

Inflation and its Reflections on the Reserves of Social Insurance Funds in Yemen (2010–2020): An Analytical Perspective

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ABSTRACT

This study aims to analyze the reflections of inflation on the reserves of the Social Insurance Fund in Yemen during the period 2010–2020. The research employed a descriptive–analytical approach through reviewing and comparing official statistical data on inflation rates and the Fund’s investment returns in different financial instruments over the decade. The analysis revealed that the persistent rise in inflation rates led to a decline in the real value of returns from investments in treasury bills, government bonds, and bank deposits, despite the nominal increase in these returns. The findings indicate that investing in treasury bills was not effective in achieving the intended objective of generating reasonable returns with low risk, as inflation eroded both the realized returns and, in some years, part of the real value of the invested principal. Similarly, the results showed that bank deposits between 2017 and 2020 failed to generate positive real returns due to rising inflation. Overall, the study highlights that the investment policy adopted by the Fund was unable to shield its reserves from inflationary risks, raising serious challenges to its financial sustainability and its capacity to meet long-term obligations.

Keywords: Inflation, Social Insurance, Financial Reserves, Yemen

INTRODUCTION

Social insurance is a fundamental human right that every individual in society should enjoy. It is considered a prerequisite for achieving social cohesion and justice, as well as an effective instrument for reducing poverty and inequality, as demonstrated by the long-standing experiences of advanced economies and middle- and low-income countries that invested early in social development (International Labor Conference, 2011, p.8).

The funds of social insurance systems have distinctive characteristics compared to other financial resources available in national economies. As a source of long-term financing, social insurance funds may generate steady inflows for decades, which requires achieving sufficient returns to cover annual obligations such as pensions, compensations, and other future liabilities.

The issue of social insurance raises several challenges across many countries, the most prominent of which is the ability of social insurance funds to maintain financial sustainability and to continue meeting their commitments toward contributors (Ibrahim, 2008, p.2). The system of social insurance is closely linked to investment, since investing the reserves of social insurance funds represents a key pillar that strengthens their ability to achieve sustainability (Fadaaq, 2017, p.2).

However, multiple factors influence the achievement of financial sustainability in social insurance systems. Among the most critical is inflation, as the accelerated rise in inflation rates generates negative reflections on the investments of social insurance funds, particularly those directed to domestic public debt instruments (Jaadi, 2014, p.120).

Accordingly, this study examines the reflections of inflation on the reserves of the Social Insurance Fund as well as its monetary investments directed toward domestic public debt, within the context of a weak investment policy that has been unable to secure the required returns. Specifically, the study focuses on:

1. Analyzing the reflections of inflation on the reserves of the Social Insurance Fund in Yemen.
2. Analyzing the reflections of inflation on the monetary investments of the Social Insurance Fund in Yemen during the period 2010–2020.

Problem Statements

The problem addressed in this study lies in analyzing the reflections of inflation on the funds of the Yemeni Social Insurance Fund, and the negative implications this has for both its current and future financial position and its ability to fulfill its obligations. Accordingly, the research problem can be formulated through the following questions:

1. What are the reflections of inflation on the funds and reserves of the Social Insurance Fund in Yemen?
2. What are the reflections of inflation on the Fund's investments directed toward domestic public debt instruments during the study period?

Objectives:

This study aims to:

1. Analyze the reflections of inflation on the reserves of the Social Insurance Fund in Yemen.
2. Examine the reflections of inflation on the investments of the Social Insurance Fund in Yemen during the period 2010–2020.
3. Propose scientifically grounded recommendations and approaches that may contribute to improving the performance of the Yemeni Social Insurance Fund and enhancing its financial sustainability

Study Scope

The scope of this study is defined across three dimensions: temporal, spatial, and thematic. From a temporal perspective, the study covers the period from 2010 to 2020. This timeframe was chosen because it reflects a decade of economic instability in Yemen characterized by rising inflation and fiscal challenges, providing an appropriate window to examine the cumulative impact on the Social Insurance Fund.

From a spatial perspective, the research is confined to the Yemeni Social Insurance Fund, which administers retirement pensions, compensations, and related benefits for employees in the private sector. The study does not extend to other branches of social security or public-sector schemes, ensuring a focused institutional context.

As for the thematic boundaries, the study investigates the effects of inflation on the reserves and investments of the Social Insurance Fund. While the topic intersects with broader discussions in economics and social policy, the research narrows its scope to the economic dimension, particularly examining how inflation influences the fund's ability to maintain reserves and manage investments. It is also important to clarify that the study is limited to the concept of *social insurance* rather than *social security* in general, focusing specifically on the fund's role in providing pensions and financial benefits to private sector employees.

LITERATURE REVIEW

Social Insurance System

Social insurance is one of the technical means of achieving social security; it is a branch or a section thereof. Experts have differed in their attempts to establish a precise and unified definition of social insurance. Some researchers have defined it as “a system that aims to guard against the consequences of social risks to which workers are exposed, risks that they cannot face alone due to their limited financial capabilities” (Shahata, 2010, 40).

Others defined it as “any insurance based on the principle of social solidarity, with the notion that the losses incurred by individuals are collectively compensated by all who are exposed to the same risks that gave rise to such losses” (Al-Shami, 2007, 9).

Another perspective holds that for insurance to be classified as social insurance, it must include the following (Ahmed, 2002, 5):

1. Any compulsory or government-subsidized insurance that provides material protection for vulnerable individuals in society in cases of illness, accidents, disability, premature death, unemployment, or old age.
2. Any insurance imposed compulsorily on a certain group for the benefit of other groups who may suffer injury to their persons or property as a result of the first group's actions.
3. Any type of insurance that cannot be practiced by private entities, forcing governments to administer or subsidize it for purely social purposes.

From the previous definitions, we can deduce a set of characteristics that distinguish the social insurance system (Fadaq, 2017, 29):

- A system that has acquired legal status and is now applied in nearly all countries worldwide.
- It is imposed compulsorily on working individuals in society, whether in the public or private sector, and on employers, whether the state, traders, or investors.
- It does not aim to generate profit; rather, its objective is primarily social.
- It is financed through contributions deducted as a percentage of the wages of workers and employers.
- It functions as a protective umbrella for members of society against social risks when they occur.
- It aims to achieve social, economic, and political security for individuals in society.

Objectives of Social Insurance

The objectives of social insurance systems are multifaceted. From a social perspective, the system aims to provide pensions to a large segment of insured individuals and their beneficiaries, thereby guaranteeing an acceptable standard of living for each insured person, in addition to providing healthcare in cases of occupational injuries and illness. From an economic perspective, the system collects contributions from the insured and reinvests them, thereby contributing to the creation of job opportunities for a large number of workers (Al-Sayyad, 2005, 2).

Thus, social insurance serves as an effective tool in the hands of the state for achieving development on the social, economic, and political levels. It also constitutes a means of dialogue between the social classes and between rulers and the governed (www.gCSSye.net).

Accordingly, the objectives of the social insurance system can be categorized as follows:

1. Social Objectives (Ghanem, 2002, 4):

- Strengthening family stability and cohesion, as the benefits provided by the social insurance system help increase family income and thereby ensure its stability and unity.
- Dispelling the worker's and his family's fear of the future, instilling in them a sense of security and reassurance by guaranteeing a dignified life away from need and deprivation.
- Strengthening social bonds and stabilizing the relationship between employers and workers through their joint contributions to insurance premiums.
- Honoring retirees and ensuring their comfort by granting them certain benefits and recreational opportunities, such as establishing residential facilities at reduced costs and offering cards that enable them to use public transportation and attend theaters and cinemas at discounted rates, in recognition of their services during their working lives.
- Investing social insurance surpluses in schools, universities, housing, and other projects of a social, health, and housing nature that help solve various related social problems.

2. Economic Objectives (www.gcssye.net):

- Increasing labor productivity by providing workers with psychological and material stability, thereby fostering a favorable climate for higher productivity.
- Preserving human capital by boosting workers' morale, maintaining their health, or reintegrating occupationally injured individuals into the labor market after rehabilitation, rather than leaving them dependent on society.
- Alleviating the burden on employers by having the insurance system assume their obligations under labor law—such as end-of-service indemnities, occupational injuries, sick leave, maternity leave, etc.—in exchange for monthly contributions paid by employers.
- Channeling social insurance surpluses into economic and developmental projects that create jobs, reduce unemployment, and drive economic growth.
- Raising the living and economic standards of insured workers who lose their earning capacity by providing pensions to them and their families after them.
- Reducing the financial and social burdens borne by the state and society, given that social insurance is among the most important economic tools for achieving balance and addressing economic imbalances.

3. Political Objectives (Al-Saleh, 2002, 16; Ghanem, 2002, 5):

- Defusing tensions between workers and employers when workers are exposed to social risks, since employers contribute a share of the insurance premiums as stipulated by the system.
- Protecting the state from potential unrest or rebellion by labor groups who, when exposed to social risks and deprived of their livelihoods, may otherwise disrupt public order and peace.
- Contributing to political stability and preventing unrest or revolutions, as social insurance serves as a means of dialogue between social classes and between rulers and citizens.
- Representing a practical manifestation of democracy by guaranteeing a minimum level of income, thereby reducing class disparities and providing the poorer classes with a decent standard of living that enables them to participate in social and political life.
- Strengthening solidarity within society and fostering psychological and social stability, which in turn contributes to political stability in the country.

The Emergence and Development of Social Insurance Phases of Development

The social insurance system has gone through several phases before assuming its current modern form. It began as a religious moral obligation, then evolved under labor pressures, and finally gained recognition as a right of workers, becoming a mechanism for achieving social, economic, and political stability in states (Fadaq, 2017, 37).

Historical Emergence of Social Insurance

Social insurance systems have had a significant place in the history of nations. In ancient times, social insurance took the form of mutual subsistence, whose existence in organized societies is confirmed by historical writings. Ancient Egyptian papyri, for example, show evidence of grants given to the poor and incapacitated, as well as associations that paid sums to the heirs of deceased members (Jabbari, 2016, 15). Similar practices existed in ancient China and Greece, although these were limited to the concept of mutual subsistence—providing basic necessities such as food, shelter, and clothing. Although this cannot be considered social insurance in the modern sense, it represented a branch of the broader system of social security, which was rooted in the customs and traditions of each society (Darrar, 2004, 9).

Over time, with societal development and population growth, rural-to-urban migration began in search of employment. In urban settings, individuals became dependent on their wages, which were often insufficient to meet all needs and face the risks of life. Consequently, the sense of security diminished, as individualism led to the erosion of solidarity, a defining feature of tribal and rural communities (Kamel, 2006, 6). Following urban migration, scientific advancements, and the advent of machinery after the Industrial Revolution, machines gradually replaced humans, eroding the moral fabric of agrarian societies.

This negatively impacted individuals, leading to occupational diseases, job loss, and unemployment due to machine substitution or work-related illnesses and injuries. Workers—being the group most vulnerable to such risks—thus sought mechanisms to ensure protection against the consequences of industrialization, which left them utterly exposed to insecurity. Since traditional methods were no longer sufficient, new mechanisms had to be devised to provide such security (Ibrahim, 2008, 24).

From this point, the urgent need arose for cooperative systems that provide workers with the greatest possible degree of social protection and security. Gradually, ideas and concepts began to take shape until the social insurance system was introduced, aiming to provide workers with protection and security against the social risks they face, which threaten their social and economic stability (Qasim, 2010, p.13).

Social Insurance System Phases:

The first signs of social insurance systems appeared at the end of the nineteenth century. Germany witnessed the first legislation on social insurance, which was later adopted by many European countries. The system emerged as an attempt by German Chancellor Bismarck to attract the working class and prevent them from adopting socialist ideologies opposed to the capitalist system, which had led to social injustice and the exploitation of workers. Bismarck's efforts focused on improving the living conditions of this group by granting them certain social benefits to alleviate the impact of the social risks they faced. This strategy aimed to absorb workers' anger and reduce their inclination toward socialist movements (Al-Maflehi & Dileep Arjune, 2024; Samati, 2011, p.17).

In this regard, Bismarck issued three successive legislations:

- **First:** On June 15, 1883, mandating health insurance.
- **Second:** On July 6, 1884, regulating insurance against work-related injuries.
- **Third:** On June 30, 1889, mandating insurance against disability and old age risks.

These three legislations were consolidated into a single code called the *Social Insurance Code*. This was later complemented by the Unemployment Insurance Law of 1929 and the Death Insurance Law of 1931. These social insurance laws were the first in history to be characterized by their compulsory nature (Fadaq, 2017, p.40).

The introduction of these legislations had a widespread influence across many European countries and beyond. Following Germany, Austria and Hungary adopted similar measures, while Sweden issued a compulsory old-age insurance law in 1913 covering all citizens. This influence extended to France, the United States, New Zealand, Britain, and other parts of the world (Qasim, 2010, p.19).

Historical Development of the Social Insurance System in Yemen:

Yemen did not recognize the concept of social insurance until much later compared to other countries. This delay was due to colonization, wars, and conflicts that Yemen experienced throughout history, where social protection was limited to humanitarian and religious aid provided in earlier times. This situation continued until the early 1970s (Al-Maflehi & Dileep Arjune, 2023; Al-Shami, 2007, p.2).

The development of the social insurance system in Yemen can be divided into two main stages:

Stage One: Post-Revolutions (1962–1989):

The Yemeni Revolutions of September 26, 1962, in Sana'a (Yemen Arab Republic) and October 14, 1963, in Aden (People's Democratic Republic of Yemen) played a pivotal role. Social justice was among the main goals of these revolutions, aiming to eliminate class disparities, raise the people's economic and social standards, and build a fair democratic society. During the years following the 1962 revolution in Sana'a, little progress was made in insurance due to governments focusing on consolidating the republican system. Meanwhile, Aden remained under British colonial rule until its independence on November 30, 1967 (Al-'Areqi, 2006, p.55).

Throughout the 1970s and 1980s, numerous legal legislations on social insurance were issued in both Aden and Sana'a to address urgent needs in social protection and workers' welfare. This culminated in the establishment of the Social Security Department in Aden in 1987, tasked with implementing the provisions of Social Security Law No. (1) of 1980. In Sana'a, Law No. (16) of 1987 concerning social insurance for private sector employees and workers was enacted, alongside Law No. (17) of 1987 establishing the Public Corporation for Social Insurance, responsible for implementing Law No. (16) of 1987 (General Authority for Social Security and Pensions, 2002, p.20).

Stage Two: Yemeni Unification (1990–2002):

The unification of Yemen in 1990 marked a significant turning point in social insurance. Key developments during this phase included:

- The merger of the Social Security Department in Aden and the Pension Fund in Sana'a into one organizational framework under the *General Authority for Social Security and Pensions*.
- Issuance of the Pensions and Social Insurance Law by Republican Decree No. (25) of 1990, with its executive regulations issued under Decree No. (125) of 1992. This law repealed the previous legislations in both Sana'a and Aden.
- Issuance of Law No. (26) of 1991 concerning social insurance, which repealed Law No. (16) of 1987 concerning private sector workers (ibid, p.21).
- In early 2000, Republican Decree No. (1) amended certain articles of the Pensions and Social Insurance Law No. (25) of 1990. The amendment guaranteed retirees a comprehensive pension that included all allowances received during service, as well as establishing a minimum pension of YR 7,000 (Issam, 2010, p.4).
- In 2001, following a governmental reshuffle, the General Authority for Social Security and Pensions was placed under the supervisory jurisdiction of the Ministry of Civil Service, with the Minister of Civil Service and Insurance assuming the chairmanship of its Board of Directors (General Authority for Social Security and Pensions, 2002, p.22).

Although Yemen only came to know true social insurance in the last two decades of the twentieth century, its social insurance and social security systems now manage four public funds aimed at achieving social and economic development, while extending social protection to wide sectors of workers in Yemeni society (Al-Maflehi & Dileep Arjune, 2022a; Fadaq, 2017, p.49)

Concept of Inflation

Inflation is considered one of the most significant economic problems facing countries, as it affects production, the distribution of economic resources, and the external relations of the state. A combination of internal and external factors interacts to influence inflation rates, depending on the structure of each country's economy and the extent of its openness to the global market. Countries lacking an industrial base are unable to produce adequately and thus resort to borrowing to cover their expenditures. Any increase in spending leads to a rise in the general price level, which in turn causes a depreciation of the national currency (Al-Hassan, 2017, p.2).

The definition of inflation differs according to its causes. Some economists attribute inflation to the demand side, while others ascribe it to the supply side. Classical theory regards inflation as an increase in the supply of money, whereas Keynesian theory views it as a result of demand expansion exceeding supply growth under the condition of optimal resource utilization. The monetarist school, however, considers inflation to be a purely monetary phenomenon, resulting from an increase in the money supply at rates exceeding production growth or deficit financing (Mehrān, 2007, p.5).

Although the common definition of inflation is "the sustained and significant rise in the general price level in a country," economists have distinguished several related concepts within the broader term of inflation, such as (Da'mi & Tabani, 2020, p.171):

- **Price inflation:** the continuous rise in the general price level between two periods of time.
- **Income inflation:** the increase in monetary incomes such as wages and profits.

- **Cost inflation:** the rise in costs borne by the government or productive enterprises.
- **Monetary inflation:** the excessive issuance of currency.

Thus, the common definition of inflation as merely a rise in the general price level does not encompass all aspects of the phenomenon. Hackett, for example, defines inflation as “an imbalance between partial monetary flows and partial real flows” (Talib & Abdullah, 2015, p.188). Similarly, inflation can also be defined as “an economic situation in which the purchasing power of a monetary unit declines due to a rise in the general price level, leading to increased velocity of money circulation and a disruption of money’s function as a store of value” (Al-Nusour, 2014, p.190).

In light of the foregoing definitions, inflation can be generally defined as “the sustained rise in the general price level resulting from an imbalance between monetary flows and real commodity flows.”

The Impact of Inflation on the Reserves and Pensions of Social Insurance Funds under the Full Funding Method

The accumulated reserves of social insurance funds are exposed to the risk of partial or total loss due to inflation, which leads to a persistent decline in the purchasing power of money. This traditional problem particularly affects social insurance systems that follow the full funding (reserve accumulation) method.

The continued decrease in the purchasing power of money causes a significant erosion of accumulated reserves, rendering social insurance funds unable to meet their obligations, thus threatening their financial sustainability. The problem becomes more complex when governments intervene to adjust pensions in line with rising living costs, thereby placing additional burdens on the already depreciating reserves (Al-Maflehi & Dileep Arjune, 2022; Oudah, 2007, p.35).

Since maintaining the real value of pensions and ensuring their adequacy in relation to price and wage changes is crucial, rapid inflation disrupts both wages and living expenses. Consequently, actual wage progression diverges from the actuarial assumptions used in calculations. Social insurance funds, however, cannot disregard their obligation to maintain pension values, as this is a national and international duty. Continuous rises in prices, wages, and living expenses have become global phenomena, particularly during periods of economic instability (Dileep Arjune & Al-Maflehi 2023; Malik, 2012, p.62).

In many cases, social insurance funds face additional burdens that disrupt their financial balance when governments mandate pension increases to offset declining purchasing power. For example, assuming wages increase at a compound rate of 8% annually, an employee’s wage in January 2010 would double in 9 years, triple in 14 years, and quadruple in 18 years. This means that a pension set in early 2010 would equal only 50% of a new pension set for the same worker in 2019, one-third in 2023, and one-fourth in 2027. These projections highlight the severe implications of inflation over extended periods (Fadaq, 2017, p.138).

This illustrates the extent of the financial burdens placed on social insurance systems and their reserves as a result of inflation, which simultaneously reduces the real value of both pensions and reserves. The decline in the real value of retirees’ pensions necessitates raising pensions at the same rate as inflation in order to preserve their real value. To achieve this, social insurance funds must secure investment returns at least equal to the inflation rate. Otherwise, pensions cannot be increased at the same pace as prices, leading to a steady decline in retirees’ living standards and, eventually, the collapse of funds in fulfilling their primary mission (Abdulaziz, 2016, p.176).

The Impact of Inflation on the Investments of Social Insurance Funds

Guaranteeing the value of invested funds is considered one of the essential conditions of security, a principle emphasized by the International Labour Organization as a key requirement for investing social insurance funds. In this context, it is necessary to ensure that invested funds retain their value against the decline in purchasing power of money (Malik, 2012, p.25).

Social insurance institutions typically invest their surpluses in various instruments, such as government bonds, treasury bills, and bank deposits. However, such investments are most vulnerable to inflation risks and the erosion of real value, as they are generally fixed-income investments (Salah, 2006, p.56).

It is evident that the accumulation of reserves is not an end in itself, but rather a means of pooling funds for investment to generate appropriate returns that can effectively finance insurance benefits. This raises the critical issue of determining suitable investment policies and selecting appropriate channels. Investing the massive reserves accumulated under the reserve funding method is highly complex, especially in light of the risks posed by declining purchasing power, which compels managers of social insurance investments to seek channels resilient to such risks (Oudah, 2007, p.35).

In this regard, some countries have resorted to investing part of their reserves in equities despite the reservations of social insurance experts. For instance, in Switzerland—where monetary stability is relatively strong—equity investments are permitted. Similarly, Italian law allows up to 25% of reserves to be invested in company shares, while in Germany, reserves are specifically built to counter the effects of declining purchasing power, with investments in equities generating profits sufficient to raise benefits in line with inflation rates (Malik, 2012, p.29).

Given the vast size of social insurance reserves, governments often intervene in investment operations or resort to borrowing from these funds. Consequently, the sustainability of such funds depends more on governments' ability to repay debt and interest than on the size of accumulated reserves. Moreover, government loan interest rates are typically low, meaning the investment return is limited to interest that steadily loses real value due to persistent inflation (Fadaq, 2017, p.140).

In conclusion, government monetary investments directed toward domestic public debt do not provide genuine protection for invested reserves against inflation and declining purchasing power. States are committed only to the nominal book value of reserves, while the losses resulting from reduced purchasing power are effectively absorbed by governments instead of benefiting social insurance funds.

METHODOLOGY

This study adopts the descriptive-analytical method, through which the researcher describes the current situation of the Social Insurance Fund in Yemen and examines the nature of its financial resources and operational mechanisms during the period 2010–2020. This approach enables the analysis of the Fund's available financial data and facilitates an understanding of how its performance has been influenced by rising inflation rates.

The methodology goes beyond mere description, as it also involves an analytical dimension that interprets the relationship between inflation on one hand, and the Fund's reserves and investments on the other. Such an approach provides a scientific basis for identifying areas of weakness and assessing the extent of inflation's impact. Through this process, the study seeks to explore appropriate measures for improving the Fund's operational mechanisms in order to mitigate the adverse effects of inflation on its reserves, enhance the efficiency of resource management, and strengthen its ability to achieve long-term financial sustainability.

RESULTS

The Yemeni Social Insurance Fund possesses substantial reserves resulting from its insurance activities and the collection of contributions. In 2010, these reserves amounted to approximately YR 65.9 billion, representing about 1.8% of the Gross Domestic Product, and this figure has continued to rise (Social Fund for Development, 2010, p. 72).

The Social Insurance Fund directs nearly 96.51% of the total value of its investment portfolio, according to 2020 statistics, towards investment in domestic public debt in the form of treasury bills, government bonds, and bank deposits with the Central Bank. This is done in accordance with directives issued by the Ministry of Finance (Saif, 2022, p. 248).

It is well known that cash investments with fixed returns, such as treasury bills, government bonds, and bank deposits, are the most exposed to inflation risks, making them more vulnerable than other types of investments. This exposure leads to a decline in the real rate of return on investment compared to its nominal rate.

The following section reviews the implications of rising inflation rates on the investment returns generated from treasury bills, government bonds, and bank deposits.

First: The Implications of Rising Inflation Rates on Investment Returns from Treasury Bills

Table (1): Implications of Rising Inflation Rates on Investment Returns from Treasury Bills in the Social Insurance Fund in Yemen during the Period 2010–2020 (Amounts in thousands Yemeni Riyals)

Year	Value of Investment in Treasury Bills	Annual Investment Return on Treasury Bills	Rate of Return on Treasury Bills	Annual Inflation Rate	Difference Between Rate of Return and Inflation Rate (Real Rate of Return)
2010	13,503,833	1,193,872	8.8%	11.19%	-2.39%
2011	30,307,379	4,985,444	16.4%	19.56%	-3.16%
2012	98,680,349	15,308,073	15.5%	9.87%	5.63%
2013	148,963,114	20,254,894	13.6%	10.98%	2.62%
2014	184,506,887	26,231,908	14.2%	8.14%	6.06%
2015	221,730,789	32,150,964	14.5%	22%	-7.5%
2016	263,320,235	38,820,865	14.7%	21.32%	-6.62%
2017	303,443,800	45,132,617	14.9%	30.39%	-15.49%
2018	353,292,066	52,949,795	15%	27.60%	-12.6%
2019	384,602,080	36,190,510	9.4%	12.01%	-2.61%
2020	0	0	0	0	0
Period Avg	200,235,053	27,321,894	13.7%	17.31%	-3.61%

Source: Public Institution for Social Insurance, Central Bank of Yemen, Annual Reports for the Period 2010–2019, Republic of Yemen.

It is evident from **Table (1)** that the rising inflation rates had significant reflections on the rates of return on treasury bills during the period 2010–2019. This confirms that monetary investments are the most affected by the rise in inflation rates. In 2010, the rate of return on treasury bills reached (8.8%), while the inflation rate in the same year was (11.19%), and the difference between the rate of return and the inflation rate (the real rate of return) was (-2.39%). This negative value indicates that inflation eroded the real value of the return entirely, in addition to eroding part of the real value of the invested principal by the amount of the difference, which was (-2.39%).

In 2011, the rate of return was (16.4%), while inflation was (19.56%), and the difference was (-3.16%). This also indicates the erosion of the real value of the return as well as part of the real value of the invested principal equal to the difference (-3.16%). In the following years 2012, 2013, and 2014, the rates of return were (15.5%), (13.6%), and (14.2%), respectively, while the inflation rates for the same years were (9.87%), (10.98%), and (8.14%), with differences of (5.63%), (2.62%), and (6.06%), respectively. This indicates that inflation eroded part of the real value of the return in those years, with the real value of the returns amounting to (5.63%), (2.62%), and (6.06%).

During the years 2015, 2016, 2017, 2018, and 2019, the Fund achieved rates of return on treasury bill investments of (14.5%), (14.7%), (14.9%), (15%), and (9.4%), respectively. However, inflation rates during this period were high enough to exceed the rates of return, reaching (22%), (21.32%), (30.39%), (27.60%), and (12.01%), respectively. This led to the erosion of the real value of the returns, in addition to part of the real value of the invested principal. The differences between the rates of return and inflation during the period 2015–2019 were (-7.5%), (-6.62%), (-15.49%), (-12.6%), and (-2.61%), respectively.

The decline in the rate of return in 2019 to (9.4%) was due to the government's suspension of the Fund's investments in treasury bills on 31/7/2019. Therefore, the rate of return shown in the table for 2019 reflects only the investment return for the period from January to July of that year. In 2020, the Yemeni government, represented by the Ministry of Finance and the Central Bank, converted all the Fund's balances invested in treasury bills into government bonds with zero interest, as shown in the table.

As for the annual average for the period 2010–2019, the average annual investment return rate was (13.7%), while the average annual inflation rate was (17.31%). The average annual difference between the return and inflation rates during the period was (-3.61%). Generally, this indicates that the Fund lost the real value of the investment return in addition to part of the real value of the invested principal in treasury bills, estimated at (-3.61%), due to the rapid rise in inflation during the study period.

Second: The Reflections of Rising Inflation Rates on Investment Returns from Government Bonds

The Social Insurance Fund began investing in government bonds in 2009, based on recommendations from the government represented by the Ministry of Finance and the Central Bank of Yemen. However, the Fund was soon forced to stop investing in government bonds and to transfer the invested amounts into treasury bills on 19/6/2012 (Public Institution for Social Insurance, 2012, p.71).

In 2020, the government compelled the Fund to transfer all its balances invested in treasury bills into government bonds, but this time with zero interest.

This indicates that the government, represented by the Ministry of Finance and the Central Bank, uses the Fund's investment reserves and balances deposited with the Central Bank to cover the deficit in the state's general budget.

Table (2) Reflections of Rising Inflation Rates on Investment Returns from Government Bonds in the Social Insurance Fund in Yemen during the Period (2010–2012) and in 2020 (amounts in thousands Yemeni Rials)

Year	Value of Investment in Government Bonds	Annual Investment Return on Government Bonds	Rate of Return on Government Bonds	Annual Inflation Rate	Difference Between Rate of Return and Inflation (Real Rate of Return)
2010	44,150,000	3,090,500	7%	11.19%	-4.19%
2011	44,150,000	3,090,500	7%	19.56%	-12.56%
2012	3,150,000	441,000	14%	9.87%	+4.13%
2020	420,792,590	0	0%	23.09%	-23.09%
Annual Avg	128,060,648	1,655,500	7%	15.93%	-8.93%

Source: Public Institution for Social Insurance, Central Bank of Yemen, Annual Reports for the Period 2010–2019, Republic of Yemen.

It is evident from the above table that the rate of return on government bonds in 2010 and 2011 was (7%) for both years, while inflation was (11.19%) and (19.56%), respectively. The difference between the two rates was (-4.19%) and (-12.56%). These negative values indicate that inflation in those two years exceeded the rates of return, leading to the erosion of the real value of the returns, in addition to part of the real value of the invested principal in government bonds, equal to the differences (-4.19%) and (-12.56%), respectively.

In 2012, the Central Bank raised the interest rate on government bonds to (14%). The Fund achieved a return rate of (14%), while inflation was (9.87%), with a difference of (+4.13%). This indicates that the real value of the return was reduced by inflation, bringing it down to (4.13%).

In 2020, as noted, the government required the Fund to convert all its balances invested in treasury bills into government bonds with zero interest.

As for the annual average for the period, which was calculated for 2010–2012 and 2020, the average rate of return was (7%), while the average inflation rate was (15.93%). The average difference was (-8.93%), indicating that the increase in inflation during the period 2010–2020 led to the loss of the real value of the Fund's returns from government bond investments, in addition to part of the real value of the invested principal, estimated at (-8.93%).

Third: The Reflections of Rising Inflation Rates on Investment Returns from Bank Deposits

Investments in bank deposits generate annual returns for the Social Insurance Fund of approximately (15%) to (16%), calculated monthly. The Fund began investing in this field on 7/6/2017, by placing deposits in the Cooperative and Agricultural Credit Bank of Yemen (Saif, 2022, p.249).

Table (3): Reflections of Rising Inflation Rates on Investment Returns from Bank Deposits in the Social Insurance Fund in Yemen during the Period (2017–2020) (*amounts in thousands Yemeni Rials*)

Year	Value of Investment in Bank Deposits	Annual Investment Return on Bank Deposits	Rate of Return on Bank Deposits	Annual Inflation Rate	Difference Between Rate of Return and Inflation (Real Rate of Return)
2017	3,500,000	306,882	8.8%	30.39%	-21.59%
2018	5,806,882	909,334	15.7%	27.60%	-11.9%
2019	6,716,216	1,063,450	15.8%	12.01%	+3.79%
2020	7,779,665	1,236,585	15.9%	23.09%	-7.19%
Annual Avg	5,950,691	879,063	14.05%	23.27%	-9.22%

Source: Public Institution for Social Insurance, Central Bank of Yemen, Annual Reports for the Period 2010–2019, Republic of Yemen.

It is evident from the above table that the Fund achieved rates of return on bank deposits in 2017 and 2018 of (8.8%) and (15.7%), respectively, while inflation rates in those years were (30.39%) and (27.60%). The differences were (-21.59%) and (-11.9%), respectively. These negative values indicate that inflation exceeded the rates of return, leading to the erosion of the real value of the returns and part of the invested principal.

In 2019, the rate of return on deposits was (15.8%), while inflation was (12.01%), and the difference was (+3.79%). This indicates that although the rate of return exceeded inflation, the real value of the return was reduced by inflation to (3.79%).

In 2020, the return rate was (15.9%), while inflation was (23.09%), with a negative difference of (-7.19%), indicating erosion of the real value of returns and part of the invested principal.

The annual average for 2017–2020 shows an average rate of return of (14.05%), an average inflation rate of (23.27%), and an average difference of (-9.22%). This indicates that rising inflation rates negatively affected the Fund's investments in bank deposits, eroding both the real value of returns and part of the real value of the invested principal.

Fourth: The Reflections of Rising Inflation Rates on Monetary Investments of the Social Insurance Fund

Table (4): Reflections of Rising Inflation Rates on Investment Returns from Monetary Investments in the Social Insurance Fund in Yemen during the Period 2010–2020 (*amounts in thousands Yemeni Rials*)

Year	Value of Monetary Investments	Annual Investment Return on Monetary Investments	Rate of Return on Monetary Investments	Annual Inflation Rate	Difference Between Rate of Return and Inflation (Real Rate of Return)
2010	57,653,833	4,284,372	7.4%	11.19%	-3.79%
2011	74,457,379	8,075,944	10.8%	19.56%	-8.76%
2012	101,830,349	15,749,073	15.5%	9.87%	+5.63%

2013	148,963,114	20,254,894	13.6%	10.98%	+2.62%
2014	184,506,887	26,231,908	14.2%	8.14%	+6.06%
2015	221,730,789	32,150,964	14.5%	22%	-7.5%
2016	263,320,235	38,820,865	14.7%	21.32%	-6.62%
2017	306,943,800	45,439,499	14.8%	30.39%	-15.59%
2018	359,098,948	53,859,129	15%	27.60%	-12.6%
2019	391,318,295	37,253,960	9.5%	12.01%	-2.51%
2020	428,572,255	1,236,585	0.3%	23.09%	-23.06%
Annual Avg	230,763,262	25,759,745	11.8%	17.83%	-6.03%

Source: Public Institution for Social Insurance, Central Bank of Yemen, Annual Reports for the Period 2010–2019, Republic of Yemen.

It is evident from **Table (4)** that the Fund achieved an investment return rate of (7.4%) on monetary investments in 2010. This low rate was due to the Fund's entry into treasury bill investments starting on 1/7/2010, after being authorized by the government, with treasury bills representing about (97.90%) of its monetary investments. This explains the relatively low return rate in 2010 (Saif, 2022, p.248). Inflation in the same year was (11.19%), and the difference was (-3.79%), indicating a loss in the real value of both returns and part of the invested principal.

In 2011, the return rate increased to (10.8%), while inflation was (19.56%), with a difference of (-8.76%). Again, this shows that inflation caused a loss in the real value of both returns and part of the principal.

In 2012, 2013, and 2014, the Fund achieved return rates of (15.5%), (13.6%), and (14.2%), respectively, while inflation rates were (9.87%), (10.98%), and (8.14%). The differences, i.e., real returns, were (+5.63%), (+2.62%), and (+6.06%), respectively. This shows that although inflation reduced the real value of returns, the Fund still achieved positive real returns.

From 2015 to 2020, the Fund's return rates were (14.5%), (14.7%), (14.8%), (15%), (9.5%), and (0.3%), respectively, while inflation rates were (22%), (21.32%), (30.39%), (27.60%), (12.01%), and (23.09%). The differences were all negative: (-7.5%), (-6.62%), (-15.59%), (-12.6%), (-2.51%), and (-23.06%), respectively. These negative values indicate losses in the real value of returns and parts of the invested principal.

The decline in returns in 2019 and 2020 was due to the government's suspension of treasury bill investments on 31/7/2019, and the subsequent conversion of all the Fund's balances at the Central Bank into zero-interest government bonds starting in 2020.

In conclusion, the rapid rise in inflation during 2010–2020 negatively affected the monetary investments of the Social Insurance Fund, including treasury bills, government bonds, and bank deposits. This led to the loss of the real value of returns and parts of the invested principal. Moreover, government interventions (by the Ministry of Finance and the Central Bank) in the Fund's investment decisions had negative effects, depriving the Fund of potentially significant returns that could have supported its financial sustainability and enabled it to meet its obligations. This was most evident in 2020, when the government converted all the Fund's balances invested in treasury bills into zero-interest government bonds.

Overall, the study confirms that the Fund's investments directed toward domestic public debt (treasury bills and government bonds), which the government uses to cover budget deficits, are more vulnerable to inflationary risks. Such investments are inconsistent with the principle of preserving the value of the Social Insurance Fund's assets and do not contribute effectively to achieving its objectives.

DISCUSSION

The findings of this study highlight the profound vulnerability of the Yemeni Social Insurance Fund's reserves to inflationary pressures, primarily due to its overwhelming reliance on fixed-income instruments such as treasury bills, government bonds, and bank deposits. While these assets are traditionally considered low-risk, the evidence shows that persistent inflation not only eroded the real value of returns but, in several years, also

reduced the real value of the principal itself. This underscores a structural mismatch between the Fund's investment strategy and the macroeconomic environment in which it operates.

A critical concern emerging from the results is the limited scope of the Fund's investment policy. By concentrating nearly all reserves in domestic public debt instruments, the Fund effectively exposed itself to inflationary shocks and fiscal vulnerabilities of the Yemeni state. Such concentration reflects not only a lack of diversification but also the dominance of short-term fiscal imperatives over long-term sustainability objectives. The forced conversion of treasury bill holdings into zero-interest government bonds in 2020 epitomizes the risks of excessive government intervention, which deprived the Fund of potential returns and undermined its ability to preserve asset value.

Beyond the financial dimension, the erosion of reserves has serious social consequences. Inflation simultaneously increases the cost of living for beneficiaries while diminishing the real value of pensions and compensations. This dual effect weakens the legitimacy of the Fund as a social protection mechanism, as it becomes less capable of fulfilling its mandate of ensuring adequacy and stability of income for retirees. The results thus reveal not only technical inefficiencies but also the broader governance challenge of balancing social protection objectives with fiscal constraints.

From a policy perspective, the study's outcomes suggest the urgent need for diversification of the Fund's portfolio into inflation-resilient assets. International experiences demonstrate that carefully managed allocations to equities, real estate, and inflation-indexed securities can protect reserves against erosion while maintaining long-term growth potential. For instance, pension funds in Europe and Latin America have adopted mixed portfolios that balance safety with exposure to growth-oriented assets, thereby reducing dependency on government debt. Applying similar strategies in Yemen—adapted to its institutional capacity and regulatory environment—could significantly strengthen financial sustainability.

Equally important is the establishment of a comprehensive risk management framework. The absence of mechanisms to hedge against inflation, coupled with weak institutional oversight, magnifies the Fund's exposure to systemic risks. Introducing instruments such as inflation-indexed bonds, as well as strengthening internal governance, transparency, and actuarial assessments, would enable more proactive responses to inflationary shocks.

Eventually, the discussion of results underscores that the erosion of the Social Insurance Fund's reserves is not an inevitable outcome of inflation but rather a consequence of narrow investment choices, weak governance, and inadequate policy frameworks. By adopting diversified investment strategies, enhancing institutional oversight, and introducing inflation-protection mechanisms, the Fund can reposition itself as a resilient pillar of social protection in Yemen.

CONCLUSION

The outcomes of this study reveal that inflation constitutes one of the most critical challenges confronting the Social Insurance Fund in Yemen, particularly during the period 2010–2020. The analysis demonstrates that inflation has exerted a direct and adverse impact on the purchasing power of the Fund's reserves and on its investment portfolio, which has been overwhelmingly concentrated in domestic public debt instruments such as treasury bills, government bonds, and bank deposits with the Central Bank. While such investments were traditionally considered safe and low-risk, the persistent rise in inflation rates eroded their real value, thereby reducing the effective returns and diminishing the Fund's capacity to sustain its financial commitments over time.

The results further indicate a persistent and widening gap between nominal returns generated from these fixed-income investments and the prevailing inflation rates. This gap has translated into negative real returns in most years of the study period, leading to a steady erosion of the Fund's accumulated reserves. Such outcomes underscore the vulnerability of the Fund's financial sustainability when its resources are predominantly invested in instruments that are highly exposed to inflationary pressures. This overreliance on fixed-interest government

debt highlights the structural weakness of the current investment strategy, which fails to shield the Fund from the adverse macroeconomic environment.

Moreover, the study underscores that the erosion of reserves is not merely a financial issue but also a social concern, as it directly undermines the Fund's ability to honor its obligations to retirees and insured individuals. In a context where inflation simultaneously drives up the cost of living, the mismatch between the real value of pensions and benefits and the actual needs of beneficiaries becomes more pronounced. Consequently, the decline in the real value of pensions threatens the Fund's legitimacy and its role as a cornerstone of social protection in Yemen.

In light of these findings, the study concludes that achieving long-term financial sustainability for the Social Insurance Fund necessitates a fundamental revision of its investment policies. Diversification of investment channels emerges as a strategic imperative, with greater emphasis on instruments that are more resilient to inflation, such as equities, inflation-indexed securities, and real assets. Equally important is the adoption of proactive and flexible investment strategies that align with economic cycles and inflationary trends, ensuring that the Fund can secure real returns sufficient to preserve and grow its reserves.

Furthermore, strengthening the governance and regulatory frameworks of the Fund is essential to safeguard its resources, enhance transparency, and build institutional resilience. Such reforms must be accompanied by robust actuarial assessments that periodically evaluate the Fund's financial position in light of inflationary developments and demographic changes. Only through a combination of prudent investment diversification, effective risk management, and sound governance can the Fund fulfill its dual mandate of providing adequate social protection while maintaining financial viability in the face of persistent inflationary pressures.

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