

# Financial Inclusion and Economic Growth in Turkey: A Causality Analysis

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Received: 12/11/2021

Accepted: 17/02/2022

Online Published: 20/04/2022

## Abstract

The access to financial products and services by firms and individuals, in other words financial inclusions, is a significant determinant of economic growth. This study investigates the causality between financial inclusion indicators and economic growth in Turkey for the period of 1980-2019 through causality analysis. The causality analysis results reveal a insignificant interaction among financial institutions access, financial markets access, and economic growth.

**Keywords:** financial institutions access, financial market access, economic growth, causality analysis

**JEL Classification** C22, F43, G20, O11

## 1. Introduction

The financial sector has considerably developed in the world with the contribution of financial and trade globalization, technological development, and economic development. Financial sector development is theoretically expected to influence the economic growth through various channels such as capital accumulation and mobilization, facilitation of goods and services trade, risk control and management (Bagehot, 1873; King and Levine, 1993; Levine, 1997). Many researchers have also investigated the influence of financial sector development on economic growth and other variables and a significant number of the studies have discovered a positive influence of financial sector development on economic growth (e.g. see Guru and Yadav, 2019; Nguyen et al., 2021; Shen and He, 2022).

Financial inclusion is a significant component of financial sector development and states the access of individuals and businesses to affordable and useful financial products and services (World Bank, 2022). A significant improvement has been experienced globally in financial inclusion during the past ten years and account ownership raised to 76% from 51% during the 2011-2021 period (World Bank, 2021b). Financial inclusion is also expected to affect the economic growth through diverse channels at theoretical terms. The improvement in access of individuals and businesses to financial services can raise the business opportunities, feed the investments and in turn positively influence the economic growth (Demirguc-Kunt and Klapper, 2012). Financial inclusion can also influence the economic growth through enhancing the financial sector development and smoothening the consumption (Sahay et al., 2015). On the other hand, economic growth can influence the financial inclusion through increasing the income of economic units and in turn their demand towards the financial products and services. Therefore, a bilateral causality between financial inclusion and economic growth is theoretically expected.

This article explores the interaction among financial institutions access, financial markets access, and economic growth in Turkey over the 1980-2019 period through causality analysis. In the

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remaining part of the article, the relevant empirical literature is firstly summarized and then dataset and method are described. The empirical analysis is conducted in Section 4 and Section 5 concludes the article.

## 2. Literature Review

The considerably expanded financial sector in the world has led the researchers to analyze the effects of financial sector development. In this context, the researchers have generally investigated the effect of financial sector development on economic growth and other variables. Financial inclusion, a crucial aspect of financial sector, is also important for economic growth, because it indicates the degree of access to financial products and services by individuals and firms. The researchers have investigated the effect of financial inclusion on economic growth, poverty, and income inequality since 2010 and revealed a positive impact of financial inclusion on economic growth and bilateral causality between financial inclusion and economic growth as seen in Table 1.

**Table 1.** Literature summary about the relationship between financial inclusion and economic growth

Study	Study sample and period	Method	Findings (Impact of financial inclusion on economic growth)
Kendall et al. (2010)	139 countries	Regression	Positive
Ghosh (2011)	India, 1973-2004	Regression	Positive
Onaolapo (2015)	Nigeria, 1982-2012	Regression	Positive
Babajide et al. (2015)	Nigeria, 1981-2012	Regression	Positive
Sharma (2016)	India, 2004-2013	Granger causality and VAR analysis	Bilateral causality between financial inclusion and economic growth; Positive
Inoue and Hamori (2016)	37 sub-Saharan African countries, 2004-2012	Dynamic regression	Positive
Gourene and Mendy (2017)	West African Economic and Monetary Union, 2006-2015	Dumitrescu and Hurlin causality test	Bilateral causality between financial inclusion and economic growth
Thomas et al. (2017)	8 South Asian countries, 2007-2015	Dynamic regression	Positive
Saab (2017)	MENA countries, 1999-2014	Granger causality and regression	Bilateral causality between financial inclusion and economic growth; Positive

<b>Study</b>	<b>Study sample and period</b>	<b>Method</b>	<b>Findings (Impact of financial inclusion on economic growth)</b>
Lenka and Sharma (2017)	India, 1980-2014	ARDL cointegration	Unidirectional causality from financial inclusion to the economic growth; Positive in short and long term
Williams et al. (2017)	Nigeria, 2006-2015	Regression	Positive
Kim et al. (2018)	57 Organization of Islamic Cooperation countries	Regression	Positive
Sethi and Acharya (2018)	31 countries, 2004-2010	Cointegration and causality analyses	A bilateral causality between financial inclusion and economic growth; Positive in the long run
Mwaitete and George (2018)	Tanzania, 2008-2015	Regression	Positive
Raza et al. (2019)	Pakistan, 2010-2015	Regression and causality analyses	Positive
Inoue and Hamori (2019)	168 developing economies, 2004-2014	Dynamic regression	Positive
Siddik et al. (2019)	24 Asian countries, 2004-2016	Granger causality and regression analyses	A bilateral causality between financial inclusion and economic growth; Positive
Ratnawati (2020)	10 developing Asian economies, 2009-2018	Regression	Positive
Dahiya and Kumar (2020)	India, 2005-2017	Bayesian vector auto-regression model	Positive
Ozhan and Ozparlak (2021)	European and Central Asian countries	Regression	Positive
Huang et al. (2021)	27 EU member states, 1995-2015	FMOLS and panel ARDL	Positive (More effective in the low-income and new EU countries than high-income and old EU countries)

Study	Study sample and period	Method	Findings (Impact of financial inclusion on economic growth)
Ifediora et al. (2022)	22 sub-Sahara African countries, 2012-2018	Generalized Method of Moments	Positive

### 3. Data and Method

The study investigates the causality between financial inclusion indicators and economic growth in Turkey over the 1980-2019 period. Financial inclusion is proxied by financial institutions access and financial markets access and financial inclusion indicators are obtained from IMF (2021) (see Svirydzhenka (2016) for the methodological issues about the financial inclusion indicators.). On the other hand, economic growth is proxied by real GDP per capita growth and obtained from World Bank (2021c). All series are annual and cover the 1980-2019 period, because financial inclusion indicator has existed for the 1980-2019 period.

The causality between financial inclusion indicators and economic growth is investigated by Toda and Yamamoto (1995) causality test. The traditional Granger (1969) causality test requires the series to be stationary, but this requirement is not valid for by Toda and Yamamoto (1995) causality test. Therefore, Toda and Yamamoto (1995) causality test enables the series to include more information and in turn relatively more robust consequences are obtained. In the causality analysis, first optimal lag length ( $p$ ) of the VAR model and maximum integration level ( $d_{max}$ ) are determined. Then the following VAR model is estimated by seemingly unrelated regression:

$$y_t = \gamma_0 + \sum_{i=1}^{p+d_{max}} \alpha_{1i} y_{t-1} + \sum_{i=1}^{p+d_{max}} \beta_{1i} x_{t-1} + e_{1t} \quad (1)$$

$$x_t = \gamma_0 + \sum_{i=1}^{p+d_{max}} \alpha_{2i} y_{t-1} + \sum_{i=1}^{p+d_{max}} \beta_{2i} x_{t-1} + e_{2t} \quad (2)$$

The null hypothesis of Equation (1) suggests that x variable is not a cause of y variable and it is tested by Wald test conforming to the  $\chi^2$  distribution with k degree of freedom.

### 4. Empirical Analysis

In the empirical analysis, first stationarity of GRW, FIA, and FMA is checked with ADF (augmented Dickey-Fuller) (1981) unit root test and test results are presented in Table 2. The unit root test indicates that all series are not stationary at level, but become stationary after first-differencing.

**Table 2.** ADF unit root test results

Variables	Test statistics	
	Constant	Constant + Trend
GRW	-1.829752	-1.732201
D(GRW)	-10.73607**	-10.62309**

Variables	Test statistics	
	Constant	Constant + Trend
FIA	-0.075748	-1.760000
D(FIA)	-4.301317**	-4.390469**
FMA	-1.996173	-1.247819
D(FMA)	-5.567799**	-5.687403**

\*\* indicates that it is significant at 5%

The VAR model is estimated to specify the optimal lag length and the results are presented in Table 3. The optimal lag length is determined as 1 considering the information criterion.

**Table 3.** Optimal lag length of VAR model

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-45.68724	NA	0.002790	2.631743	2.762358	2.677791
<b>1</b>	<b>62.79790</b>	<b>193.5140*</b>	<b>1.29e-05*</b>	<b>-2.745833*</b>	<b>-2.223373*</b>	<b>-2.561641*</b>
2	67.70499	7.957443	1.63e-05	-2.524594	-1.610289	-2.202259
3	77.97391	14.98707	1.56e-05	-2.593184	-1.287035	-2.132705

\* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

The presence of autocorrelation and heteroscedasticity is tested with LM tests and White heteroscedasticity tests and no autocorrelation and heteroscedasticity problems are discovered. Then causality between financial inclusion indicators and economic growth is investigated by Toda and Yamamoto (1995) causality. In this context, regression model with 2 lags ( $p + d_{max} = 1 + 1 = 2$ ) is estimated and the findings of causality analysis are reported in Table 4. The causality analysis reveals an insignificant causality between financial inclusion indicators and economic growth.

**Table 4.** Causality analysis results

Null Hypotheses	Chi-sq	Prob.
FIA $\rightarrow$ GRW	0.577821	0.4472
GRW $\rightarrow$ FIA	0.5778	0.4472
FMA $\rightarrow$ GRW	0.001211	0.9722
GRW $\rightarrow$ FMA	1.545037	0.2139

A mutual interaction between financial inclusion and economic growth is theoretically expected. Furthermore, Sharma (2016), Gourene and Mendy (2017), Saab (2017), Sethi and Acharya (2018), and Siddik et al. (2019) have reached a bilateral causality between financial inclusion and economic growth in compatible with theoretical considerations. However, an insignificant causality between financial inclusion and economic growth is discovered for Turkey and this may probably can be resulted from low level of domestic savings and current financial inclusion level in Turkey.

## 5. Conclusion

Financial inclusion is a significant determinant of economic growth. Financial inclusion can raise the business opportunities, feed the investments and financial sector development and in turn positively affect the economic growth. In this study, the reciprocal interaction between financial inclusion indicators and economic growth is investigated by Toda and Yamamoto (1995) causality test for the 1980-2019 period. The causality analysis indicates that there is not a significant causality among financial institutions access, financial markets access, and economic growth inconsistent with theoretical expectations and empirical findings. We evaluate that the aforementioned contradiction can be resulted from the low level of domestic savings and current financial inclusion level in Turkey. Therefore, financial inclusion as an instrument can be used to foster the economic growth.

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