THE DYNAMICS OF SAVING, INVESTMENT AND GROWTH UNDER THE DARK SHADOW OF INFLATION IN TURKEY: A TODA-YAMAMOTO ANALYSIS

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Abstract

This paper examines the complex relationships between inflation, Gross Domestic Product (GDP), investment and savings within Turkey's fragile economic structure. Ensuring economic growth and stability is vital for a country's prosperity and development. It is therefore crucial to understand how inflation, as a sustained increase in general price levels, erodes purchasing power and destabilizes the economy. GDP represents the total value of goods and services produced in an economy in a given period and is considered a broad measure of economic performance. Investment is seen as the engine of economic growth and development, increasing productivity and competitiveness by expanding the capital stock. Savings, in turn, play an indispensable role in financing investment and supporting economic stability. Understanding the interactions of these four key variables is critical for the design and implementation of effective macroeconomic policies. Using data from 1980 to 2022, this analysis with the Toda-Yamamoto Causality Test aims to reveal the causal relationships between these indicators in Turkey's economic structure. The analysis reveals causality from inflation to investments and from GDP to inflation. These findings provide important insights into which policy measures may be more effective in supporting Turkey's economic growth and stability.

Keywords: Savings, Investment, Growth, Inflation, Toda-Yamamoto.

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TÜRKİYE'DE ENFLASYONUN KARANLIK GÖLGESİNDE TASARRUF, YATIRIM VE BÜYÜME DİNAMİKLERİ: BİR TODA-YAMAMOTO ANALİZİ

ÖZET

Bu çalışma, Türkiye'nin hassas ekonomik yapısı içinde enflasyon, Gayri Safi Yurtiçi Hasıla (GSYH), yatırım ve tasarruflar arasındaki karmaşık ilişkileri incelemektedir. Ekonomik büyüme ve istikrarın sağlanması, bir ülkenin refahı ve kalkınması için hayati önem taşır. Bu nedenle, enflasyonun genel fiyat seviyelerinde sürekli bir artış olarak satın alma gücünü nasıl erittiğini ve ekonomiyi nasıl istikrarsızlaştırdığını anlamak büyük önem taşır. GSYH, belirli bir dönemde bir ekonomide üretilen mal ve hizmetlerin toplam değerini temsil eder ve ekonomik performansın geniş bir ölçüsü olarak kabul edilir. Yatırım, ekonomik büyümenin ve kalkınmanın motoru olarak görülür ve sermaye stokunu genişleterek üretkenliği ve rekabetçiliği artırır. Tasarruflar ise, yatırımları finanse etmek ve ekonomik istikrarı desteklemek için vazgeçilmez bir rol oynar. Bu dört temel değişkenin etkileşimlerini anlamak, etkili makroekonomik politikaların tasarımı ve uygulanması için kritiktir. 1980'den 2022'ye kadar olan verileri kullanarak Toda-Yamamoto Nedensellik Testi ile yapılan bu analiz, Türkiye'nin ekonomik yapısındaki bu göstergeler arasındaki nedensel ilişkileri ortaya çıkarmayı amaçlamaktadır. Analiz sonucunda, enflasyondan yatırımlara doğru ve GSYH'den enflasyona doğru nedensellik tespit edilmiştir. Bu bulgular, Türkiye'nin ekonomik büyüme ve istikrarını desteklemek için hangi politika önlemlerinin daha etkili olabileceğine dair önemli içgörüler sunmaktadır. Bu araştırma, akademik literatüre katkıda bulunmanın yanı sıra, Türkiye'deki politika yapıcıların vatandaşların yaşam kalitesini artıracak daha güçlü ve dirençli bir ekonomik ortam oluşturma çabalarına rehberlik etmeyi amaçlamaktadır. Enflasyon, GSYH, yatırım ve tasarruflar arasındaki karmaşık ilişkileri anlayarak, politika yapıcılar daha bilinçli kararlar alabilir ve ekonomik kalkınmayı sürdürülebilir kılabilirler.

Anahtar kavramlar: Tasarruf, Yatırım, Büyüme, Enflasyon, Toda-Yamamoto.

1. Introductıon

Economic growth and stability are cornerstones of a country's welfare and prosperity. Understanding the intricate relationships between key economic indicators such as inflation, Gross Domestic Product (GDP), investment, and savings is crucial for the effective design and implementation of macroeconomic policies. Inflation, characterized by a sustained rise in the general price level, can erode purchasing power and destabilize the economy. GDP, on the other hand, represents the total value of goods and services produced within an economy over a specified period, serving as a broad measure of economic performance. Investment, often regarded as the engine of economic growth and development, boosts productivity and competitiveness by expanding the capital stock. Meanwhile, savings play an indispensable role in financing investment and bolstering economic stability. This study aims to unravel the complex relationships among these four pivotal variables within the fragile economic structure of Turkey. Employing the Toda-Yamamoto Causality Test, we analyze data spanning from 1980 to 2022. The outcomes of this analysis are intended to offer critical insights into which policies might be more effective in enhancing Turkey's economic growth and stability. In the introduction, we will first provide a comprehensive overview of the topic, followed by a succinct review of existing literature. While previous studies offer various perspectives on the interplay between economic growth, inflation, investment, and savings, there is a pressing need for a more detailed understanding of how these relationships manifest specifically within the Turkish context. This study aims to fill that gap by detailing its objectives and methodology, highlighting its unique contributions and significance. Gaining a deeper insight into these economic relationships will equip policymakers with valuable information, aiding them in steering the Turkish economy towards sustainable growth. Ultimately, this study aspires to lay the groundwork for strategic policy recommendations that can better navigate Turkey's economic dynamics and maintain a delicate balance among these factors. By thoroughly examining the relationships between inflation, growth, investment, and savings, this research will propose strategies for fostering a more resilient and sustainable economic structure in Turkey.

2. Lıterature Revıew

The relationship between inflation, GDP, investment and saving is crucial for economic analysis. Various studies have investigated the causal links between these variables. Studies show that there is a bidirectional causal relationship between saving and investment leading to economic growth in both the short and long run (Denano and Sibera, 2022; Alrasheedy and Alaidarous, 2019). In addition, studies have shown unidirectional causality from saving and investment to GDP, suggesting that these factors drive economic growth (Mehda et al., 2014; Mehrara et al., 2012). Moreover, the impact of GDP on savings has been emphasised by presenting evidence of a unidirectional causal link from GDP to savings, highlighting that higher economic growth leads to increased savings rates (Chen et al., 2017). Understanding these causal relationships is crucial for policymakers to formulate effective economic policies that promote sustainable growth. In this section, studies that have empirically investigated the relationship between the variables will be presented.

2.1. Literature on GDP-Investment Relationship

This section presents a review of the literature on the relationship between economic growth and investment (Table 1). These studies examine the effects of growth on investment and the contribution of investment to growth under various economic conditions and methodologies. The literature review contributes to a deeper understanding of this issue and provides valuable information that will shed light on future research and policy development processes. This review aims to contribute to the understanding of the complex relationship between economic growth and investment and to the formulation of effective policies.

Table 1. Literature on GDP-Investment Relationship

Reseacher	Period, Country	Method	Result
Agrawal et al. (2009)	1960–2005, India, Pakistan, Bangladesh, Sri Lanka and Nepal	the Error Correction Model (ECM) procedure of Banerjee et al. (1998), dynamic OLS (DOLS) of Stock and Watson (1993), the auto regressive distributed lag (ARDL)	Agrawal et al. (2009) found that long-term sustainable economicgrowth involved a high level of investment and domestic savings.
Sekantsi and Kalebe (2015)	1970-2012, Lesotho	Autoregressive distributed lag (ARDL) bounds test, vector error correction model (VECM) based Granger causality test	INV→GDP (Short & Long-Run)
Kuhe and Torruam (2020)	1980-2015, Nigeria	Johansen cointegration, fully modified least squares; Vector error correction model (VECM) and Granger causality test based on Toda-Yamamoto procedure	INV↔GDP (Short-run)
Saxena and Singh (2020)	1992-2018, India	Granger causality test	Economic growth does not foster investment and saving,
Wyk and Kapingura (2021)	1986-2018, South Africa	Johansen Cointegration, the Vector Error Correction Model, Granger Causality Test.	INV→GDP
Denano and Sibera (2022)	1980-2021, Ethiopia	Vector Error Correction Model, Johansen Cointegration Test, Vector error correction tests	INV→GDP

2.2. Literature on GDP-Savings Relationship

The relationship between savings and GDP varies across studies. While some studies show a unidirectional causal relationship from savings to GDP, others suggest that savings do not significantly affect GDP in the short and long run (Jamal and Sultana, 2023). In addition, findings from studies on Malaysia and Saudi Arabia show mixed results regarding the causality between savings and economic growth (Denano and Sibera, 2022; Tang, 2009). These inconsistencies highlight the complexity of the relationship between saving and GDP, while some studies emphasise the importance of economic growth driving savings rather than vice versa. Therefore, the existence of a direct causality between saving and GDP remains a matter of debate, with different studies offering contrasting perspectives on the issue (Table 2).

Table 2. Literature on GDP-Savings Relationship

Reseacher	Period, Country	Method	Result
Carroll and Weil (1994)	1958-1987, 64 countries	Granger Causality Test	GDP→SAV SAV≠GDP
Chaturvedi et al. (2009)	South-east and south Asia	Two stage least squares with panel data	SAV↔GDP (+)
Odhiambo (2008)	1950-2005, South Africa	The cointegration-based error-correction mechanism	SAV↔GDP (Short-Run) GDP→SAV (Long-Run)
Agrawal et al. (2009)	1960–2005, India, Pakistan, Bangladesh, Sri Lanka and Nepal	The Error Correction Model (ECM) procedure of Banerjee et al. (1998), dynamic OLS (DOLS) of Stock and Watson (1993), the auto regressive distributed lag (ARDL)	Agrawal et al.(2009) found that long-term sustainable economicgrowth involved a high level of investment and domestic savings.
Masih and Peters (2010)	1960-1996, Mexico	the vector error correction (VEC) model, Toda–Yamamoto	GDP was driven in the long run by savings.
Mistzal (2011)	1980-2009, advanced economies and in emerging and developing countries	co-integration models and Granger's causality test	GDP↔SAV
Alomar (2013)	1980-2010, GCC Countries (Saudi Arabia, Kuwait, Bahrain, Qatar, United Arab Emirates, Oman)	Johansen Fisher panel test	GDP→SAV GDP↔SAV (Bahrain)
Sekantsi and Kalebe (2015)	1970-2012, Lesotho	Autoregressive distributed lag (ARDL) bounds test, vector error correction model (VECM) based Granger causality test	SAV contributes to long-term GDP. GDP→SAV (Short-Run) SAV→GDP (Long-Run)
Alrasheedy and Alaidarous (2019)	1984-2016, Saudi Arabia	Granger Causality test	GDP↔SAV
Saxena and Singh (2020)	1992-2018, India	Granger causality test	Economic growth does not foster investment and saving,
Nosheen et al. (2021)	1983-2020, Pakistan	The non-linear Autoregressive distribution lags (NARDL)	Saving has a positive and significant effect on growth (in the long run), while it has a positive but insignificant effect in the short run
Wyk and Kapingura (2021)	1986-2018, South Africa	Johansen Cointegration, the Vector Error Correction Model, Granger Causality Test.	The effect of savings on economic growth is (-). (+) impact in the short run. GDP→SAV
Denano and Sibera (2022)	1980-2021, Ethiopia	Vector Error Correction Model, Johansen Cointegration Test, Vector error correction tests	SAV→GDP
Chakraborty (2023)	1992-2018, BRICS	Granger and Dumitrescu-Hurlin panel granger causality tests	SAV↔GDP
Jamal and Sultana (2023)	1991/92-2017/18, India	Autoregressive Distributed Lag (ARDL) approach to test for cointegration and Error correction based Granger causality analysis	"There is no evidence is found to support the usually accepted growth models in India, that investment is the engine of economic growth"

2.3. Literature on GDP-INF Relationship

This section focuses on a number of studies that examine the connection between inflation and economic growth (Table 3). Many facets of the connection and interactions between inflation and economic growth are covered in these papers. These studies clarify the path of future research and policy development processes and advance our knowledge of the intricate interactions between economic growth and inflation.

Table 3. Literature on GDP-Inflation Relationship

Reseacher	Period, Country	Method	Result
Mallik and Chowdhury (2001)	Bangladesh, India, Pakistan and Sri Lanka	Cointegration and error correction models	(+) correlation in the long-run
Chaturvedi et al. (2008)	south-east and south Asia	two stage least squares with panel data.	INF→GDP (-)
Koulakiotis et al. (2012)	1961-2008, 14 European countries	panel univariate GARCH models	INF↔GDP
Rouangsang and Nimanussornkul (2012)	1997:Q2-2011:Q4, 5 South-East Asian Countries	Granger Causality Test	GDP→ INF
Lai et al. (2015)	1980-2010, France	Vector Autoregression (VAR) model and Granger causality test	INF→GDP
Oshungade (2015)	1970-2011, 65 countries	Granger Causality Test	INF→GDP
Nosheen et al. (2021)	1983-2020, Pakistan	The non-linear Autoregressive distribution lags (NARDL)	Inflation has a negative and significant impact on economic growth in the long run.
Özyılmaz (2022)	1996-2019, 27 EU Countries	Dumitrescu and Hurlin (2012) causality approach	INF↔GDP

2.4.Literature on Investment-Savings Relationship

Exploring the connection between investment and savings in the literature opens doors to understanding how our financial choices impact the economy's health. Through diving into various studies, we hope to uncover the real-life stories behind these economic concepts and how they shape our financial future.

Table 4. Literature on Investment-Savings Relationship

Reseacher	Period, Country	Method	Result
Feldstein and Horioka (1980)	1960-1974, 16 OECD Countries	Regression	(+) correlation
Chaturvedi et al. (2008)	South-East and South Asia	Two stage least squares with panel data	INF→SAV (+)
Sekantsi and Kalebe (2015)	1970-2012, Lesotho	Autoregressive distributed lag (ARDL) bounds test, vector error correction model (VECM) based Granger causality test	SAV→INV (Short & Long-Run)
Akadiri et al. (2016)	1960-2014, Turkiye	Johansen cointegration test, DOLS estimator	The FH hypothesis is valid.
Yadav et al. (2018)	1951-2015, India	ARDL	SAV→INV
Alrasheedy and Alaidarous (2019)	1984-2016, Saudi Arabia	Granger Causality Test	SAV→INV
Akkoyunlu (2020)	1950-2017 1950-1989 1990-2017 Turkiye	ARDL Bounds Test	Investments and savings are positively correlated during the period of restricted capital mobility (1950-1989) and negatively correlated during the period of perfect capital mobility (1990-2017).
Keskin (2020)	1990-2015, Turkiye	ARDL Bounds Test	The impact of savings on investments is weak.
Kuhe and Torruam (2020)	1980-2015, Nigeria	Johansen cointegration, fully modified least squares; Vector error correction model (VECM) and Granger causality test based on Toda-Yamamoto procedure	SAV↔INV
Akkuş (2021)	1980-2020, Turkiye	Fourier Shin cointegration test, DOLS estimator	The FH hypothesis is not valid.
Bozkurt and Altıner (2021)	1983-2019, Turkiye	Fourier Shin cointegration test, DOLS estimator	The FH hypothesis is valid.
Ugochukwu et al. (2021)	1981-2020, Nigeria	Vector Autoregressive model	There is no direct causality between saving and investment
Yurtkuran (2021)	1985-2017, Turkiye	Maki cointegration test , DOLS estimator	Feldstein and Horioka (1980) hypothesis is valid.
Pehlivan (2022)	1990-2019, Turkiye	Fourier Shin cointegration test, FMOLS and DOLS estimators	The impact of savings on investment is weak.
Denano and Sibera (2023)	1980-2021, Ethiopia	Vector Error Correction Model, Johansen Cointegration Test, Vector error correction tests	SAV↔INV
Şeyranlıoğlu (2023)	1990-2021, Turkiye	Engle-Granger (EG-1987) Lee et al. (2015) RALS Engle-Granger (RALS-EG) Cointegration Tests	An increase of 1 unit in gross domestic savings (S/Y) leads to an increase of 0.6931 and 0.6823 units in gross domestic investment (I/Y), respectively.

2.5.Literature on Investment-Inflation Relationship

Inflation has a negative impact on investments by increasing uncertainty about future inflation (Ball and Cecchetti, 1991; Evans, 1991; Evans and Wachtel, 1993). Empirical studies on this issue are presented in Table 5.

Table 5. Literature on Investment-Inflation Relationship

Reseacher	Period, Country	Method	Result
Federer, 1993	USA	the risk premium	INF→Propensity to invest ↓
Pindyck and Solimano (1993)	29 countries	panel regressions	INF→Propensity to invest ↓
Serven and Solimano (1993)	1972-1987, 12 Developing Countries	The cross-country compariso	INF→Propensity to invest ↓
Barro (1995)	1960-1990, 100 Countries	Regression	INF→Propensity to invest ↓
Kalckreuth (2000)	1987-1997, Germany	Within estimators and GMM techniques	INF→Propensity to invest ↓
Byrne and Davis (2004)	1964:Q1 to 1999:Q4.	ARDL	INF→Propensity to invest ↓
Demir (2009)	1991:1-2001:2 for Argentina, 1990:1-2003:2 for Mexico 1992:1-2003:2 for Turkey.	micro-level data analyses	INF↑→INV ↓
Fisher (2009)	1998:01-2008:02, the clients of ADOPEM, the Dominican Republic	Autoregressive conditional heteroskedastic (ARCH) process	INF→INV ↓
Ciżkowicz and Rzońca (2013)	1960-2005, 21 OECD Countries	Panel	INF↑→INV ↓
Öge Güney (2018)	1999:Q1-2014:Q42, Polonya	GARCH model	INF↑→INV ↓

2.6. Literature on Savings-Inflation Relationship

The relationship between saving and inflation shows different causality directions in different economies, and there is no consensus in the literature on the relationship between inflation and saving in general (Table 6).

Table 6. Literature on Savings-Inflation Relationship

Reseacher	Period, Country	Method	Result
Chaturvedi et al. (2008)	South-East and South Asia	Two stage least squares with panel data	INF→SAV (+) impact
Patra et al. (2015)	1981-2011, Asya	Panel data approach	Inflation has a positive and significant impact on savings.
Ferreira (2017)	1995-2014, 42 Countries	Panel threshold model	INF has a (+) impact on SAV.
Premik and Stanisławska (2017)	2004:01-2015:12, Poland	Regression	Inflation expectations affect saving attitudes (-).
Okşak and Özen (2020)	Turkiye	Granger causality test, Toda Yamamoto approach	INF↑→SAV↑ (Short Term) INF↑→SAV↓ (Long Term) SAV→INF
Nosheen et al. (2021)	1983-2020, Pakistan	The non-linear Autoregressive distribution lags (NARDL)	Saving has a positive and significant effect on inflation

3. DATA, METHODOLOGY AND RESULTS

The main objective of this study is to gain an in-depth understanding of the relationships between inflation, saving, investment, and Gross Domestic Product (GDP) under the dark shadow of inflation in Turkey's complex economic environment. Understanding the complexity of interactions among these important factors in Turkey's economic trajectory is critical in efforts to ensure economic stability and promote sustainable growth.

3.1.Data Set

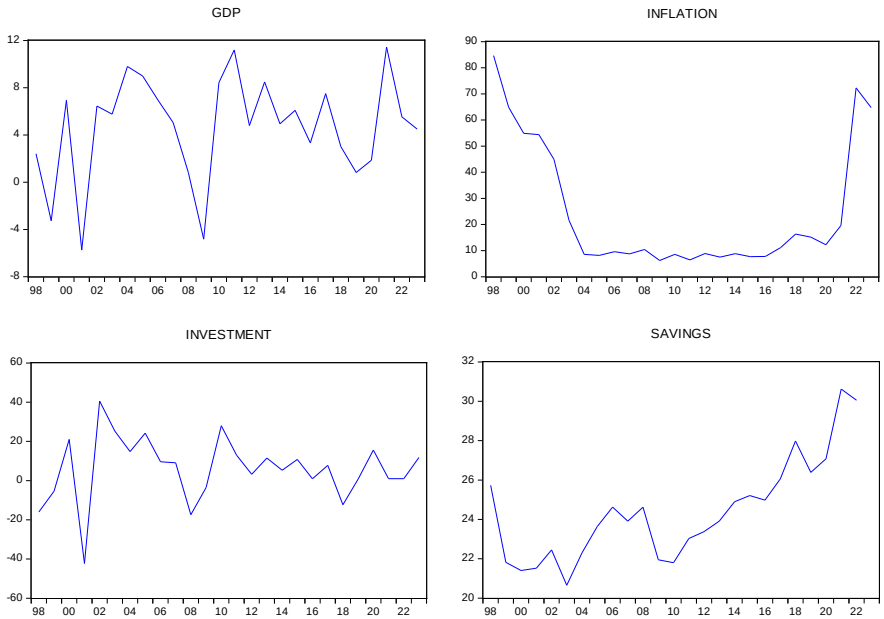
In this context, comprehensive data sets for the period 1980-2022 were obtained from World Bank sources and used for the analysis (Table 7). These data provide an important tool for understanding Turkey's economic development and guiding future policy decisions while making a significant contribution to understanding the relationships between inflation, investment, and GDP.

Table 7. Data Used in Analysis

Variables	**Abbreviation**	**Source**
Inflation Rates	INF	World Bank
Growth	GDP	World Bank
Total Investments	INV	World Bank
Savings	SAV	World Bank

Figure 1 shows the course of the variables to be used in the analyses over the period 1980-2022.

Figure 1. Time Path Plots of Variables



Graphical analysis reveals that the variables do not have a clear trend structure except Savings. This finding is an important information provided by the graphical tools used for a deeper understanding of the relationships between the variables analysed. The fact that the variables do not have a trended structure is an issue that should be taken into account in unit root analyses.

The model created is shown in Equation 1;

$$INV_t=\alpha_0+\alpha_1 GDP_t+\alpha_2 INF_t+ \alpha_3 SAV_t+u_t \quad (1)$$

In the model, INV: total investments, GDP: growth, INF: inflation, SAV: savings, and *t* index is the time series dimension of the variables. α_1 and α_2 are the coefficients, and *u* is the error term.

3.2.Method and Empirical Findings

The first and required step before beginning the analysis was to do the stationarity tests, which were completed using Augmented Dickey-Fuller (ADF) (1979; 1981) and Phillips Perron (PP) (1988). The findings are shown in Table 8.

Table 8. Unit Root Test Results for Variables

	Test Statistic	%1	%5	%10
GDP (I0)				
ADF, Level	-7.039943	-3.596616	-2.933158	-2.604867
PP, Level	-10.92758	-3.600987	-2.935001	-2.605836
INFLATION (I1)				
ADF, Level	-2.585228	-3.596616	-2.933158	-2.604867
ADF, 1st Level	-6.762731	-3.600987	-2.935001	-2.605836
PP, Level	-2.738718	-3.596616	-2.933158	-2.604867
PP, 1st Level	-6.767207	-3.600987	-2.935001	-2.605836
INVESTMENT (I1)				
ADF, Level	-1.850175	-3.596616	-2.933158	-2.604867
ADF, 1st Level	-8.134253	-3.600987	-2.935001	-2.605836
PP, Level	-1.850175	-3.596616	-2.933158	-2.604867
SAVINGS (I1)				
ADF, Level	-3.078076	-4.192337	-3.520787	-3.191277

ADF, 1st Level	-6.244119	-4.198503	-3.523623	-3.192902
PP, Level	-3.011693	-4.192337	-3.520787	-3.191277
PP, 1st Level	-7.673297	-4.198503	-3.523623	-3.192902

Note. "*** represents a significance level of 1 %. The number of delays in the ADF tests is determined according to the Schwarz criteria. The Schwartz criteria is a stronger criterion and gives better results than the others. In the PP tests, the number of delays determined according to Newey-West Bandwith is taken. As a test format, fixed and trend equation options are used for all variables at the level value. The fixed equation option is used to obtain the first difference of the variables. MacKinnon critical values are contemplated."

As can be seen from Table 8, the series have different degrees of stationarity. GDP is I(0), while inflation, investment, and savings are I(1). Toda-Yamamoto causality analysis, which allows working with different degrees, will be applied. The maximum integration order (dmax) of the series is 1. To determine $k+D_{max}$, Lag Length Criteria were checked and found to be 1 (Table 9).

Table 9. Lag Length Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-484.0145	NA	464752.4	24.40073	24.56961	24.46179
1	-415.2202	120.3900*	33348.28*	21.76101*	22.60545*	22.06633*
2	-405.0951	15.69404	45916.35	22.05475	23.57474	22.60433
3	-394.4701	14.34373	64203.63	22.32350	24.51905	23.11734

The maximum integration order must be shorter than the lag length in order to perform the Toda–Yamamoto causality test (Akkaş and Sayılgan, 2015: 575). The series meets this requirement (dmax=1 < k=2) since the study's maximum integration order is 1 and its lag duration is 2. The test was applied once the requirements were satisfied and the ideal lag duration and maximum integration order had been established. Using Eviews-10, the Toda–Yamamoto causality test was carried out. The test results are displayed in the Table 10 that follows.

Table 10. Toda-Yamamoto Causality Test Results

Value	Probability	Decision	Direction of Causality
0.337356	0.8448	0.844780879 > 0.05 H0 cannot be rejected, no causality.	GDP≠INV
8.019168	0.0181	0.01814094< 0.05 H0 rejected, causality exist.	**INF →INV**
3.304971	0.1916	0.858571343 > 0.05 H0 cannot be rejected, no causality.	SAV≠INV
0.983633	0.6115	0.611514568 > 0.05 H_0 rejected, causality exists.	INV≠GDP
4.113177	0.1279	0.127889522 > 0.05 H0 cannot be rejected, no causality.	INF≠GDP
0.720420	0.6975	0.697529829 > 0.05 H0 cannot be rejected, no causality.	SAV≠GDP
2.274461	0.3207	0.320705988 > 0.05 H0 cannot be rejected, no causality.	INV≠NF
13.93178	0.009	0.000943523 < 0.05 H_0 rejected, causality exists.	**GDP→INF**
1.275808	0.5284	0.528398788 > 0.05 H0 cannot be rejected, no causality.	SAV≠INF
2.776449	0.2495	0.249517931 > 0.05 H0 cannot be rejected, no causality.	INV≠ SAV
0.599099	0.7412	0.741152034>0.05 H0 cannot be rejected, no causality.	GDP≠ SAV
2.279325	0.3199	0.319926979>0.05 H0 cannot be rejected, no causality.	INF≠ SAV

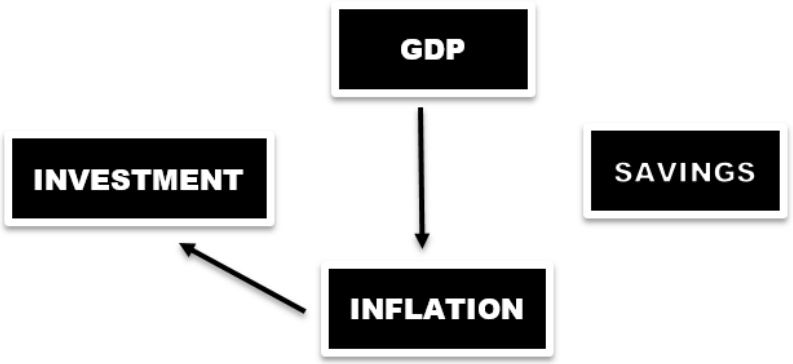
According to the Toda-Yamamoto Test (1995) results;

- from INF to INV

- from GDP to inflation

a direct causality was found (Figure 2).

Figure 2. Toda-Yamamoto Causality Test Results



5. CONCLUSION

Understanding the interactions between inflation, savings, investment, and economic growth is vital for any economy. Inflation reduces the purchasing power of individuals, making it harder for them to save money. During periods of high inflation, people may be less motivated to save because their savings lose value over time. This reduction in savings can negatively impact investments, as people have less money to invest in businesses or financial markets. Additionally, high inflation often leads central banks to raise interest rates in an effort to control it, which makes borrowing more expensive for businesses and individuals, further hindering investment and slowing down economic growth (Fawley & Neely, 2013). On the other hand,

savings and investments are crucial for fostering economic growth. When people save money, it is often used by banks and financial institutions to provide loans to businesses and entrepreneurs. This financing supports new projects, expansions, and technological advancements, all of which drive economic growth. Thus, there is a positive relationship between savings, investment, and growth. However, inflation can also affect the returns on investments. This study delves into the complex relationships between inflation, Gross Domestic Product (GDP), investment, and savings in Turkey. By examining data from the World Bank covering the period from 1980 to 2022, and applying the Toda-Yamamoto Causality Test, the study found a causality from economic growth to inflation and from inflation to investment. These findings are consistent with previous research conducted by scholars like Rouangsang & Nimanussornkul (2012), Öge Güney (2018), Ciżkowicz & Rzońca (2013), Demir (2009), Fisher (2009), Byrne & Davis (2004), Kalckreuth (2000), Barro (1995), Federer (1993), Pindyck & Solimano (1993), and Serven & Solimano (1993). The insights gained from this study highlight the necessity for strong and effective monetary policies to control inflation. Maintaining price stability is essential to create a favorable investment climate that supports economic growth. Moreover, implementing regulations and structural reforms that encourage investments is crucial for sustainable economic development. Increasing domestic savings rates and channeling these savings into productive investments are critical for ensuring economic stability and achieving Turkey's long-term development goals. Future research should explore these relationships in greater depth across different sectors and economic conditions to provide a broader and more comprehensive perspective for policymakers. Ultimately, this study provides valuable insights into Turkey's economic dynamics and helps inform effective policy decisions. A better understanding of the complex relationships between economic indicators will significantly contribute to achieving the country's sustainable development goals.

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