

Research Article

Inflation and Households' Welfare in South Sudan (2013-2024)

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Abstract

The study investigates the impact of inflation on households' welfare in South Sudan between 2013 and 2024. The 2013 start date captures the onset of a major political crisis and civil conflict that profoundly altered the country's economic trajectory. The period to 2024 covers multiple phases: intense conflict and humanitarian crisis, episodic peace agreements, shifts in oil production and export capacity, currency and monetary interventions, and varying donor/aid flows. These dynamics influence both the incidence of inflation (frequency, magnitude, and composition) and its transmission to households (through wages, remittances, food prices, and access to markets). Focusing on the period from 2013 to 2024, therefore, enables the study to link macroeconomic shocks with household-level outcomes through distinct political-economic episodes. The study has also thoroughly explored the impact of inflation, as studied by previous scholars. Specifically, it examines how inflation influences the Human Development Index (HDI), consumption, hunger incidence, education, and labor force participation. Increases in food prices led to a decline in labor force participation, resulting in higher unemployment rates among urban residents. Inflation is exacerbating food insecurity and hunger, particularly for the poorest households, who are more vulnerable to hunger. Inflation had also negatively affected households' perceptions of welfare. Increases in food prices led to a decline in labor force participation, resulting in higher unemployment rates among urban residents. Inflation is exacerbating food insecurity and hunger, particularly for the poorest households, who are more vulnerable to hunger. Inflation had also negatively affected households' perceptions of welfare. Addressing high inflation must be at the center of efforts to reduce poverty and hunger, to improve the welfare of the people of South Sudan. The study employs various econometric models, including the Vector Error Correction Model (VECM) and a Difference-in-Differences (DiD) model, to explain both short-term and long-term effects. The findings indicate that inflation has a statistically significant negative effect on HDI and consumption, with coefficients of -0.46 and -0.82, respectively. The study has suggested that the government, the central Bank, and Non-Governmental organizations should put forward various mitigating measures to confront inflation, thereby improving the livelihoods of every individual in the country. Therefore, the study concludes that inflation poses a substantial threat to welfare and recommends robust macroeconomic policies and social programs to mitigate inflation and enhance livelihoods.

Keywords

Inflation, Welfare, HDI, Households, VECM, DiD, Poverty, Consumption

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1. Introduction

The world record for inflation occurred in Germany after World War I, when prices rose by a factor of 10 million within 18 months, due to printing too much money. The Great Depression in 1939 had a major impact on the global market and stressed the financial system worldwide. The consumer price index, a standard gauge of inflation, measures the annual change in the average shopper's expenditure on a fixed basket of goods and services. That change may be issued or locked in at regular intervals, for instance, once a year [1].

The study used time series data spanning from 2013 to 2024, providing a comprehensive 11-year dataset. This extended period supports rigorous parametric analysis and enables a detailed investigation of short-run trends and the long run between inflation and households' welfare growth. As noted by Amin (2020), such a broad dataset is crucial for examining historical patterns and understanding dynamics over multiple economic cycles. By utilizing data from this timeframe, the study aimed to provide an in-depth analysis of the factors influencing households' welfare, capturing different aspects of households' welfare [2]. Worldwide consultations with the poor have revealed that they are preoccupied with dealing with risks and uncertainty, and their inability to effectively deal with shocks often lies at the core of their poverty [3]. This has renewed interest in examining the role of risk in the dynamics and causes of poverty [4]. Policy makers are now increasingly aware that social risk management strategies should be an integral part of poverty-reducing strategies [5].

Speaking broadly, monetarists have suggested that inflation is one of the most domestic issues. When the central Bank resorts to printing money, there is no doubt that the price will rise, which increases the cash available in the hands of the public, thereby stimulating the economy [6].

Friedman, (2022) "Inflation is often and, in many ways, a monetary phenomenon. The importance of governments in regulation will always be emphasised by economic theory [7]. After the peace agreement with the Republic of Sudan in 2005, which ended Africa's deadly civil war (Ties, 2024). The Republic of South Sudan was declared independent on July 9, 2011. Despite being a small country with abundant oil reserves, South Sudan's poor development outcomes reveal a history of conflict characterized by a weak government and inadequate institutional service delivery. The South Sudanese economy demonstrated all the characteristics of a war economy between 2022 and 2024, including sharply declining output, rapid currency depreciation, and rising inflation. Oil dependence has tied the nation's future to changes in global commodity prices [8]

2. Literature Review

Numerous empirical studies have explored the nexus between inflation and household welfare. Ahmad (2022) examined the relationship between inflation and welfare ex-

penses in Pakistan using the ARDL model [9]. Ahmad's research showed that inflation significantly reduced consumption and household well-being. Owusu, (2020) and Maigari, (2021) found similar results in Nigeria, where inflation adversely affected education and income levels [10, 11]. The extended tests indicated that inflation impacted household welfare asymmetrically. The study employed ECM, with results showing that inflation negatively impacted household welfare.

Hoang [12] applied a nonlinear ARDL model in Vietnam and found that inflation has negative impact on households' welfare. In the short term, the error correction model was utilized. In essence, his study showed that the short-term impact of inflation on families cannot be determined. The study suggests that, for economic growth to occur, the inflation rate must be kept at a tolerable level. Another study in Turkey, by Çolak (2023) found a negative long-term relationship between inflation and the HDI [13]. Obradovic (2023) in Serbia found similar effects using the ARDL and Toda-Yamamoto methods [14]. In South Sudan, Elvin (2022) found that inflation greatly reduced welfare during conflict years [15].

3. Methodology

3.1. Data Sources and Justification for Choosing the Data Set from 2013-2024

This paper utilizes panel data from the World Bank's High Frequency Survey (2013-2024), focusing on rural and urban households in South Sudan. The major variables used include the Human Development Index (HDI) as the dependent variable. The independent variables include Total Inflation (TINFL), Food Price Inflation (FPINF), and Non-Food Price Inflation (NFPINF), while the control variables are Conflict Incidence and Access to Basic Services. The 2013 start date captures the onset of a major political crisis and civil conflict that profoundly altered the country's economic trajectory. The period to 2024 covers multiple phases: intense conflict and humanitarian crisis, episodic peace agreements, shifts in oil production and export capacity, currency and monetary interventions, and varying donor/aid flows. These dynamics influence both the incidence of inflation (frequency, magnitude, and composition) and its transmission to households (through wages, remittances, food prices, and access to markets). Focusing on the period from 2013 to 2024, therefore, enables the study to link macroeconomic shocks with household-level outcomes through distinct political-economic episodes.

3.2. Analytical Framework

The methodology applies two analytical frameworks: *Difference-in-Differences (DiD)*, used to assess inflation's differential impact across time and geographic regions. And the *Vector Error Correction Model (VECM)*: To distinguish between short-run and long-run relationships between inflation and welfare indicators.

$$HDI_{ist} = \beta_0 + \beta_1 Post_t + \beta_2 (Post_t \times Inflation_{st}) + X_{ist}\gamma + \delta_s + \theta_t + \varepsilon_{ist} \quad (1)$$

Where:

HDI_{ist} – is the Human Development Index (welfare measure) for a household or individual i , in region (e.g., Boma) s , at time t . It is the dependent variable that reflects the household welfare.

β_0 – The intercept or constant term. It captured the baseline HDI when all other variables are zero.

$Post_t$ – A dummy variable that equals 1 if the observation is in the post-treatment period (e.g., after high inflation starts), and 0 otherwise. It captures the average change in HDI over time that is common to all groups (both treated and control).

β_1 , & β_2 – are the coefficient

$Inflation_{st}$ – is the level or rate of inflation in region s at time t . This could refer to overall inflation, food inflation, or non-food inflation.

X_{ist} – is a vector of control variables (e.g., household income, employment, education, access to services) for individual/household i , region s , and time t , with γ being the vector of associated coefficients. These control for other observable characteristics that may affect HDI.

δ_s – is the region fixed effects (e.g., Boma-specific dummy variables)? They control for time-invariant unobserved heterogeneity across regions (e.g., geography, infrastructure, culture).

θ_t – refers to the time fixed effects (e.g., year dummies). These captured time-specific shocks which are common to all regions, such as national policy changes or global economic events.

ε_{ist} – is the error term, captured by unobserved factors affecting HDI that are not included in the model. It is assumed to be independently and identically distributed with a mean of zero.

The purpose of this DiD specification was to allow the researchers to estimate the causal effect of inflation on welfare by comparing HDI before and after inflation shocks via $Post_t$, comparing high inflation with low inflation areas and controlling for confounders through X_{ist} , region effects (δ_s) and time effects (θ_t).

3.3. Model Specification

The analytical model for Difference-in-Differences Regression is specified as follows:

The empirical model for VECM to test the short-run and long-run dynamics is as follows:

$$\Delta HDI_t = \alpha_1 ECT_{t-1} + \sum \beta_i \Delta X_{t-1} + \varepsilon_t \quad (2)$$

Where:

ΔHDI_t = Change in Human Development Index at time

ECT_{t-1} – is the lagged error correction term from the cointegration relationship.

α_1 – indicates how much of the disequilibrium from the long-run relationship is corrected in the current period.

$\sum \beta_i$ – is the sum of lagged changes (differences) in the independent variables (X) that affect? HDI.

ε_t = error term

Cointegration was verified using the Johansson cointegration approach, which confirmed one cointegrating equation between HDI and Inflation.

4. Results and Discussion

4.1. Descriptive Statistics

The descriptive analyses show that HDI ranged from 0.17 to 0.54 with a standard deviation of 4.57, while total inflation peaked at 24.75%, with food prices ranging between -2.60% and 7.73%. Indicating that food inflation was a major contributor to household distress, especially during the 2016-2018 conflict and the COVID-19 pandemic.

4.2. Regression Results

Estimates from the Ordinary Least Squares (OLS) as indicated in Table 1 show that there is a significant negative effect of Inflation on HDI.

Table 1. Regression results for inflation.

Variable	Coefficient	Std. Error	t-Stat	p-value
Inflation	-0.4687	0.0206	2.28	0.035
R ² = 0.50				

The results show that a 1% increase in inflation reduces HDI by 0.47 units, whereas the R-square is 0.50, indicating that inflation explains 50% of the variations in HDI.

4.3. Difference-in-Differences Results

Table 2. DiD and Disaggregated Impacts.

Outcome	Total Inflation	Food Inflation	Non-Food Inflation	Significance
Poverty	0.252	0.008**	0.238	Yes
Consumption (log)	-0.829**	-0.116**	-0.680**	Yes
Girls in School	-0.136	-0.136**	-0.020	Yes
Labour Participation	-0.138	-0.207**	-0.049	Yes
Hunger Incidence	0.430**	0.329	0.193	Yes
Life Satisfaction	-1.205	-0.170	0.193	Yes

The results from DiD indicate that. Inflation significantly impacted Poverty (USD 1.90 PPP), a 0.25 increase for every 1% inflation rise. Real consumption: -0.829 ($p < 0.01$), Girls' school attendance: -0.136 ($p < 0.05$), Hunger incidence: +0.430 ($p < 0.01$), and Life satisfaction: -1.205 ($p < 0.10$). Consumption and hunger were particularly responsive to inflation, confirming immediate household-level hardship.

4.4. Cointegration and VECM Tests

Johansen tests confirmed one cointegrating equation between inflation and HDI ($p < 0.01$), indicating a long-run equilibrium. Error correction term: -0.921 (significant) $P < 0.01$ indicating a strong adjustment speed to equilibrium after shocks.

Table 3. Short-Run and Long-Run VECM Estimates.

Variable	Coefficient	p-value
Total Inflation -	0.576	0.002
Food Inflation	-0.640	0.000
Non-Food Inflation	-0.343	0.001

As indicated in Table 3, both short and long-run total inflation and food inflation have the biggest negative impact on household welfare.

From all the results, it is clear that inflation has a significant negative effect on HDI, consumption, and school attendance. Inflation has also worsened urban poverty due to stagnant incomes and rising living costs. As a result of this, households adopted harmful coping strategies, including skipping meals and selling productive assets. In periods of high inflation, girls' education and labor force participation declined. This distorted household's perceptions of current and future well-being.

5. Conclusion

This study demonstrated that inflation hurts the welfare of households, especially their consumption spending and the rate of poverty. Overall, inflation adversely impacts households' welfare in numerous ways, thereby diminishing the welfare of families in South Sudan, and in many cases many households resorted to different coping strategies like eating less desirable food, skipping meals, among others. Moreover, inflation adversely affected girls' education. However, these coping mechanisms could elevate their likelihood of experi-

encing future episodes of food insecurity. The coping mechanisms used by the impoverished, particularly the sale of productive assets like livestock, usually place them at a more significant disadvantage in the long run. From all the results, it is clear that inflation has a significant negative effect on HDI, consumption, and school attendance. Inflation has also worsened urban poverty due to stagnant incomes and rising living costs. As a result of this, households adopted harmful coping strategies, including skipping meals and selling productive assets. In periods of high inflation, girls' education and labor force participation declined. This distorted household's perceptions of current and future well-being.

Recommendation

The study suggested that key economic priorities for the Government of South Sudan should be to implement urgent macroeconomic measures to reduce high inflation, like fiscal policy and monetary policy, thus enhancing the country's welfare state.

The Government of South Sudan and economic think tanks should adopt a contractionary fiscal policy to curb inflationary pressure, thus reducing excess demand for goods and services, and above all, subsidize essential sectors like hospitals, schools to support vulnerable populations, hence increasing the country's Human Development Index.

The Government of South Sudan, along with all NGOs, should also carry out various social protection programs such as cash transfer, food security program, and social safety net to improve people's welfare, hence increasing the consumption expenditure. The government of South Sudan should also undertake Agriculture and food security programs, like investing in an extensive irrigation system and agricultural services, to improve people's standard of living.

In addition, for South Sudan to achieve SDG 2 (to end hunger and ensure access to food by all people, including the poor, by 2030), the issue of rising inflation must be contained very quickly, as it is exacerbating hunger and food insecurity.

Abbreviations

Term	Meaning
HDI	Human Development Index
VECM	Vector Error Correction Model
TINFL	Total Inflation
NFPINFL	Food Price Inflation

WB	World Bank
WFP	World Food Program
HHFS	Households High Frequency Survey

Conflict of Interest

The authors declare no conflicts of interest.

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