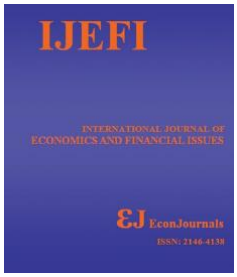

International Journal of Economics and Financial Issues

ISSN: 2146-4138

available at http: www.econjournals.com

International Journal of Economics and Financial Issues, 2025, 15(5), 210-224.

Türkiye's Economic Trilemma: Inflation, Inequality, And Growth

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Received: 26 March 2025 **Accepted:** 08 July 2025 **DOI:** https://doi.org/10.32479/ijefi.19982

ABSTRACT

This study investigates the intricate relationship between inflation, income inequality, and economic growth in Türkiye. Recent unconventional monetary policies, particularly artificial interest rate cuts, have exacerbated existing economic disparities, disproportionately benefiting affluent individuals. This has contributed to rising income inequality and consumption-driven inflationary pressures. The research explores the impact of tighter monetary policies and increased interest rates on the behavior of wealthy individuals and their influence on inflation persistence. Additionally, the study delves into the disproportionate burden of services inflation on lower-income households. Addressing this issue requires a multifaceted approach, including policies to enhance the affordability of essential services, strengthen the social safety net, and promote inclusive economic growth. By examining these interconnected factors, the study aims to shed light on the underlying dynamics driving inflation, income inequality, and economic growth in Türkiye. The objective is to develop a comprehensive policy framework that addresses the root causes of these issues and fosters sustainable economic development for all segments of society.

Keywords: Interest Rates, Wealth Inequality, Demand-Side Inflation, Inflation Inertia
JEL Classifications: E31, E62, O44, E58

1. INTRODUCTION

Although the term "inflation" has a long history, countries struggle with a new face of inflation every period. One of the most familiar words in economics is a factor that is followed and commented on by almost all citizens of a country. What makes inflation so important? The answer to this question can be quite complex. An indication of high inflation is a proportionally higher increase in the prices of goods and/or services purchased in a country despite the increase in wages. Economic units that grew with the industrial revolution had to face inflation. Since the early 20th century, both wars and economic depressions created a natural stage for inflation to manifest itself. In the second half of the century, during the so-called "Great Inflation" period, which lasted for nearly two decades, the United States abandoned the global monetary system. It saw four economic recessions, two energy shortages, and unprecedented price and wage practices. Even though the Ford administration in 1970 declared inflation "enemy No. 1", the policies implemented did not yield any results results (Federal Reserve History, 2013). The situation in Türkiye was no different. In the 1990s, inflation was portrayed as a "monster" in newspapers. In 1994, Türkiye's annual inflation rate peaked at 119.8%. By 2005, because of the monetary and fiscal policies implemented, inflation had fallen to 5.8%.

Was the real culprit inflation, portrayed as a "monster"? Or was inflation the result of poor economic indicators? Whatever the answer, governments use conventional and unconventional methods to stabilize inflation. Türkiye's recent attempts to stimulate its economy through low interest rates and increased credit have backfired. This unconventional monetary policy has led to a reliance on foreign borrowing, which has created trade deficits. The Turkish lira's value has plummeted against the dollar, eroding confidence in the national currency. This has driven up import costs while exports have not kept pace, further exacerbating economic challenges. In addition to all these, foreign investors gradually withdrew from the country (Kartal et al., 2024). The expansionary monetary policy did not yield the expected results. Along with

Table 1. Income Inequality in Türkiye

Year	Share in GDP	GDP USD	Polulation	GDP per Capita	Income increase compared to 2021
2022		906,000.000.000	85,279,553	10,623.88	
Lowest%20	5.9%	53,454,000,000	17,055,911	3,134	9.60%
Next%20	9.8%	88,788,000,000	17,055,911	5,206	5.00%
Next%20	14.0%	126,840,000,000	17,055,911	7,437	6.20%
Next%20	20.5%	185,730,000,000	17,055,911	10,889	10.30%
Highest%20	49.8%	451,188,000,000	17,055,911	26,453	15.70%
Total/Average	100%	906,000.000.000	85,279,553	10,623.88	11.50%
Gini Coefficient					0.433
P80/P20 Ratio					8.440

dollarization, inflation rates reached the peak rates experienced in the 1990s. While lowering interest rates created an opportunity for wealthy individuals, the inflation factor came into play for low-income individuals. Today, the most important socio-economic problem[1] in both developed and developing countries is income inequality (Dabla-Norris et al., 2015). Although income inequality and wealth concentration manifest themselves differently in each country, there is still no precise measurement (Zucman, 2019). The distribution of income is not a new problem; many economists such as Malthus, Marx and Ricardo put income distribution at the center of political economy (Piketty, 2014). According to the World Inequality Database 2022, 10% of the world's population earns 52% of global income, while the poorest earn 8.5%. An individual in the top 10% earns an average of 122,100 USD per year, while an individual in the poorest earns 3,920 USD per year. Against this backdrop, wealth inequality is more pronounced than income inequality.

The poorest 10% of the world's population have no wealth, while the richest 10% have 76% global wealth (WIR, 2022). Many studies on income inequality, which is as important as inflation, investigate the link with economic factors. Various mechanisms work in the relationship between income inequality and economic growth. These mechanisms include the level of economic development, technological development, socio-political turmoil, savings rate, fertility rate, imperfections in credit markets, politics and institutions. Studies on these linkages have mostly found a negative correlation between income inequality and economic growth (Mdingi and Ho, 2021). However, monetary policy changes have different effects on different income groups in the economy. In expansionary monetary policies, the high-income group becomes richer while the low-income group becomes poorer. Türkiye is a country that has experienced this situation with the monetary policy implemented in recent years. Expansionary monetary policies cause a large share of national income to shift towards high-income households. Under normal circumstances, this increases aggregate demand and reduces inflation (Kronick and Villarreal, 2020). However, the situation in Türkiye has been different. As the central bank lowered policy interest rates, savings shifted to foreign currency and thus the value of the Turkish Lira fell in response to the demand for foreign currency. Table 1 exhibits that the Gini coefficient, which was 0.415 in 2021, has increased to 0.433 in 2022. This indicates that income inequality has worsened in 2022 compared to 2021. Secondly, the P80/P20 ratio, which shows the difference between the income of the top 20% of the population and the bottom 20% of the population, has also increased in 2022 compared to 2021 (the gap has widened from 8 times to 8.44 times). In other words, the gap between the highest and lowest earners has widened. The most fundamental reason for this deterioration in income distribution is the interest rate reduction policy implemented between September 2021 and mid-2023. The significant jump in inflation caused by this policy has disrupted income distribution. It is expected this deterioration to continue in 2024.[2]

Moreover, since the money supply was higher than economic growth, the value of the domestic currency fell, and the Quantity Theory of Money approach broke down. While dollarization increased the value of foreign currencies, consumption expenditures increased due to economic growth. Inflation, which had been on an upward trend, started to increase due to the increase in consumption expenditure and the increase in demand[3]. Prices rose and purchasing power began to fall rapidly. If wage increases remained below the rate of inflation, purchasing power could not stabilize. All the while, income inequality and concentration of wealth began to be deeply felt. As long as the real income of households remains below the rate of inflation, income inequality will continue to increase[4]. High inflation manifests itself differently

1 See Figures 6 and 7 in appendix section. The unorthodox monetary policy implemented by the Turkish government in the aftermath of 2019 led to a significant decrease in policy rates, aiming to curb inflation. However, this unconventional approach proved counterproductive, resulting in a surge in inflation. The unequal income distribution exacerbated the impact of high inflation, disproportionately affecting low-income households. These individuals were forced to allocate a larger portion of their income to essential goods and services such as food, non-alcoholic beverages, and housing. Conversely, high-income households demonstrated a preference for discretionary spending, including transportation, which contributed to a rise in car sales..

2 See figure 8 in appendix section. Highest %20 expended 42.67 time more compared to lowest %20 for education in 2023. 18.42 times more expended by highest %20 compared to lowest %20 for entertainment and culture and 17.78 times more for transportation. Figure 9 gives more details by excluding this top 3 expenditure area. Highest %20 expended 12.56 time more compared to lowest %20 for hotels and restaurants.

3 See figures 10 and 11 in the appendix section. The pandemic lockdowns in Türkiye led to a slight increase in household savings compared to pre-pandemic levels. However, the subsequent decrease in interest rates and significant monetary injections by the central bank stimulated a dramatic surge in household credit after 2020. This contradictory trend is attributed to a combination of factors, including the desire to capitalize on low-interest rates, the need for financial stability during uncertain times, and potential government incentives or programs aimed at encouraging economic activity..

4 See Figures 12 and 13 in the appendix part. The top 20% of earners account for approximately 46-47% of total consumption. Post-pandemic, with pent-up demand and the acquisition of cheap credit and increased assets facilitated by misguided economic policies, this group has augmented their

for high- and low-income households. Low-income households may consume more in the face of high inflation by borrowing or spending all of their income (Charalampakis et al., 2022). The purpose of this consumption may be the expectation of future price increases for goods and services. When today's price remains lower than tomorrow's price, households prefer to consume rather than save their income.

Income inequality in Türkiye during the high inflation period is an important part of this study. The increase in variance due to expenditures was observed as the underlying cause of the failure of inflation rates to fall despite all interventions. In this context, VECM model was applied to the data between 2006Q1 and 2023Q4. Household expenditures were calibrated by multiplying household expenditures by the expenditure percentages of the first lowest 20% and the last highest 20%. In the impulse-response and variance decomposition analysis performed by adding USD and policy and deposit rates to goods, services, core goods, hotel, restaurant, energy and food prices inflation, the expenditures of the lowest income group increase the variance of all inflation variables except headline services inflation. The impact of this increase is 20% higher than that of the high-income class. Based on these results, the issue is also behavior disorder along with income distribution disorder. Moreover, we also see in the CBRT's (Central Bank of the Republic of Türkiye) latest inflation report that the inflation expectations of households, the real sector and professionals diverge significantly. Trying to understand inflation by modeling the pattern rather than expectation surveys is essential to develop more effective methods of combating inflation, or to understand that the current government cannot bring inflation down to targeted levels without causing a crisis, and to formulate both individual and institutional strategies. Households consistently anticipate a more rapid increase in consumer prices than is ultimately realized[5]. This phenomenon has significant implications for economic stability and policymaking. A key observation is the marked decline in the proportion of households expecting inflation to accelerate or remain unchanged following the introduction of FX-protected deposit applications by the government. This suggests that the policy measure had a tangible impact on public perceptions of inflation. However, the positive effect was short-lived, as the rate of expected inflation rose significantly after the general elections. The subsequent increases in energy and transportation prices, implemented by the government, contributed to a renewed deceleration in expected inflation. Several factors may contribute to this persistent divergence between actual and expected inflation. One possibility is that households possess limited information or understanding of the underlying economic dynamics that influence price levels. As a result, they may rely on heuristics or anecdotal evidence to form their expectations, leading to systematic biases. Additionally, psychological factors such as anchoring and adjustment biases can influence inflation expectations, as individuals tend to cling to prior beliefs even in the face of contradictory information. Furthermore, the political and economic environment in Türkiye may play a role in shaping inflation expectations. Periods of political instability, economic uncertainty, or government interventions can heighten inflationary concerns among households. Moreover, the credibility of policymakers and their ability to effectively manage the economy can significantly impact public perceptions of inflation.

Understanding the factors that drive the divergence between actual and expected inflation is crucial for policymakers in Türkiye. By addressing the underlying causes, such as improving public information, enhancing economic literacy, and promoting policy credibility, the government can work to reduce this discrepancy and foster greater economic stability.

The study consists of four chapters. The second section includes a literature review of the studies on the subject, the third section presents the methodology and the results of the empirical analysis, and the fourth and final section includes conclusions and discussions.

2. LITERATURE REVIEW

There is a large body of research on the inertia of inflation, income inequality and economic growth in both domestic and foreign sources. Countries with different economic growth have been intensively researched to analyze the various behaviors of inequality. In this section, the studies are analyzed in two sub-sections.

2.1. Inflation-Income Inequality

Siami-Namini et al. (2020) present evidence that CPI inflation has a positive effect on income inequality and a negative effect on interest rates. They also confirm the Kuznet's inverted U-shaped hypothesis between income inequality and GDP. Creel and El Herradi (2022) analyzed the effects of ECB monetary policy on income inequality in 10 Euro area countries. While traditional monetary policy was more effective in countries with high income inequality during the periods when it was implemented, monetary policies in general had a low impact on income inequality. El Herradi et al. (2023) investigated the effects of inflation on the top income group of 14 developed OECD countries between 1920 and 2016. According to the results, inflation reduces the income share of the top 1% income group. The situation in Türkiye is almost the same in different studies. Gemicioğlu et al. (2024) analyzed the effects of inflation and indirect taxes on consumption inequality in Türkiye. While nominal consumption was equal between 2003 and 2019, inflation and indirect taxes increased inequality in real consumption after this period. This result also suggests that

spending in a highly inflationary environment (as exemplified by increased spending on transportation, such as car purchases). This situation has compelled the bottom 20% of earners to spend their entire income, as rising prices between 2019 and 2023 have left little room for saving. As you will see in Section 4, our models also indicate that the bottom 20% is no less influential than the top 20% in driving variance in inflation types such as goods, essential goods, and headline inflation, excluding services inflation.

5 The divergence of actual inflation rates and expectation was always an issue for Türkiye especially in the last decade. See Figure 14 in appendix section. Household inflation expectation for the following 12 months (InfExpct) is always significantly higher than actual inflation (Actual CPI). One important point in this figure is the proportion of households expecting consumer prices to rise at a faster or the same rate (Faster CPI) declines significantly after FX protected deposit application was launched by the government. After the general elections Faster CPI increased significantly however with the energy and transportation prices increases of the government it lost its momentum quite fast and decreased again.

the mix of monetary and indirect tax policies works in favor of the upper income group. Garcimartín et al. (2021) focused on the consumption structure of households in Central America and the variation of inflation across goods and services. According to this research, each income group reacts differently to inflation. In the inflation-adjusted Gini number calculation, income inequality increases at a non-negligible level. An interesting finding comes from Van Kints and Breunig (2021). When they analyze the relationship between income distribution and inflation in Australia, they state that the lowest income group experiences the most intense inflation. They emphasize that the highest income group experiences the least intense inflation, and that this difference is due to alcohol and tobacco product expenditures. Berisha et al. (2023) also mention the simultaneous increasing effect of inflation on different income groups. Moreover, this effect is more pronounced in low-income groups. Altunbaş and Thorthon (2022) state that inflation targeting increases income inequality as much as high inflation in their study for 121 countries. Ndou (2024) shows that in South Africa, income inequality responds negatively to positive inflation shocks within the 3-6% inflation targeting band. However, income inequality increases when inflation exceeds this band. Kronick and Villarreal (2020) emphasize that expansionary monetary policies in Canada increase income inequality, while contractionary monetary policies decrease income inequality. Cevik (2023) conducted research on the persistence of city-level inflation in Lithuania between 2000 and 2021. The data of monthly CPI (Consumer Price Index) subcomponents of five major cities yielded mixed results on inflation inertia. While headline inflation showed mixed results, many consumption categories showed significant persistence. Even though shocks pass, their effects have lasting consequences. Against this finding, Zheng et al. (2020) argue that inflation affects income inequality through asset values and interest rates. They also mention that high inflation tends to reduce economic growth and alleviate income inequality. Binetti et al. (2024) argue that the perceived causes of inflation are exogenous. However, households make complex and difficult decisions in the decision-making process. In addition, there are political differences in households' spending and consumption approach and their perspective on inflation. Corsello and Riggi (2024) focus on the effects of energy shocks on household spending and inflation in Italy. Prices for the bottom and top households in the expenditure distribution in different consumption baskets widen inflation inequality. Low-income households benefit from the containment of inflation but reduce the amount spent on basic consumption. Tirelli and Ferrara (2019) investigate the effects of inflation and income distribution in a two-factor New Keynesian model. They find ambiguous results, as a decline in inflation always increases welfare for the high-income group, while the low-income group suffers significant consumption losses.

2.2. Economic Growth - Income Inequality

Research for developed countries generally confirms the Kuznet hypothesis. That is, economic growth first increases and then decreases income inequality. Nevertheless, the situation may vary according to country dynamics. In developing or less developed countries, the situation is more complicated. Mdingi and Ho (2021) emphasize this complexity in their review of the literature on the relationship between income inequality and economic growth. Zungu et al. (2021) investigated growth and income inequality using data from Southern African Development Community member countries between 1990 and 2015. While income inequality decreases at low growth, income inequality tends to increase when per capita income exceeds USD 8,969. Huh and Park (2020) examined the effects of globalization on economic growth and income inequality. The results showed that globalization encourages economic growth and increases income inequality. It is also stated that extra-regional integration is the main reason for the increase in income inequality with globalization. Fawaz and Rahnama (2022) focused on the relationship between economic growth and income inequality in economies in transition. They find a positive relationship between economic growth and income inequality in high-income countries in transition and a negative relationship in low-income countries. In addition, while inflation has a positive impact on economic growth in high-income countries, it has a negative impact in low-income countries. Wolde et al. (2022) found a negative long-run relationship between economic growth and income inequality in Ethiopia over the period 1980-2017. Pop (2024) found a monotonically decreasing link between economic growth and income inequality in 11 Central and Eastern European countries. As growth declines, income inequality will also decline. Although Kuznet theory is proved for a few countries, the results are considered linear and insignificant.

Adom et al. (2021) examined energy efficiency, economic growth and income inequality in 51 African countries and concluded that income inequality slows economic growth. Policardo and Cerrera (2024) studied wealth inequality and economic growth in the US and France. An increase in wealth inequality slows economic growth as it increases the total stock of non-productive assets. Acheampong et al. (2024) found that in Brazil, one of the BRICS countries, income inequality in the lower- and middle-income groups has a negative impact on economic growth. A positive effect was observed in Russia, China and South Africa. Tsitouras and Papapangus (2023) similarly state that economic growth in Greece increases income inequality in the short run. Phi et al. (2023) note differently that income inequality reduces economic growth in Vietnam. Topuz (2022), on the other hand, states that high income inequality negatively affects economic growth in 143 countries. However, this process differs at the income level of countries. As a result, he emphasizes that this effect is complex due to country development levels. Čiegis and Dilius (2019) argue that among EU countries with different levels of development, economic growth is positively affected in countries with high income inequality, while economic growth is negatively affected in countries with low-income inequality. Banna et al. (2020) argue that economic growth in Malaysia reduces income inequality, while mentioning the contribution of ethnic groups in the country to income inequality. Carrera et al. (2023) discuss income inequality from a political perspective. In the study conducted on 79 developed and developing countries in the 1990-2015 period, all countries combat the increase in income inequality by issuing public debt. In the early 2000s, Reuveny and Ve Li (2003) investigated the effects of economic openness and democracy on income inequality in 69 countries between 1960 and 1996. They presented evidence that democracy and trade reduce income inequality.

Table 2: Definition of variables

Variables	Description	Source
last20hinc	Last %20 household income	TURKSTAT
first20hinc	First %20 household income	TURKSTAT
depint	Deposit interest rate	CBRT
pint	Policy interest rate	CBRT
usdtry	USDTRY exchange rate	CBRT
goodsinf	Goods inflation rate	TURKSTAT
servicesinf	Service inflation rate	TURKSTAT
goodsinfenergyfood	Goods-energy-food inflation rate	TURKSTAT
core goods	Core goods inflation rate	TURKSTAT
hotrest	Hotel and Restaurant	TURKSTAT

Table 3: Definition of heatmap abbreviations

Abbreviation	Definition
FandNABVG%	Food and non-alcoholic beverages
ABVGCT%	Alcoholic beverages and tobacco
CandFWR%	Clothing and footwear
Housing%	Housing
Furnit%	Furnishings, household equipment
Health%	Health
Transport%	Transportation
Commun%	Communication
EntandCul%	Recreation and culture
Edu%	Education
Hotrest%	Hotels, cafes and restaurants
Various%	Miscellaneous goods and services

3. METHODOLOGY AND RESULTS

This section of the study covers the econometric analysis for Türkiye for the period 2006Q1-2023Q4, including inflation, first 20% household income, the last 20% household income, policy and deposit interest rates variables. Table 2 shows the definition and sources of the variables.

First, cointegration test and VECM model were applied to the variables in the context of VAR (Vector Autoregression) model developed by Sims (1980). We then used impulse response analysis and variance decompositions. Impulse response analysis and variance decomposition are the two main tools used in the context of Vector Autoregressions (VARs) to understand the dynamic interactions between variables in a system. They offer insights into how the system responds to unexpected shocks and how the variability of a given variable can be attributed to these shocks. An impulse response function (IRF) traces the path of a variable in a VAR model following a one-unit shock to another variable, holding everything else constant. In simpler terms, it allows us to assess the impact of an unexpected change in one variable on the future values of all variables in the system. IRFs are typically presented graphically and show the response over a selected number of periods.

3.1. VAR Model

Sims (1980) criticized the temporal restriction of definitions in the simultaneous equation system and the temporary classification of endogenous/exogenous variables. VAR assumes that all variables under study are endogenous. It presents the vector of endogenous variables as an autoregressive function of their lagged values. Although this model includes seasonal dummies and trends, it is essential that all variables are perceived as endogenous (Baltagi and Baltagi, 2011: 378). As per the existing literature the VAR method has been demonstrated as a coherent and credible approach (Stock and Watson, 2001). The VAR model can be presented as follows:

$$y_t = \beta_1 y_{t-1} + \beta_2 y_{t-2} + \beta_3 y_{t-3} + \cdots + \beta_n y_{t-n} + \varepsilon_t \quad (1)$$

This equation models how an asset's return Y_t depends on its past performance Y_{t-1}, Y_{t-2}, Y_{t-3}. The coefficients β_1, β_2, β_3 capture the influence of these past returns. In Vector Autoregression (VAR) models, each variable is predicted by its own history, similar to Y_t here. VAR models are best suited for stable data (stationary series) and require choosing the most impactful lags Y_{t-1}, Y_{t-2} and etc.

The VAR model has many advantages and disadvantages (Brooks, 2008: 292-293). The Vector Autoregression (VAR) model offers several distinct advantages over traditional econometric techniques. Notably, its endogenous treatment of all variables enables the simultaneous estimation of their interdependencies, a crucial feature for understanding complex economic systems. Furthermore, the VAR model's multivariate nature allows for a more nuanced examination of the dynamic relationships between variables, capturing intricate patterns and features that may be overlooked in univariate models. This increased flexibility often leads to more accurate and informative forecasts compared to traditional structural models.

However, the VAR model is not without its limitations. One significant drawback is its lack of theoretical underpinnings. While it can effectively describe the empirical relationships between variables, it provides little insight into the underlying economic mechanisms driving these interactions. Additionally, the VAR model can be susceptible to spurious relationships, where correlations between variables appear statistically significant but lack meaningful economic causation. This can complicate the interpretation of model results and make it challenging to estimate accurate coefficients. Moreover, the assumption of stationarity at the same level is essential for hypothesis testing within the VAR framework. While some researchers argue for analyzing non-stationary data without differencing to preserve information about long-run relationships, this approach can introduce challenges and potential biases in the estimation and interpretation of results.

3.2. Cointegration and VECM Model

Engle and Granger (1987) combined cointegration and error correction modeling to construct the trace error correction model with VAR model logic. If there is cointegration between variables, the error correction model can be generated from the autoregressive distributed lag model. In fact, each equation in the VAR model is an autoregressive distributed lag model. In this respect, VECM can be considered as a VAR model with cointegration restrictions (Zou, 2018). When variables with different degrees of integration come together, the new combination has an integration that is equal to the greatest degree. That is, when two variables with I(1) are linearly combined, the new combination will be I(1).

If for i=1,2,3.k, $X_{i,t} \sim I(d_i)$, then each of the *k* variables is integrated at level d_i.

$$Z_t = \sum_{i=1}^{k} \alpha_i X_{i,t} \quad (2)$$

A linear combination of *k* variables is then X_i in the context of Z_t. Rearrangement:

$$X^{1,t} = \sum_{i=2}^{k} \beta^{i} X^{i,t} + Z'^{t} \quad (3)$$

Here $\beta_i = \frac{\alpha_i}{\alpha_1}$, $Z'_t = \frac{z_t}{\alpha_1}$, $i = 2,\ldots\ldots k$. Generally, if x_i's are I(1), z'_t will be non-stationary (Brooks, 2008; 336-337). The cointegration testing approach based on the Vector Error Correction Model proposes a function as follows:

$$\Delta Z_t = \prod_0 d_t + \sum_{j=0}^{p-1} \prod_J \Delta Z_{t-j} + \alpha\beta^T Z_{t-p} + \varepsilon_t \quad (4)$$

Here $\Delta Z_t = Z_t - Z_{t-1}$, and d_t is the vector of deterministic variables. The most confusing question in cointegration tests is whether it is healthy to estimate the variables in levels or to estimate the variable levels in logarithmic order. According to Hendry and Juselius (2000), if the variables are cointegrated in level, they are also cointegrated in logarithmic order.

The VECM model is a system that detects long-run deviations between variables. The VECM model for cointegrated data is based on the Engle and Granger (1987) error correction theory. If there is cointegration between series, the dynamic relationship between these series is examined with the VECM model. A three-variable error correction function is formed as follows:

$$\Delta y_t = \beta_1 \Delta x_t + \beta_2 \Delta w_t + \beta_3 (y_{t-1} - \gamma_1 x_{t-1} - \gamma_2 w_{t-1}) + \varepsilon_t \quad (5)$$

In error correction theory, if the data in a dynamic linear model with non-stationarity structure are I(1), the variables are expected to be cointegrated at degree (1,1). VECM models provide a flexible framework for analyzing the dynamic interactions between multiple variables. The model's structure allows for the examination of both contemporaneous and lagged relationships, enabling researchers to identify causal pathways and feedback effects. This is particularly valuable in macroeconomic analysis, where complex interdependencies between variables are often observed. Furthermore, VECM models can be used to forecast future values of the variables. By estimating the model's parameters and incorporating information on past values, researchers can generate predictions that account for both the long-run equilibrium relationships and the short-run dynamics. This forecasting capability is essential for policymakers and businesses alike, as it provides valuable insights into future economic conditions.

However, it is important to note that constructing VECM models requires careful consideration of several factors. First, the variables must be cointegrated, meaning that there exists a long-run relationship between them. This can be tested using various statistical techniques, such as the Johansen test. Second, the appropriate lag order for the model must be determined. This can be done using information criteria, such as the Akaike Information Criterion (AIC) or the Bayesian Information Criterion (BIC). Finally, the model's adequacy should be evaluated using diagnostic tests to ensure that the residuals are serially uncorrelated, normally distributed, and homoscedastic.

3.3. Variance Decomposition and Impulse-Response Analysis

Once we estimate the VAR model, we can use variance decomposition to analyze the sources of variability in the dependent variable. This technique helps us quantify how much of the future forecast errors (how much the actual values deviate from the predictions) for each variable are explained by its lagged values, compared to the influence of other variables in the model. Moreover, impulse response analysis and variance decomposition are often used in conjunction. IRFs reveal the dynamic nature of the response, while variance decomposition helps quantify the relative importance of each shock in explaining the variability. In particular, variance decompositions offer a different way to examine variable structures in the VAR method.

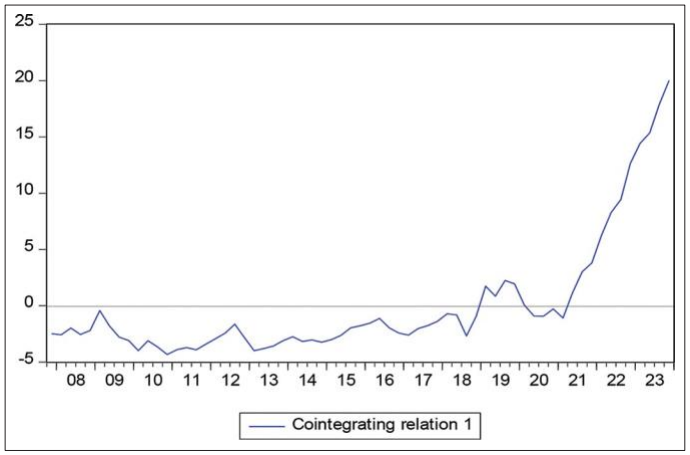
Briefly, variance decomposition is a statistical technique that allows researchers to break down the variance of a variable (such as the return of a stock index) into the contributions of different factors. This is useful for understanding what factors are most important for driving the movement of the variable. This combined approach provides a comprehensive understanding of how shocks propagate through the system and influence the behavior of individual variables.

3.4. Results of Analysis

As of 2019, inflation has risen remarkably, marking a historic peak for Türkiye with three-digit figures in 2023. Of course, unusually expansionary monetary policy is not the only reason for the rise in inflation. There are many internal and external factors that contribute to this situation. But the irony is that for an audience that acts as if the interest rate is solely responsible, this study examines other subtle details underlying the situation.

The Vector Error Correction Model (VECM) is a specialized time series model designed to handle non-stationary data that

Figure 1: Cointegration relation



exhibits cointegration. This model is particularly well-suited for macroeconomic data, which often displays non-stationarity due to factors such as trends, seasonality, and shocks. VECM models offer a robust framework for analyzing the long-run relationships and short-run dynamics between macroeconomic variables. The primary advantage of using VECM models for non-stationary cointegrated data lies in their ability to capture both the long-run equilibrium relationships and the short-run deviations from these equilibria. By incorporating error correction terms, VECM models explicitly account for the tendency of the variables to revert to their long-run equilibrium levels. This feature is crucial for understanding how macroeconomic variables adjust to shocks and disturbances.

Figure 1 provides evidence that the variables are cointegrated. This structural break is an output of the policies implemented especially after 2018 were often tailored to benefit specific capital groups. Large corporations, particularly those operating in the construction, energy, and finance sectors, wielded substantial influence over the government's decision-making processes. These corporations received various forms of support, including tax breaks, public contracts, and regulatory favors, while small and medium-sized enterprises faced considerable challenges. Capital groups played an active role in driving policy shifts during this period. Government responses to challenges such as currency fluctuations, inflationary pressures, and the global economic crisis were frequently shaped by the demands of large corporations. This dynamic contributed to the consolidation of power within certain sectors of the economy while marginalizing others The economic turmoil that gripped Türkiye between 2018 and 2023 exposed the intricate interplay between the government's class-based alliances and powerful capital groups. The policies implemented during this period primarily served the interests of specific capital groups, while a significant portion of the population grappled with economic hardships. However, during election cycles, the popular classes broke free from passivity and became more active participants in the political process. This period highlights the deepening of economic inequality and social injustice in Türkiye. Ensuring sustainable economic growth and social justice remains a fundamental challenge for the country's future.

Figure 2: Consumption expenditure type trends

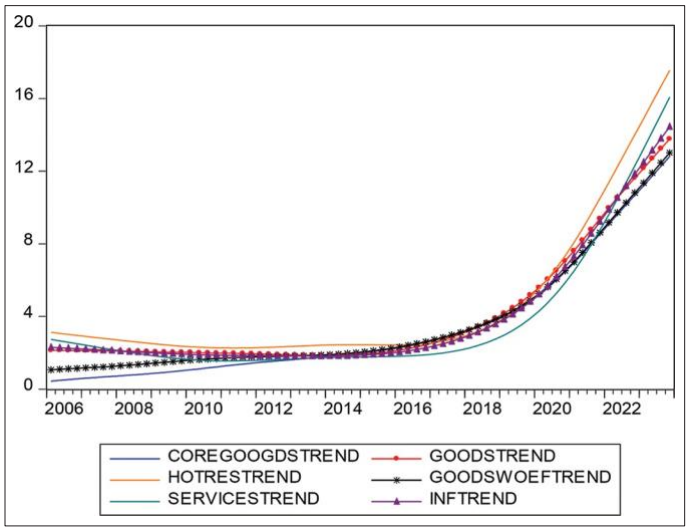


Figure 2 shows the trend of headline inflation and other types of inflation generated by household expenditures. A trend is a structure that tracks the long-term increases or decreases of variables in a time series. In this respect, it can be said that the trend of the inflation types analyzed in the graph has increased as of 2019. And this increase continues until the end of 2023.

Table 3 provides the definition of the categories seen in the heat maps. In Figure 3, the heatmap offers a visual representation of inflation rates across various expenditure categories over a specified temporal span. Color-coded to denote inflation levels, the map reveals a complex pattern of inflationary trends. While certain categories exhibited sustained periods of elevated inflation, particularly in the earlier years, a general downward trajectory in inflation rates became apparent in subsequent periods. However, the volatility of inflationary patterns varied significantly across categories. For instance, food and non-alcoholic beverages displayed a relatively consistent level of inflation throughout the analyzed period, indicating a degree of stability. Conversely, housing costs demonstrated substantial fluctuations, characterized by alternating periods of elevated

Figure 3: Quarterly heatmap for inflation by main expenditure groups

	2014-Q1	2014-Q2	2014-Q3	2014-Q4	2015-Q1	2015-Q2	2015-Q3	2015-Q4	2016-Q1	2016-Q2	2016-Q3	2016-Q4	2017-Q1	2017-Q2	2017-Q3	2017-Q4	2018-Q1	2018-Q2	2018-Q3	2018-Q4
FandNABVG%	6.12%	2.02%	0.77%	3.22%	5.90%	1.34%	-1.27%	3.04%	4.70%	-3.30%	1.78%	1.32%	8.92%	2.03%	-1.85%	3.56%	5.36%	4.69%	5.99%	6.90%
ABVGCT%	5.04%	-0.10%	1.20%	-0.91%	3.73%	-0.13%	1.49%	0.35%	9.37%	0.37%	8.67%	3.47%	6.77%	0.02%	0.43%	0.03%	0.41%	0.13%	1.12%	0.54%
CandFWR%	-11.84%	16.23%	-5.60%	7.27%	-13.40%	14.80%	-6.94%	9.78%	-11.22%	13.67%	-7.16%	7.32%	-9.76%	11.65%	-4.42%	11.35%	-9.44%	11.49%	-1.99%	13.27%
Housing%	1.59%	0.86%	1.20%	3.45%	1.80%	1.43%	1.11%	1.80%	2.42%	1.00%	1.22%	1.08%	3.58%	1.25%	1.50%	2.72%	3.66%	2.68%	6.28%	8.75%
Furnit%	2.98%	2.60%	0.83%	1.18%	2.67%	2.28%	2.31%	2.80%	2.87%	1.22%	0.58%	1.09%	2.39%	2.03%	2.42%	4.66%	4.47%	4.25%	9.83%	9.51%
Health%	3.35%	2.68%	1.51%	1.22%	2.49%	1.54%	1.35%	1.46%	4.08%	2.20%	1.90%	0.70%	6.83%	2.57%	0.78%	1.01%	4.83%	3.00%	3.16%	3.78%
Transport%	4.86%	0.62%	0.86%	-1.94%	-0.90%	2.72%	1.35%	1.80%	0.47%	2.33%	1.92%	4.68%	6.47%	1.35%	2.18%	6.00%	3.46%	6.30%	9.11%	1.04%
Commun%	-0.61%	0.32%	1.96%	-0.21%	1.42%	-0.08%	0.85%	1.20%	-0.30%	0.77%	1.96%	0.52%	0.67%	0.40%	0.17%	0.30%	-0.85%	1.89%	5.05%	3.13%
EntandCul%	2.21%	1.01%	3.61%	-0.62%	1.96%	3.69%	3.52%	1.45%	1.58%	1.06%	1.34%	0.10%	4.70%	3.50%	2.30%	-1.41%	2.72%	4.08%	7.09%	5.47%
Edu%	0.27%	2.36%	3.09%	2.08%	0.12%	1.51%	2.32%	2.17%	0.40%	2.21%	3.86%	2.50%	0.41%	2.24%	4.47%	2.67%	0.71%	2.31%	3.74%	2.83%
Hotrest%	3.78%	3.09%	3.45%	2.75%	2.59%	3.64%	3.92%	2.29%	2.12%	1.63%	2.45%	1.86%	2.27%	2.60%	3.66%	2.15%	2.35%	3.49%	6.47%	5.43%
Various%	3.56%	1.62%	1.91%	1.62%	3.48%	2.27%	2.17%	2.64%	3.96%	1.93%	2.19%	1.71%	5.87%	1.65%	1.16%	3.23%	4.23%	4.85%	8.35%	7.45%

	2019-Q1	2019-Q2	2019-Q3	2019-Q4	2020-Q1	2020-Q2	2020-Q3	2020-Q4	2021-Q1	2021-Q2	2021-Q3	2021-Q4	2022-Q1	2022-Q2	2022-Q3	2022-Q4	2023-Q1	2023-Q2	2023-Q3	2023-Q4	2024-Q1	2024-Q2	2024-Q3
FandNABVG%	7.79%	1.93%	-3.39%	2.07%	8.36%	4.07%	-2.15%	6.74%	7.24%	4.09%	5.52%	10.51%	24.61%	18.11%	6.04%	10.35%	14.39%	9.63%	15.01%	10.74%	14.42%	8.81%	3.48%
ABVGCT%	0.85%	11.63%	14.91%	6.43%	-0.91%	0.32%	1.16%	0.08%	0.76%	0.78%	0.15%	9.14%	24.70%	11.11%	9.93%	5.28%	10.79%	3.67%	20.86%	12.61%	7.66%	11.68%	6.99%
CandFWR%	-14.35%	5.84%	-3.06%	12.39%	-10.91%	7.33%	-2.07%	5.58%	-6.40%	9.60%	-2.16%	9.23%	5.61%	10.52%	4.62%	7.68%	-4.86%	8.34%	12.50%	15.18%	-1.62%	11.55%	-0.04%
Housing%	-2.98%	0.90%	5.29%	5.71%	1.86%	0.48%	2.42%	3.77%	4.30%	2.47%	7.12%	7.40%	20.45%	12.29%	11.85%	10.94%	6.96%	-8.83%	8.69%	19.73%	15.73%	10.05%	11.69%
Furnit%	-0.09%	1.94%	4.27%	1.94%	-1.04%	2.61%	5.22%	6.83%	5.88%	2.39%	4.99%	11.78%	24.96%	11.82%	9.85%	9.73%	10.85%	5.29%	16.80%	10.88%	12.42%	8.51%	3.29%
Health%	6.66%	3.69%	1.12%	1.23%	6.31%	3.42%	2.41%	2.52%	7.84%	4.30%	1.41%	2.82%	17.51%	8.10%	12.93%	7.67%	20.57%	5.88%	18.52%	9.28%	20.16%	4.78%	5.24%
Transport%	-3.16%	3.46%	4.52%	1.95%	0.46%	0.41%	7.70%	7.31%	4.50%	4.35%	3.33%	14.67%	30.08%	18.38%	5.75%	1.65%	5.48%	7.37%	28.82%	7.25%	8.39%	5.40%	3.96%
Commun%	0.15%	-0.44%	1.07%	1.71%	-0.09%	0.36%	4.03%	0.93%	1.50%	0.89%	1.28%	2.67%	6.73%	7.60%	6.77%	7.09%	7.81%	8.40%	12.32%	9.16%	10.21%	9.19%	5.02%
EntandCul%	2.07%	2.25%	2.32%	-0.75%	2.05%	1.20%	4.09%	1.87%	1.77%	3.02%	4.73%	6.25%	16.65%	10.02%	10.04%	5.77%	11.49%	7.48%	14.12%	10.24%	14.89%	7.03%	2.76%
Edu%	1.65%	4.04%	5.25%	2.20%	1.55%	1.90%	3.31%	-0.02%	1.37%	5.16%	5.10%	3.71%	5.87%	8.93%	8.71%	6.83%	9.89%	12.19%	16.10%	16.99%	15.00%	17.71%	5.26%
Hotrest%	2.19%	3.74%	4.58%	1.77%	2.40%	2.00%	4.30%	2.59%	3.91%	5.24%	7.44%	9.91%	18.57%	15.99%	10.10%	7.91%	17.05%	13.09%	19.98%	10.37%	17.32%	12.64%	6.80%
Various%	3.62%	3.71%	3.56%	1.74%	5.71%	7.00%	6.93%	4.50%	1.00%	4.27%	3.66%	10.56%	20.84%	9.02%	9.06%	7.96%	13.23%	5.56%	15.49%	9.57%	14.05%	7.96%	4.36%

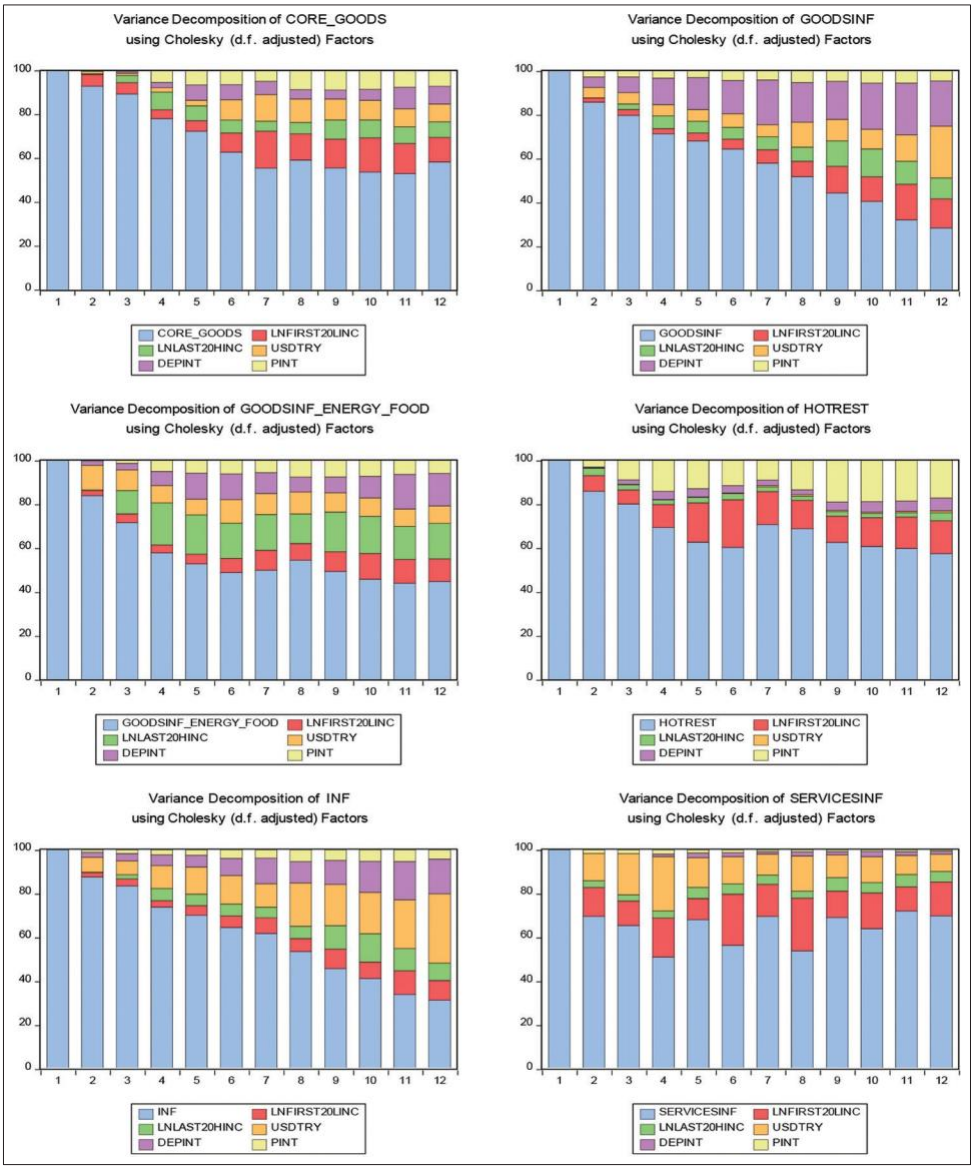
and diminished inflation. Transportation expenditures were marked by intermittent surges, potentially attributable to factors such as fuel price increases or disruptions in supply chains. In contrast, education costs generally exhibited lower inflation rates compared to other categories. This disparity may be attributed to factors such as government subsidies or heightened competition within the education sector. A comparative analysis of the categories reveals distinct patterns of volatility. Housing, transportation, and miscellaneous goods and services were characterized by frequent shifts in inflation rates.

Conversely, food and non-alcoholic beverages, along with education, demonstrated more stable inflationary trends. To gain a comprehensive understanding of these inflationary patterns, it is imperative to consider external factors such as economic policies, global events, and supply chain disruptions. Furthermore, a regional analysis, comparing local inflation rates to national or global benchmarks, can provide valuable insights into regional disparities. Additionally, seasonal fluctuations in prices within certain categories, such as food or clothing, should be taken into account when interpreting the data.

Figure 4 shows the variance decompositions of inflation types obtained with VECM models[6]. The models show the variance decomposition of headline inflation (INF), hotel and restaurants inflation (HOTREST), Goods inflation without food and energy (GOODSINF_ENERGY_FOOD), goods inflation (GOODSINF), core Goods inflation (CORE_GOODS) and services inflation (SERVICESINF) with their responses to logarithm of first 20% household income expenditures (LNFIRST20LINC), logarithm of last 20% household income

6 VECM models are employed when variables are cointegrated, implying a long-run relationship. The lag structure is determined by information criteria like the Akaike Information Criterion (AIC) or Schwarz Information Criterion (SIC), which balance model fit and parsimony. In this case, the Eviews lag length criteria likely suggested 6 lags as the optimal choice. Using the original levels of variables, rather than their differences, is crucial for capturing the long-run relationship implied by cointegration. This approach allows the model to estimate both short-run dynamics (represented by the lagged differences) and the long-run equilibrium relationship.

Figure 4: Variance decompositions of inflation types



(LNFIRST20HINC), deposit interest rate (DEPINT), policy interest rate (PINT) and foreign exchange rates (USDTRY).

According to the graphs, the core goods VECM model indicates that the Turkish economy's core goods inflation is primarily driven by domestic demand factors, both from low- and high-income households, but impact of low-income is higher. While initial inertia is observed, the influence of these income groups gradually increases over time, suggesting a demand-led shock. Additionally, interest rate and exchange rate fluctuations play increasingly significant roles in explaining the variance of core goods inflation, highlighting the interconnectedness of monetary policy and external factors in shaping the Turkish economy's price dynamics.

The Goods VECM model's variance decompositions reveal a predominant short-term inertia in goods price determination within the Turkish economy. However, this inertia gradually diminishes over time, giving way to increasing influences from both the lowest and highest income quintiles. This suggests a demand-driven shock as an important driver of goods price fluctuations. Additionally, the model indicates a growing impact of deposit interest rates and foreign exchange rates on the variance of goods inflation. These factors gradually gain prominence, eventually becoming the second and third most influential determinants after inertia, highlighting the interconnectedness of domestic monetary policy and external factors in shaping the Turkish inflationary landscape.

The VECM model analyzing goods inflation without energy, food, and non-alcoholic beverages in the Turkish economy reveals a strong initial inertial impact that diminishes over time. Notably, the influence of both the lowest and highest income quintiles on inflation increases, suggesting a demand-driven shock. Additionally, deposit interest rates and exchange rates demonstrate growing impacts on goods inflation, with deposit interest rates exhibiting a more gradual increase compared to the moderate effect of exchange rates. Furthermore, the analysis indicates that the impact of the highest income quintile on inflation is more pronounced than that of the lowest income quintile, deviating from the findings of previous models.

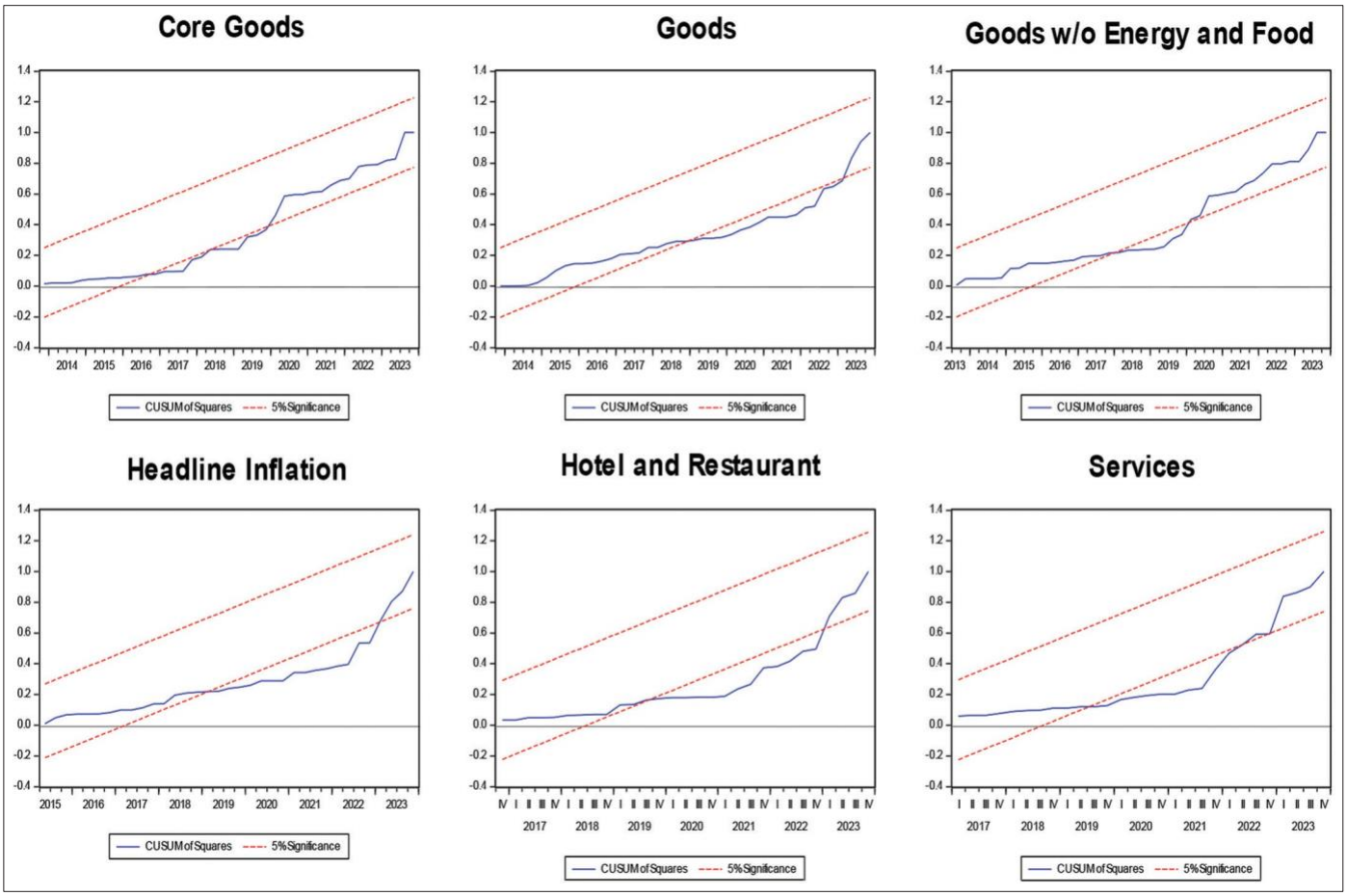
The VECM analysis of hotels and restaurants inflation reveals a significant inertial component, indicating that past inflation rates exert a persistent influence on future price levels. Moreover, the variance decomposition analysis highlights a notable shift in the explanatory power of various factors over time. While the impact of the lowest income quintile gradually increases, suggesting a demand-driven shock from this segment, the influence of deposit interest rates remains relatively moderate compared to other models. Also, the significantly stronger impact of lowest income quintile compared to highest income quintile is worth to pay more attention. The stronger impact of deposit interest rates further distinguishes this model from others. These unique insights underscore the complex interplay of factors affecting hotels and restaurants inflation, providing valuable implications for policymakers and industry stakeholders.

VECM model employed in for headline inflation underscores the predominant role of short-term price inertia in the Turkish inflationary process. While this persistence gradually wanes over time, it is replaced by increasing contributions from both the lowest and highest income quintiles, suggesting a demand-driven shock as one of the strongest drivers of price fluctuations. Moreover, the model reveals a growing influence of deposit interest rates and foreign exchange rates on the variance of headline inflation. These factors gradually gain prominence, ultimately becoming the second and third most influential determinants after inertia, emphasizing the interconnectedness of domestic monetary policy and external factors in shaping the Turkish inflationary landscape. Finally, The VECM model suggests that services inflation exhibits a more pronounced degree of persistence and stickiness relative to other inflation categories. A noteworthy finding is the significantly greater influence of the lowest income quintile on the variance of services inflation compared to the highest income quintile. Moreover, exchange rate fluctuations continue to exert a substantial impact on services inflation. The disproportionate impact of services inflation on the lowest income quintile in the Turkish economy can be attributed to several interconnected factors. Primarily, lower-income households tend to allocate a larger portion of their income to essential services, such as housing, transportation, and utilities. These services are often subject to more rigid pricing mechanisms, making them less responsive to market fluctuations. As a result, when the overall price level rises, lower-income households experience a more significant erosion of their purchasing power. Furthermore, the deteriorating relative prices of essential services can exacerbate the financial strain on lower-income households. This phenomenon occurs when the prices of these services rise at a faster rate than the prices of other goods and services[7]. Consequently, lower-income households are forced to allocate an even greater share of their income to these essential goods, leaving less disposable income for other expenditures. This can lead to a vicious cycle, as lower-income households may be compelled to reduce their consumption of non-essential goods and services, further hindering economic growth.

Finally, statistical analysis, utilizing CUSUM of squares, residual normality tests, and cointegration tests, provides empirical evidence supporting the complex and interconnected nature of these relationships. While residual normality tests and cointegration tests indicate statistical validity, the CUSUM of squares test, which is sensitive to structural changes or non-linearities, reveals a significant departure from stability between 2019 and 2023. This suggests that the underlying relationships may have undergone substantial shifts during this period, further complicating the analysis of the Turkish economy (Figure 5). Based on the provided graphs, we can observe the CUSUMSQ plots for different categories of inflation and consumer spending in Turkey. The blue line represents the CUSUMSQ statistic, while the red dashed lines indicate the critical bands. For most categories, the CUSUMSQ plots remain within the critical bands before 2019, suggesting a relatively stable model. This indicates that the underlying relationships between inflation and consumer spending were consistent during this period. However, a significant shift occurs around 2019. The CUSUMSQ plots for several categories, including Core Goods, Goods, and Services, begin to deviate from the critical bands. This suggests a structural break in the relationships between these variables. The observed structural break in the relationships between inflation and

7 See Figure 14 in the appendix section.

Figure 5: CUSUM of squares test



consumer spending in Turkey aligns with the unconventional monetary policy implemented by the Turkish government in 2019 and the subsequent economic challenges, including the COVID-19 pandemic. These factors likely contributed to increased volatility in the exchange rate and interest rates, affecting prices and consumer behaviour. Additionally, the pandemic disrupted global supply chains, leading to shortages and price increases for various goods and services. As consumers adapted to the new economic conditions, their spending patterns may have shifted, altering the relationships between inflation and consumer spending.

4. CONCLUSION AND POLICY IMPLICATIONS

The disproportionate impact of services inflation on lower-income households in the Turkish economy is a complex issue with multifaceted implications. While mainstream economic theory often emphasizes the role of demand-side factors, such as excessive money supply[8] and government spending, a more nuanced analysis reveals the significant influence of supply-side factors, particularly the concentration of market power and the deteriorating relative prices of essential services.

The neoclassical model of perfect competition, which underlies much of mainstream economic analysis, assumes a market characterized by numerous small firms, homogeneous products, and perfect information. In such a scenario, firms are price-takers, unable to influence market prices. However, empirical evidence suggests that many markets, including those for essential services, are far from perfectly competitive. Often dominated by a few large firms, these markets exhibit oligopoly or monopoly structures, allowing firms to exercise pricing discretion and manipulate prices to maximize profits. When markets are characterized by such anti-competitive practices, firms may engage in collusion, price-fixing, or predatory pricing. These behaviors can distort market outcomes, leading to higher prices and reduced consumer welfare. Moreover, the concentration of market power[9] can enable

8 See Figure 16 in the appendix section. Although monetary supply is not the ultimate reason the relationship between inflation, Money supply and foreign Exchange is significantly strong.

9 See Figure 20 in the appendix section. The significant reduction in the number of companies in sectors such as trade, education, manufacturing, accommodation and food services, agriculture, forestry, and fishing, transportation, and storage following 2021 in Türkiye is a complex issue with multiple contributing factors. While the COVID-19 pandemic undoubtedly played a significant role, it was not the sole driver of this trend. The pandemic imposed unprecedented economic challenges on businesses across various sectors. Lockdowns, restrictions, and disruptions in supply chains forced many businesses to close temporarily or permanently. The decline in consumer spending and tourism further exacerbated these challenges, particularly for sectors reliant on in-person interactions and services. However, even as pandemic-related restrictions eased, many businesses struggled to recover due to lingering economic uncertainties and the lasting effects of the crisis. The decline in the number of companies has also been influenced by broader economic factors. The Turkish economy has

firms to extract excessive profits, which can contribute to inflation.

In addition to market power, other supply-side factors can also contribute to services inflation. For instance, disruptions to production chains, increases in input costs, or changes in government regulations can lead to higher prices for essential services. Furthermore, the inflationary expectations of firms and consumers can play a self-fulfilling role, as firms may raise prices in anticipation of higher costs or increased demand, and consumers may accelerate their purchases to avoid future price increases. The failure of mainstream economic theory to adequately account for the role of supply-side factors in inflation can have significant policy implications. If policymakers mistakenly attribute inflation solely to demand-side factors, they may implement policies that are ineffective or even counterproductive. For instance, excessive reliance on monetary policy tools, such as interest rate hikes, can lead to economic downturns without addressing the underlying causes of inflation.

To address services inflation effectively, policymakers must adopt a more nuanced understanding of its causes, recognizing the interplay between demand-side and supply-side factors. This requires a shift away from the idealized model of perfect competition and toward a more realistic analysis of market structures and dynamics. By acknowledging the role of market power, supply shocks, and inflationary expectations, policymakers can develop more targeted and effective policies to combat inflation while promoting economic growth and stability.

The pronounced increase in the trade sector's net sales relative to the cost of goods sold, particularly following the COVID-19 pandemic, can be attributed to a confluence of factors. The pandemic-induced shift towards e-commerce and online shopping significantly augmented demand for goods, benefiting the trade sector. Concurrently, the Turkish lira's depreciation against the US dollar led to increased costs for imported goods, which could be passed on to consumers, bolstering the profitability of trade businesses. Moreover, government stimulus measures, such as tax reductions and subsidies, provided temporary relief to businesses, including those operating in the trade sector. In contrast, the manufacturing sector's increase in net sales was more tempered. This disparity can be explained by several factors. The manufacturing sector's greater exposure to global supply chain disruptions made it more vulnerable to fluctuations in raw material and component costs. Additionally, the sector's higher fixed costs, such as rent and wages, limited its ability to fully absorb and pass on increased costs to consumers. Furthermore, intense competition, both domestically and internationally, constrained the manufacturing sector's pricing power. The trade sector's substantial increase in gross profit compared to other sectors can be attributed to the factors outlined above, as well as its comparatively lower cost of goods sold. This suggests that the trade sector has demonstrated greater efficiency in managing costs and pricing its products (Appendix Figures 12-14).

Moreover, the deteriorating relative prices of essential services can exacerbate the financial strain on lower-income households. This phenomenon occurs when the prices of these services rise at a faster rate than the prices of other goods and services. The disparity in inflation rates between goods and services during this period can be attributed to several factors. The pandemic-induced shift towards remote work and online services increased demand for certain services, such as telecommunications and digital content. Government price controls on specific goods, such as food and energy, limited the ability of producers to raise prices. Finally, the relatively higher labor intensity of services compared to goods made them more susceptible to wage increases and other cost pressures. The deterioration of pricing behavior in the economy can be attributed to a combination of factors. The depreciation of the Turkish lira led to higher import costs, which were passed on to consumers in the form of higher prices. Inflationary expectations, influenced by factors such as past price increases and government policies, also played a significant role, as businesses and consumers anticipated future price hikes and adjusted their pricing and spending behavior accordingly. Lastly, government price controls on certain goods, while intended to mitigate inflationary pressures, may have inadvertently led to shortages and rationing by limiting the ability of producers to raise prices.

Consequently, lower-income households are forced to allocate an even greater share of their income to these essential goods, leaving less disposable income for other expenditures. This can lead to a vicious cycle, as lower-income households may be compelled to reduce their consumption of non-essential goods and services, further hindering economic growth[10].

The structure of the Turkish economy, characterized by a significant informal sector and a limited social safety net, can further amplify the impact of services inflation on lower-income households. The informal sector, which is often dominated by small businesses and self-employed workers, may be less able to absorb the increased costs associated with rising services inflation. As a result, these businesses may be forced to pass on these costs to consumers, further contributing to inflationary pressures. Additionally, the limited social safety net in Türkiye may provide insufficient support to lower-income households during periods of economic hardship, exacerbating the negative consequences of services inflation.

In conclusion, the disproportionate impact of services inflation on the lowest income quintile in the Turkish economy is a complex issue with multiple contributing factors. The combination of a greater reliance on essential services, deteriorating relative prices, and structural weaknesses in the economy can amplify the financial

faced several challenges in recent years, including high inflation, currency depreciation, and political instability. These factors have made it difficult for businesses, particularly small and medium-sized enterprises, to operate profitably. Additionally, the increasing dominance of larger corporations in many sectors has created a more competitive environment, making it challenging for smaller businesses to survive. The decline in the number of companies can have significant implications for the economy. It can lead to job losses, reduced competition, and a concentration of economic power in the hands of a few large corporations. Moreover, a reduction in the number of small businesses can hinder innovation and entrepreneurship, which are essential for economic growth and development..

10 See Figure 6-9 in the appendix section..

strain on lower-income households. Addressing this issue requires a multifaceted approach that includes policies aimed at increasing the affordability of essential services, improving the social safety net, and promoting economic growth in a way that benefits all segments of society.

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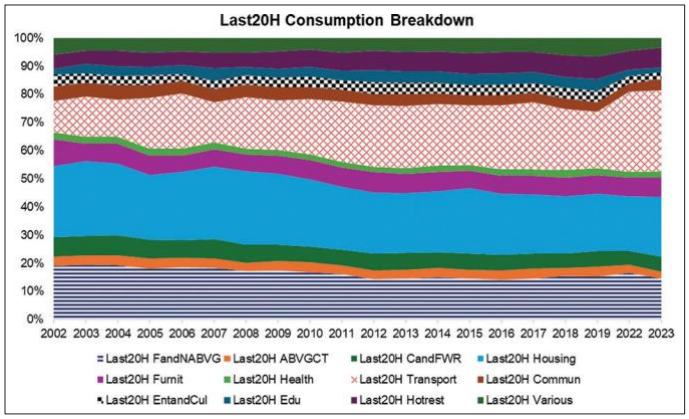
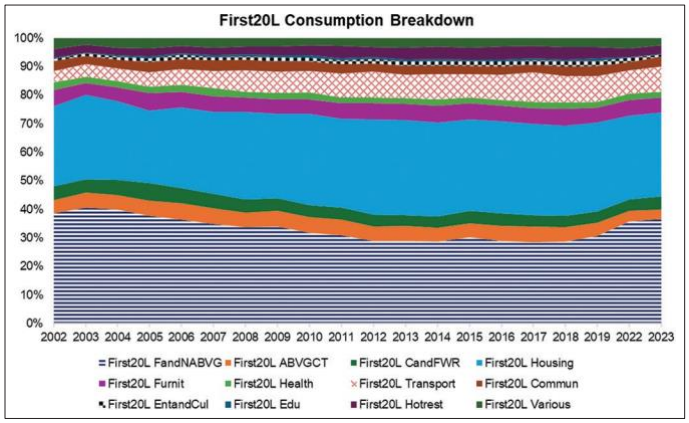
APPENDICES

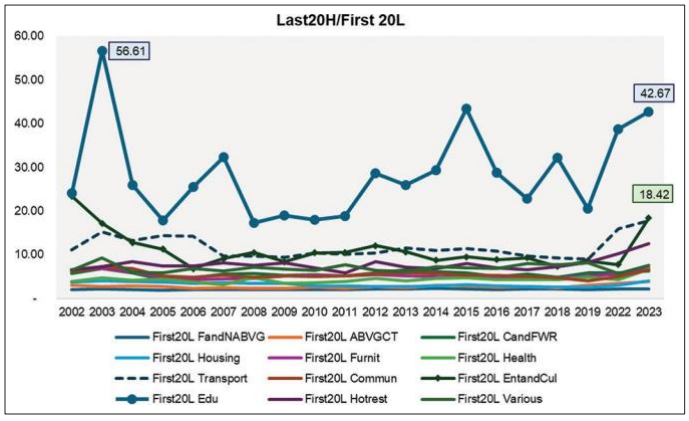
Appendix Figure 1: Highest %20 consumption breakdown



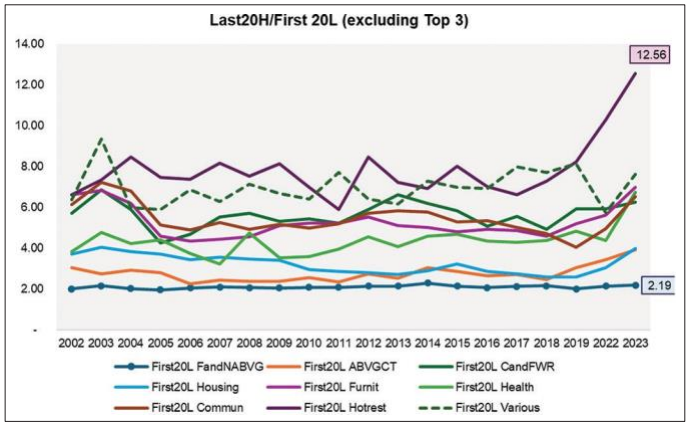
Appendix Figure 2: Lowest %20 consumption breakdown



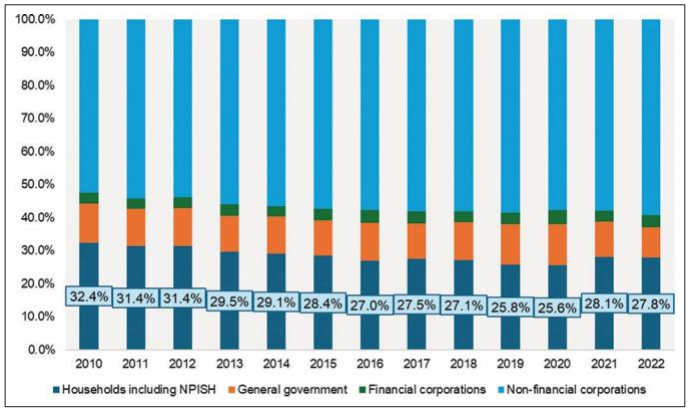
Appendix Figure 3: Highest %20 expenditures/lowest %20 expenditures index



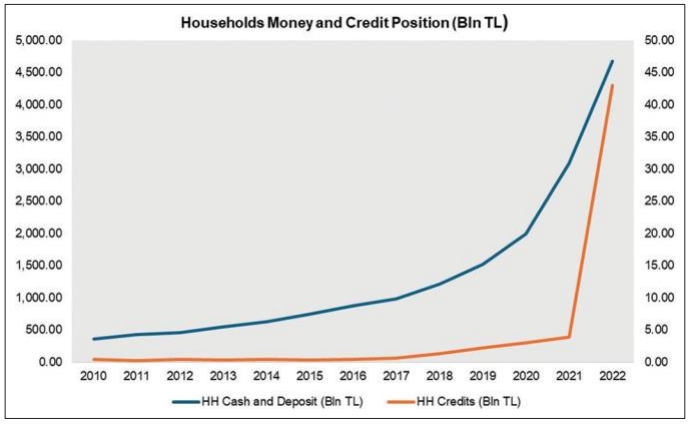
Appendix Figure 4: Highest %20 expenditures/lowest %20 expenditures index (excluding education, entertainment and culture, transportation)



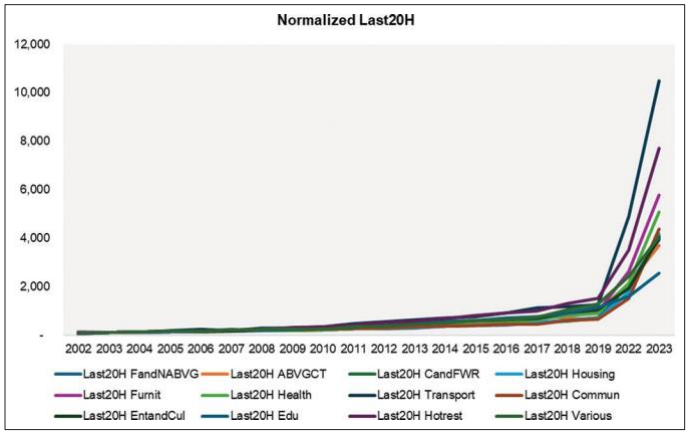
Appendix Figure 5: Savings breakdown in total economy in Türkiye



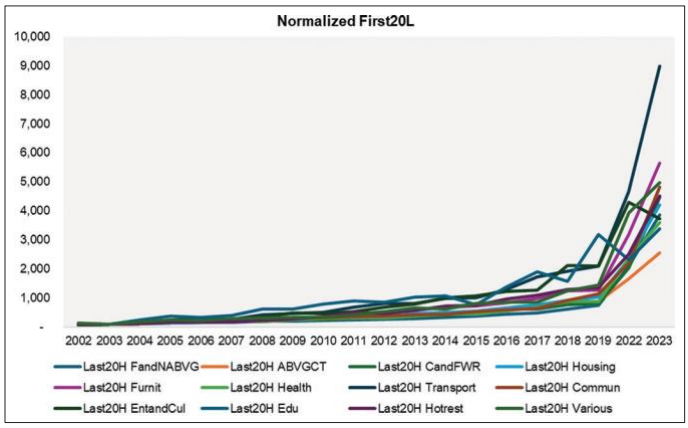
Appendix Figure 6: HH money and credit position in Türkiye



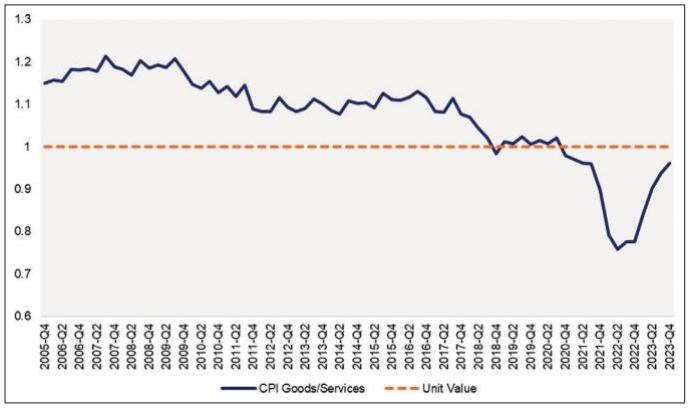
Appendix Figure 7: Normalized consumption of highest %20



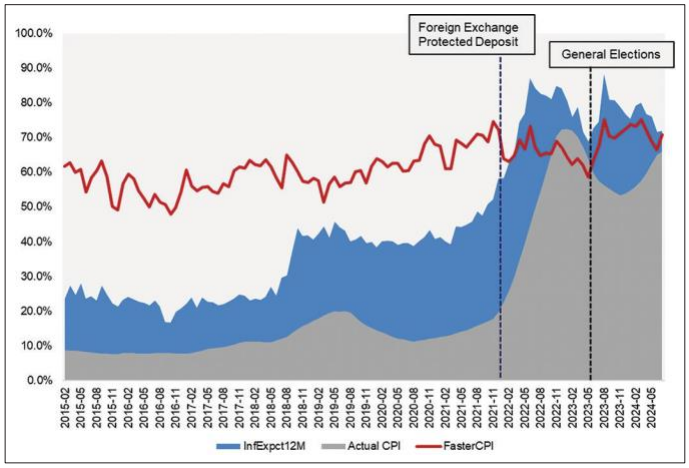
Appendix Figure 8: Normalized consumption of lowest %20



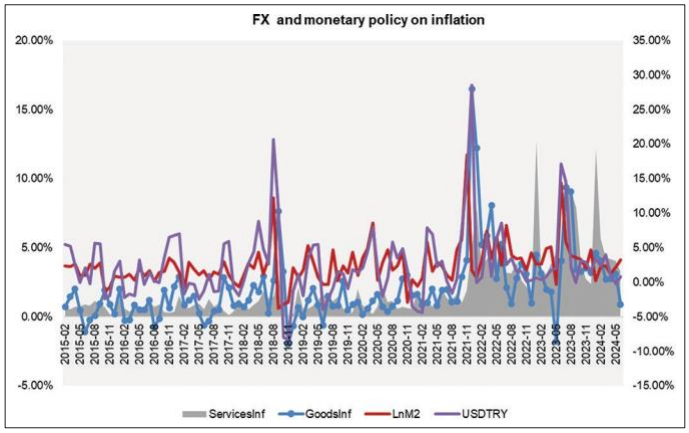
Appendix Figure 9: Relative prices pattern



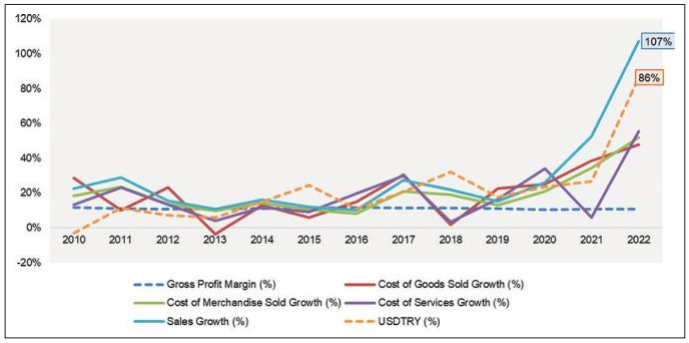
Appendix Figure 10: Inflation expectation divergence



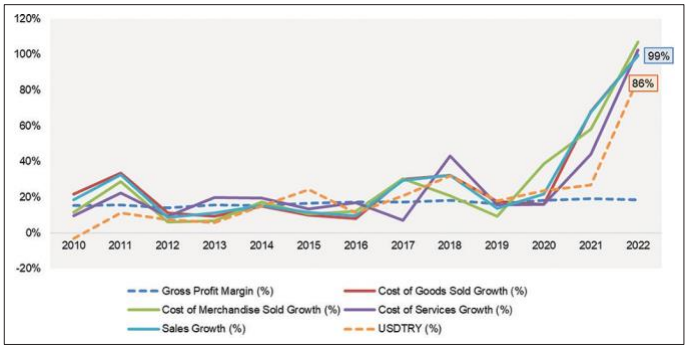
Appendix Figure 11: Money supply, FX rates and inflation relationship



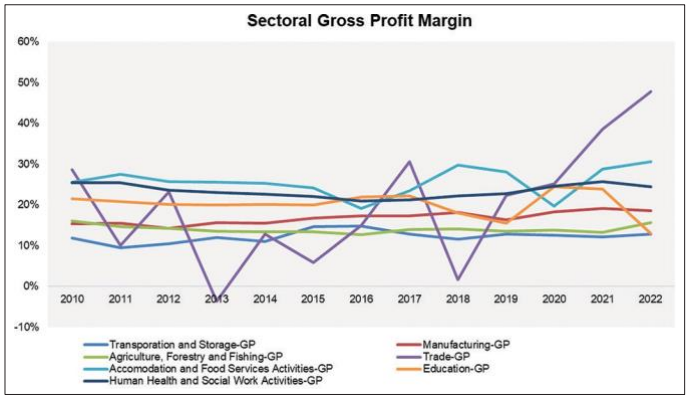
Appendix Figure 12: Trade sector growth breakdown



Appendix Figure 13: Manufacturing sector growth breakdown



Appendix Figure 14: Sectoral gross profit comparison



Appendix Figure 15: Company number changes by sector