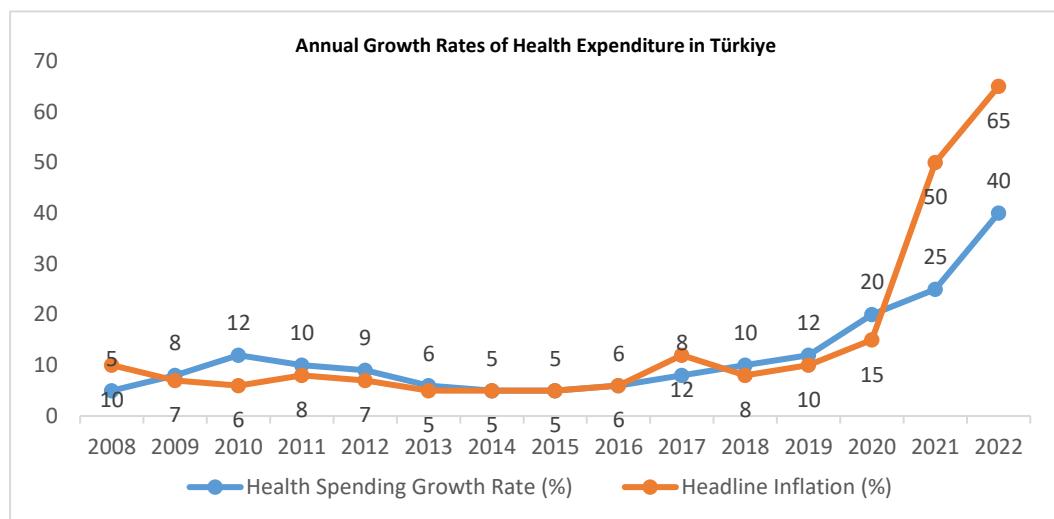
To project trends up to 2030, projection methods such as linear regression and the compound annual growth rate (CAGR) were employed. Linear regression provided predictions based on historical trends, while the CAGR method calculated the average annual growth rate. These projections, made under the assumption of no major external shocks, established a baseline scenario for how health expenditures, inflation, and economic growth might evolve in the future. This approach offers critical insights for assessing the long-term sustainability of health expenditures.

This approach offers a baseline scenario for the future, providing insights into how health spending will evolve as a share of GDP, alongside inflation and GDP growth.

## 6. Findings

According to the calculations, healthcare expenditures increased by an average of 17.97% annually over the last 15 years (2007–2022) (Figure 3). During the period 2010–2019, healthcare expenditures exceeded the inflation rate by an average of 6.96 percentage points annually, demonstrating significant growth. If this trend had continued in 2023, healthcare expenditures in Türkiye were projected to reach an average nominal growth rate of 14.03%. Although this rate is lower than the average annual growth rate of 17.97% during the 2007–2022 period, it still indicates that healthcare expenditures would continue to grow significantly.

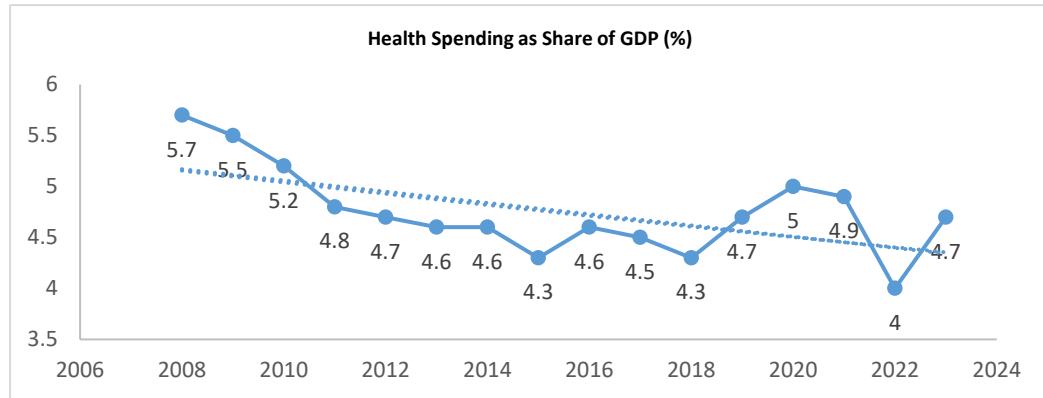
Figure 3: Annual Growth Rates of Health Expenditure in Türkiye (2007-2023)



Additionally, public health crises such as the COVID-19 pandemic and the Ukraine war have underscored the need to strengthen the resilience of healthcare systems to protect public health, improve healthcare infrastructure, and support the healthcare workforce. Resilient healthcare systems are essential for responding swiftly to natural or human-induced epidemics. These systems form the foundation of stronger, shock-resistant economies, reducing the need for harsh and costly restrictive measures and better preparing societies for future crises (Jakovljevic, 2022).

Figure 4 illustrates the changes in the share of health expenditures in Türkiye's GDP between 2010 and 2021. In the pre-pandemic period, the share of health expenditures in GDP remained relatively stable, fluctuating between 4.2% and 4.4%. However, during the pandemic, this ratio increased to 4.6%, demonstrating the resilience of the Turkish healthcare system in responding to shocks. The cost of pandemic-related expenditures was estimated to be approximately 1% of GDP (TÜİK, 2023). This highlights the importance of maintaining flexibility within the health system to absorb unforeseen crises.

Figure 4: The Share of Health Expenditure in the GDP of Türkiye (2010-2021)



Despite the healthcare system's resilience during the pandemic, Türkiye's significant economic challenges pose risks to sustaining investments in healthcare. Following the pandemic, inflationary pressures emerged, initially driven by energy price increases and supply chain disruptions. These pressures were further exacerbated by Russia's invasion of Ukraine in February 2022. The resulting surge in oil, gas, coal, industrial metals, wheat, and corn prices created widespread inflationary pressures (U.S. Energy Information Administration, 2024; International Food Policy Research Institute, 2022). These pressures increased the prices of goods and services, especially in energy, transportation, and food (UNCTAD, 2022). Consequently, inflation reached historically high levels in 2022 and 2023, with Türkiye experiencing inflation rates of 64.2% in 2022 and 64.77% in 2023 (TÜİK, 2023). Globally, inflation in G20 countries rose from 3.8% in 2021 to 8.2% in 2022 and 2023 (OECD, 2023).

Figure 5: Health Expenditures, Inflation, and GDP Growth Rates in Türkiye (2019-2023)

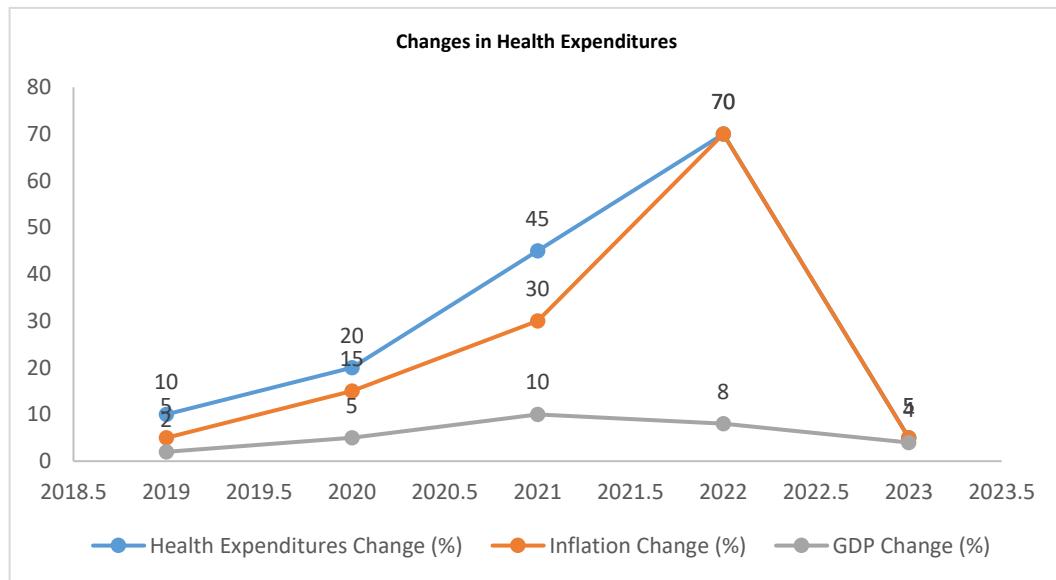


Figure 5 illustrates the changes in health expenditures, inflation, and GDP growth rates in Türkiye between 2019 and 2023. The data reveal a significant increase in health expenditures between 2020 and 2022, which was followed by a notable decrease in 2023. Inflation rates, on the other hand, saw a sharp rise, particularly in 2021 and 2022. GDP growth rates showed considerable fluctuations starting in 2021, and the realized growth rate for 2023 remained below 5%, deviating significantly from the projected 14.3%.

The COVID-19 pandemic played a critical role in these dynamics, as it caused a marked increase in health expenditures and a higher share of GDP allocated to health. The pandemic-induced surge in demand for healthcare services necessitated substantial investments in healthcare infrastructure (OECD, 2022). Furthermore, the labor-intensive nature of the healthcare sector required salary increases to attract and retain essential personnel, including doctors, nurses, and care workers (McKinsey, 2020). In Türkiye, several reforms and salary adjustments were introduced post-pandemic to address the increased workload and challenges faced by healthcare workers. Notably, additional payments were raised for staff working in intensive care units, emergency services, and COVID-19 units. In 2022, the government implemented the "3600 Additional Indicator" regulation, which enhanced salaries and retirement benefits for healthcare workers and other public employees (Ministry of Health, 2022).

The war in Ukraine in 2022 led to a global increase in energy and food prices, exacerbating inflationary pressures (OECD, 2022). Rising gas, fuel, and electricity costs were a major concern for energy-intensive health services such as hospitals and long-term care facilities (World Health Organization, 2023). In addition, the war disrupted supply chains, making it difficult to procure medicines and medical supplies, which further increased costs in the healthcare sector (OECD, 2022). Inflationary pressures, economic uncertainties, and the global economic slowdown negatively affected the growth rate of health spending (International Monetary Fund, 2023). During this period, the share of health expenditures in GDP decreased under the influence of inflation and economic challenges (TÜİK, 2023). Extraordinary inflationary pressure, cost of living crisis, and economic decline put additional upward pressure on health system costs, leading to a significant increase in health care costs (OECD, 2022). The prolonged economic slowdown, unemployment, and falling profits, combined with high inflation, reduced household disposable income and consequently affected tax revenues and social security contributions (World Health Organization, 2023).

The general increase in wages and unit labor costs has put pressure on the cost of a wide range of goods and services used as inputs in the health sector. In 2007, as part of the Ninth Development Plan, the Ministry of Health introduced a "reference drug price" policy to prevent sharp fluctuations in drug prices (State Planning Organization, 2007). For 2022, the exchange rate was set at 6.2925 TL at the beginning of the year and 10.7577 TL at the end of the year. For 2023, it was announced that the exchange rate would be 14.0378 TL (Pierros et al., 2024:25). However, the underpricing of medicines compared to the actual value of the euro (which was close to 32 TL) has affected the availability of medicines (Noyan Yalman and Ersan, 2023:28).

Increases in input costs, as well as increases in premiums and contributions, take time to be reflected in revised reimbursement rates for service provision. Typically, inflation is factored into the price setting process for the following year (Street and Gutacker, 2023:36). If additional measures, such as budget adjustments or activity restrictions within the health care system, are not taken and payments do not cover rising costs, the risk of increasing deficits becomes significant (Sorum et al., 2023:157). Higher than expected inflation can have a detrimental effect on the health care budget (Gebreyes et al., 2021). As can be seen in Figures 1 and 4, the level of future healthcare spending that was automatically generated based on the expected inflation assumptions became less generous as rising input costs outpaced planned increases in public healthcare spending.

Comparable concerns have been expressed in other high-inflation settings. For instance, Munnell and Hubbard (2021) found that even when nominal benefit adjustments (such as cost-of-living allowances) are made, rising inflation often outpaces these increases, reducing the real value of public support. Similarly, CRR (2022) emphasize that inflation can erode net health benefits, especially when rising premiums and taxes do not translate into proportional service improvements.

From a social policy perspective, Béland et al. (2024) argue that inflation disproportionately affects access to health services among vulnerable populations, particularly when public systems

fail to maintain equity. Their findings suggest that unless targeted policies are adopted, the inflation-healthcare nexus may widen existing inequalities. Supporting this, NTJ (2011) highlights that fixed-income populations are more exposed to healthcare access constraints during high inflation, particularly where price mechanisms are not responsive to real income erosion.

In terms of long-term planning, Richardson (2022) emphasizes the necessity of institutional resilience and forward-looking fiscal strategies to address sustained inflation. Without these, healthcare systems may become reactive rather than proactive in the face of economic shocks. Likewise, Henry Richardson (2022) reminds policymakers that efficiency goals must be balanced with distributive justice, as fiscal contraction can compromise the universality and accessibility of healthcare.

## 7. Conclusion

This study explores future strategies for financing health expenditures, emphasizing the distribution of the financial burden between the public and private sectors. It also evaluates how such financing can be sustained under Türkiye's current economic conditions. While the findings align with many existing studies, this research distinguishes itself from prior works by Yücel and Çalışkan (2023:553), Atalan (2020:8), and Özcan and Tüysüz (2018:162) by presenting novel strategies tailored to Türkiye's specific economic circumstances, incorporating project applications and scenario analyses.

The results indicate that factors such as population aging, rising incomes, and technological advancements will necessitate a larger share of the central budget for health expenditures in the future. Even without these pressures, unexpected increases in healthcare costs are likely to occur, requiring a growing share of government revenues. Given that healthcare spending already constitutes 15% of the total government budget, addressing these additional funding needs becomes increasingly critical. One viable solution is to minimize wasteful spending and improve efficiency (Gebreyes et al., 2021). However, the current economic climate suggests that increasing government expenditure will be a significant challenge. Meeting future health financing needs will likely require either higher government revenues (e.g., through taxation) or additional debt financing (Sorum et al., 2023:169).

The pandemic highlighted the necessity of increased public spending on health services. Yet, the ongoing cost-of-living crisis and substantial rises in energy costs have dampened public and corporate willingness to accept higher taxes or social security contributions (Street and Gutacker, 2023:40). Moreover, extensive economic support measures during the pandemic significantly widened public deficits (International Monetary Fund, 2023). Inflation rates exceeding targets have driven up interest rates, further increasing costs. Borrowing to finance health expenditures creates future debt obligations, making sole reliance on debt financing problematic (OECD, 2022). A prolonged recession could exacerbate deficits by reducing tax revenues, complicating efforts to prioritize healthcare in government budgets (Hu and Wang, 2024).

Russia's invasion of Ukraine, the energy crisis, and inflationary pressures have led to a certain decline in the priority given to healthcare in public discourse (World Health Organization, 2023). Health care is now competing with new spending priorities such as defense spending, rising direct energy costs, and investments in green transformation (OECD, 2022). As demographic changes and other factors increase the demand for healthcare services, the share of public expenditure allocated to healthcare will need to increase by about 7 percentage points by 2040 to meet future needs.

In the pharmaceutical sector, imported inputs, especially raw materials, account for about 10-15% of pharmaceutical exports. In other words, the export-import ratio is about 10-15%. This difference amounts to about USD 4.5-5 billion. As long as the current account deficit remains between USD 40-50 billion, this difference will account for approximately 10-15% of the current account deficit, which is significant in itself (TÜİK, 2023). While the consumption of conventional drugs is high, this ratio will increase further with the growing consumption of biological products,

making it difficult to predict the future situation (OECD, 2022). In the next 20 years, it is expected that more than 70% of the drugs consumed worldwide will be biological products (Keehan et al., 2023:889-890). However, Türkiye is still in the early stages of manufacturing biological products and has very limited production capacity (Bölükbaşı et al., 2021:48).

The main challenge for the health system is to ensure that increasing the health budget to create more resilient health systems remains a priority, despite other pressing needs. When public resources are insufficient to meet future health spending needs, the default option is to shift more of the burden to the private sector (Sungur and Top, 2018:167). Indeed, the supplementary health insurance scheme (TSS), which came into effect in 2013, was designed to provide more affordable access to private health services. However, if public resources for healthcare spending are limited, the widespread adoption of TSS could lead to further privatization of healthcare services (Sungur and Top, 2018:160). Furthermore, in 2023, out-of-pocket healthcare expenditures in Türkiye will account for 14.4 % of total healthcare expenditures (TÜİK, 2023). Shifting the healthcare system to the private sector may result in additional out-of-pocket payments, which may impose a heavy financial burden. This could lead to an increase in poverty and unmet healthcare needs, and create inequalities in healthcare services (Lorenzoni et al., 2020).

The current economic situation poses a significant challenge to healthcare policy makers. Due to unpredictable increases in input costs, it may become increasingly difficult to provide additional public resources for healthcare. This underscores the need for ministries of health to emphasize the high priority of healthcare investments, even in the face of other pressing needs (Street and Gutacker, 2023:76).

As emphasized in the CRR (2022) report, the future of healthcare financing must be understood not only in terms of macroeconomic sustainability but also through net benefit analysis. Rising tax burdens and mandatory contributions risk decreasing public support for universal healthcare unless benefits are perceived as fair and adequate. Aligning contribution levels with tangible improvements in service delivery will be crucial in maintaining legitimacy and sustainability.

Lastly, while the study focuses on Türkiye, the challenges described are echoed across countries experiencing sustained inflation. Studies such as the NTJ (2011) article show that fixed income thresholds for social assistance can become increasingly inadequate in high-inflation environments, leading to unmet needs even when nominal eligibility appears unchanged. Thus, international comparative research may offer valuable benchmarks and policy lessons.

Research on the sustainability of healthcare expenditures during periods of high inflation is limited. By examining the relationship between recent economic conditions in Türkiye and health expenditures, this study contributes to the literature and provides valuable insights for researchers and policymakers. However, the study has certain limitations. First, the analysis is based on current data, and future changes in economic conditions may affect the results. In addition, the study focuses only on Türkiye, and the results may not be generalizable to other countries. Therefore, future researchers are encouraged to conduct similar analyses in different countries to increase the comparability of the findings.

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