

## ***The Interaction Between Financial Development and Income Inequality: Turkish Case***

*Finansal Kalkınma ve Gelir Eşitsizliği Arasındaki Etkileşim: Türkiye Örneği*

Duygu SERİN OKTAY<sup>1</sup>

### **ABSTRACT**

Income inequality remains a significant problem, particularly in developing countries. Ensuring fair income distribution among individuals is directly related to their well-being. Therefore, it is crucial that individuals have access to the financial system regardless of their income level, and that financial system resources are adequately developed. In this context, this study emphasizes on analysing the effect of financial development on ensuring fair income distribution. Therefore, it examines Financial Kuznets Hypothesis by analysing the interaction between income inequality and financial development. In this context, the ARDL bounds test method was applied to data from Turkey between 1990 and 2020. The analysis supports the inverted-U curve which express that income inequality will increase in the initial phase as financial development increases, after it decreases. This highlights the importance of analysing policies for financial system development together to ensure equitable income distribution in a country.

**Keywords:** Income Inequality, Financial Kuznets Hypothesis, ARDL.

### **Öz**

Gelir eşitsizliği özellikle gelişmekte olan ülkelerde çözülmesi gereken önemli bir sorun olarak varlığını sürdürmektedir. Bireyler arasında gelir dağılımı adaletinin sağlanması bireylerin refahıyla doğrudan ilişkilidir. Dolayısıyla bireylerin gelir seviyesine bağlı olmaksızın finansal sisteme erişebilir olması ve finansal sistem kaynaklarının yeterli seviyede gelişmiş olması önem arz etmektedir. Çalışma bu kapsamda finansal gelişmenin gelir dağılımı adaleti sağlamaya yönelik etkilerinin incelenmesine odaklanmaktadır. Bu nedenle finansal gelişme ve gelir eşitsizliği arasındaki ilişkiyi analiz ederek Finansal Kuznets Hipotezinin geçerliliğini sınamaktadır. Bu kapsamda çalışmada Türkiye’de 1990-2020 yılları verileri ile ARDL sınır testi yöntemi uygulanmıştır. Analiz sonuçları finansal gelişme seviyesi arttıkça erken dönemlerde gelir eşitsizliğinin artacağı, ardından gelir eşitsizliğinin azalacağını ifade eden ters-U hipotezini desteklemektedir. Bu durum ülkede adil gelir dağılımının sağlanması için finansal sistemin gelişimine yönelik politikaların birlikte analiz edilmesinin önemini vurgulamaktadır.

**Anahtar Kelimeler:** Gelir Eşitsizliği, Finansal Kuznets Hipotezi, ARDL.

Tür: Araştırma Makalesi

Gönderim Tarihi: 30.11.2025

Kabul Tarihi: 20.12.2025

<sup>1</sup> Dr. Öğr. Üyesi, Adana Alparslan Türkeş Bilim ve Teknoloji Üniversitesi, İktisadi İdari ve Sosyal Bilimler Fakültesi, Uluslararası Ticaret ve Finansman Bölümü, [dserinoktay@atu.edu.tr](mailto:dserinoktay@atu.edu.tr) (ORCID: 0000-0001-7912-4054)

## 1. INTRODUCTION

Ensuring economic development and income distribution are among the basic goals that economies aim to achieve. In this context the importance of the financial sector contributes to efficient use of resources by channelling savings into investment. The financial system supports that economic growth decrease income inequality. The literature draws attention to the relationship between financial development and income inequality focusing on the role of financial development in economic growth. Financial development effects income inequality in two respects. In the first and fundamental theory, put forward by Greenwood and Jovanovic (1990) the relationship between financial development and economic development is nonlinear. The effect of the financial development changes between different stages of development. Income inequality is increasing in the beginning phase of economic growth because financial markets are mostly accessed by wealthy individuals. However, as the development process progresses and the financial system deepens access to financial systems by a larger subset of the population decreases inequality. This phenomenon is described in the literature as the "Financial Kuznets Hypothesis," which suggests an inverted-U-shaped interactive between income inequality and financial development (Greenwood & Jovanovic, 1990). The second approach was developed by Galor and Zeira (1993) using the linear hypothesis. In this hypothesis, financial markets provide to the decrease of income inequality by increasing opportunity to credit for poor individuals.

Financial development has been extensively addressed in theoretical and empirical studies. Research clearly shows the importance of the relationship between financial development and economic growth. In the literature agreement has not been reached on financial development and how it contributes to income distribution under financial structure constraints. Results of this study contribute empirically to theoretical discussions about the relationship between income distribution and financial development. The access to the financial system is crucial for individuals in a country regardless of their income level and to have sufficient financial system resources. When these conditions are met individuals can invest and find opportunities to increase their income. It investigates the interaction between financial development and income inequality in this framework. This paper based on the Kuznets financial hypothesis posits that income distribution deteriorates in the initial phase of financial development and improves with increasing financial stability. It is believed that the findings of this study are important in enabling an evaluation of the social consequences of the financial sector growth.

The purpose of this study is to produce to existing discussions in the literature with new empirical findings by analysing the interaction between income inequality and financial development in Turkey over the 1990-2020. The second section examines empirical literature within this framework. The third section provides information on dataset and established model; the fourth section discusses the analysis results using econometric methods. The conclusion section provides a general assessment of the findings.

## 2. LITERATURE REVIEW

Review of studies on financial development and inequality reveals three main approaches which stand out in the literature. First approach is the theory about the Financial Kuznets Curve which posits an inverted U-shaped relationship between income inequality and financial development. The second group of studies demonstrates negative relationship between income inequality and financial development. The third group includes studies that find a positive relationship between the two variables. The findings obtained from the literature do not reach a common conclusion and there is different opinion about the relationship between income distribution and financial development.

Akmal et al. (2007) reveal an inverse relationship between income inequality and financial development in Pakistan for 1971–2005 using ARDL and ECM methods. Rodriguez-Pose and Tselios (2009) conducted a panel data analysis for 102 European countries over the period 1995–2000 and found a positive relationship between income inequality and financial sector development. In their study covering 1980–2000, Law and Tan (2009) examined Malaysia and reported that institutional improvements in the financial sector and price stability have inequality reducing effects based on ARDL bounds testing. Shahbaz and Faridul (2011) tested the Financial Kuznets Curve for Pakistan for 1971–2005. The results propose that financial development reduces income inequality whereas financial instability increases it. Baligh and Pirae (2012) researched the effect of financial development on income inequality in Iran utilizing data from 1973 to 2010. It was concluded that financial development contributes to a more equal allocation of income. In addition, the nonlinear model was found to be invalid. During his research Shahbaz (2013) found evidence of cointegration between income inequality and financial development in Pakistan. Specifically, the study focuses on the critical role of financial development in ensuring equity in the distribution of income.

Shahbaz et al (2014) has tested the financial kuznets curve for Iran for the period 1965–2011. Economic growth helps improve income distribution, while financial development decreases inequality. Using the ARDL approach Arvas and Kanberoğlu (2014) analysed the interaction between income distribution and financial development in Turkey for 1980–2012. 1% rise in the financial development reduces income inequality by 0.04% according to their findings. Econometric results indicate a negative relationship between income inequality and financial development. Using the Structural Vector Autoregression (SVAR) method Zhang and Chen (2015) investigated the impact of financial development on income inequality in China. It was estimated the inverted U hypothesis holds for the period 1963–2006. Çetin and Şeker (2016) estimated that financial development has a negative impact on income inequality in Turkey according to ARDL test results.

In the ARDL method Ahsan and Masih (2016) determined that financial development has a positive and significant impact on inequality in India for 1963–2007. Koçak and Uzay (2019) determined that financial development decreases income inequality by utilizing the multiple structural break cointegration method in the study for the period 1980–2013. Ridzuan et al. (2021) analyzed Malaysia, Indonesia, Thailand and the Philippines for the period 1970–2016. In Malaysia and Thailand, they support the inverted U-shaped hypothesis while for Indonesia and the Philippines a U-shaped pattern is observed. In

Malaysia and Thailand, the financial development has been found to reduce inequality but it has increased in Indonesia and in the Philippines. Yılmaz and Demirgil (2021) investigated the effect of financial development on income inequality in Turkey was investigated utilizing the ARDL model. This analysis, conducted for the period 1980-2018 found evidence supporting the inverted U-curve.

### 3. DATA SET AND METHODOLOGY

It examines the impact of financial development on income inequality utilizing yearly frequency from 1990 to 2020. This purpose is achieved by applying the ARDL method developed by Pesaran Shin and Smith (2001). The dependent variable is Gini index which serves as an indicator of income inequality. Gini Index vary between 0 and 100, with higher levels implying greater inequality in income. The financial development index occurred by the IMF is employed for the financial development. The financial development index comprises six sub-indices that assess the level of development of financial markets and financial institutions with regard to efficiency and depth. The index has been calculated annually since 1980 and takes values between 0 and 1. A value approaching 1 indicates a higher value of financial development, whereas a value approaching 0 reflects a lower value of financial development (IMF, 2022). Another independent variable included in the model is the per capita real GDP growth rate, expressed in constant 2010 US dollars. The data for the variables used in the paper were obtained from IMF, World Inequality Database and World Development Indicators. Accordingly, the model is presented in Equation (1) below:

$$gini_t = \beta_0 + \beta_1 fdi_t + \beta_2 fdi_t^2 + \beta_3 \ln Y_t + \varepsilon_t \quad (1)$$

In Equation (1),  $\beta_1$  represents the impact of financial development on income inequality, and this relationship is expected to be positive.  $\beta_2$ , denotes the square of the financial development variable. Studies testing the Financial Kuznets Curve often include this variable in the model, where it is expected to have a negative and significant coefficient.  $\beta_3$ , represents the per capita real GDP growth rate. The variables used in the study were transformed using their logarithmic values, and subsequently, the analysis was conducted to investigate how the variables relate in the long run.

### 4. EMPIRICAL RESULTS

In the study, the ARDL method was used to analysed the effect of financial development on income inequality and to test Financial Kuznets Curve. Therefore, the stationarity of the series was analysed utilizing the Augmented Dickey-Fuller (ADF) unit root test and the Phillips-Perron (PP) test. The findings are shown in Table 1. Results indicate that gini, fdi and Y variables contain a unit root but become stationary after first differencing implying that these series are integrated of order one I(1). On the other hand, the fdi<sup>2</sup> series was found to be stationary at level. This proposes that the ARDL approach can be appropriately applied to investigate the long-run relationship among the variables.

**Table 1.** Unit Root Test Results

Değişkenler	ADF Test İstatistiği		PP Test İstatistiği	
	Seviye	Fark	Seviye	Fark
gini	0.266 (0.972)	-4.991 (0.000)	0.266 (0.972)	-4.991 (0.000)
fdi	-2.231 (0.199)	-5.900 (0.000)	-3.358 (0.020)	-5.900 (0.000)
fdi <sup>2</sup>	-3.765 (0.007)	-2.744 (0.082)	-4.062 (0.003)	-4.249 (0.000)
y	0.664 (0.989)	-4.922 (0.000)	0.793 (0.992)	-4.915 (0.000)

**Note:** Figures in parentheses are p-values

According to the ARDL test, the presence of a cointegration relationship was examined by first determining the appropriate lag length and then calculating the F-statistic. In the study, the F-statistic was calculated the cointegration test among the variables. Table 2 presents the F-statistic value calculated to test the null hypothesis of no cointegration, along with the critical levels derived from Pesaran, Shin, and Smith (2001). At the 5% significance level, the estimated F-statistic value (5.34) surpasses the upper critical bound (3.67). This indicates the presence of a long run relationship between financial development and income inequality. The ARDL model used to investigate the long run relationship is presented in Equation (2).

$$gini_t = \sum_{i=1}^k \beta_1 gini_{t-1} + \sum_{i=0}^l fdi_{t-i} + \sum_{i=0}^l fdi^2_{t-i} + \sum_{i=0}^l Y_{t-i} + u_t \quad (2)$$

**Table 2.** ARDL Bound Test Results

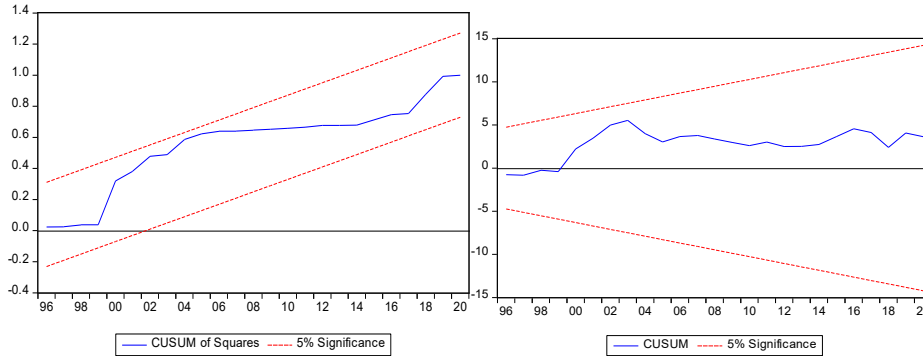
Critical Values	Lower Bound	Upper Bound
%10	2.37	3.2
%5	2.79	3.67
%2.5	3.15	4.08
Test statistics	Coefficients	
F-statistics	5.34	

Table 3 presents the estimated long-run coefficients. Consistent with the literature, a positive and statistically significant relationship is found between the FDI variable and the Gini coefficient. A one-unit increase in the FDI variable increases Gini coefficient by 0.010 units according to the results. Although FDI is relatively small its coefficient is important in providing information about the Kuznets Curve. In contrast a negative and statistically significant relationship is observed between the fdi<sup>2</sup> and the gini coefficient. In particular an increase in fdi<sup>2</sup> of one unit reduces Gini coefficient by 0.22 units. These results indicate income inequality firstly rises during the initial phase of financial

development then decreases in later stages confirming the inverted U-shaped relationship suggested by the Financial Kuznets Curve. Additionally, the per capita real GDP growth rate has a negative impact on the Gini coefficient. This finding suggests that higher GDP growth per capita raises income levels, thereby reducing income inequality which is consistent with theoretical expectations.

**Table 3.** ARDL Test Results

Variables	Coefficient	Standard Error	t-statistics	Prob
<b>fd<sub>1</sub></b>	0.01094	0.03239	-1.43667	0.0400
<b>fd<sub>1</sub><sup>2</sup></b>	-0.22445	0.10742	-2.08951	0.0000
<b>Y</b>	-0.00440	0.00041	-7.66079	0.0000
<b>C</b>	1.76613	0.01002	17.6255	0.0000



**Figure 1.** CUSUM and CUSUM<sup>2</sup> graphs

The relationship between financial development and income inequality was examined utilizing the Error Correction Model in the short run. The Error Correction Model is stated as follows (Equation 3):

$$\Delta gini_t = \beta_0 EC_{t-1} + \sum_{i=1}^k \beta_1 \Delta gini_{t-1} + \sum_{i=0}^l \Delta fdi_{t-i} + \sum_{i=0}^l \Delta fdi_{t-i}^2 + \sum_{i=0}^l \Delta Y_{t-i} + u_t \quad (3)$$

Table 4 presents the short-run results. The findings indicate that the coefficient of  $EC_{t-1}$  is negative and statistically significant, suggesting that approximately 78% of the short-term deviations in the Gini coefficient are corrected toward the long-run equilibrium each year. Furthermore, Figure 1 shows CUSUM and CUSUM<sup>2</sup> tests results. According to these results, the long-run parameters are stable at the 5% significance level.

**Table 4.** Error Correction Representation (ECM) Model

Variables	Coefficient	Standard Error	t-statistics	Prob
$\Delta fdi$	0.010949	0.030941	0.353878	0.7264
$\Delta fdi^2$	-0.280808	0.113609	-2.471712	0.0206
$\Delta Y$	-0.000010	0.000002	-4.875563	0.0001
$EC_{t-1}$	-0.780500	0.183010	-4.264796	0.0003
$R^2$	0.9679			
Adjusted $R^2$	0.9628			
Breusch Godfrey LM	0.4590 (0.6376)			
Jarque-Bera Normality Test	0.1791 (0.9142)			
Breusch-Pagan Heteroscedasticity Test	0.7888 (0.5434)			
Ramset Reset Test	0.1274 (0.8996)			

**Note:** Figures in parentheses are p-values.

## 5. CONCLUSIONS

Although there are various approaches in the literature about the relationship between financial development and income distribution, one of the most recent and influential hypotheses is the Financial Kuznets Curve which is based on the original Kuznets Hypothesis. According to this hypothesis, put forward by Greenwood and Jovanovic (1990), income inequality initially increases in the beginning stage of financial development and subsequently decreases in the later stages, thus forming an inverted U-shaped relationship. This study aims to analyze the influence of financial development on income inequality in Turkey for 1990-2020. During the studied period all variables are statistically significant and there is an inverted U-shaped relationship. In this context it is essential for countries to implement policies that support sustainable economic growth and financial development from the perspective of global strategies. Reducing inequality in the global economy not only enhances the welfare of the less developed countries but also supports the long-term goals of developed nations. In such a context access to expanding financial instruments arising from developments in the financial sector should be made available to all segments of society. Effective and inclusive financial development that does not exacerbate long term income inequality can only be achieved in this way.

## REFERENCES

Ahsan, Z. F., & Masih, M. (2016). Exploring the nexus between income inequality and financial indicators: endemic to the Indian economy?.

- Akmal, M. S., Ahmad, Q. M., Ahmad, M. H., & Butt, M. S. (2007). An empirical investigation of the relationship between trade liberalization and poverty reduction: A case for Pakistan. *Lahore Journal of Economics*, 12(1), 99-118.
- Baligh, N., & Pirae, K. (2013). Financial development and income inequality relationship in Iran. *Middle-East Journal of Scientific Research*, 13(7), 56-64.
- Çetin, M., & Şeker, F. (2016). Finansal Gelişmenin Gelir Eşitsizliği Üzerindeki Etkisi: Türkiye Ekonomisi İçin Ampirik Bir Kanıt. *International Anatolia Academic Online Journal Social Sciences Journal*, 3(2), 52-63.
- Galor, O., & Zeira, J. (1993). Income distribution and macroeconomics. *The Review of Economic Studies*, 60(1), 35-52.
- Greenwood, J., & Jovanovic, B. (1990). Financial development, growth, and the distribution of income. *Journal of Political Economy*, 98(5, Part 1), 1076-1107.
- International Monetary Fund (IMF). (2022). <https://data.imf.org/?sk=F8032E80-B36C-43B1-AC26-493C5B1CD33B>, (10.01.2022).
- Kanberoğlu, Z., & Arvas, M. (2014). Finansal kalkınma ve gelir eşitsizliği: Türkiye örneği, 1980-2012. *Sosyoekonomi*, 21(21).
- Koçak, E., & Uzay, N. (2019). The effect of financial development on income inequality in Turkey: An estimate of the Greenwood-Jovanovic hypothesis. *Review of Economic Perspectives*, 19(4), 319-344.
- Law, S. H., & Tan, H. B. (2009). The role of financial development on income inequality in Malaysia. *Journal of Economic Development*, 34(2), 153.
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16(3), 289-326.
- Ridzuan, A. R., Zakaria, S., Fianto, B. A., Yusoff, N. Y. B. M., Sulaiman, N. F. C., Razak, M. I. M., & Lestari, A. (2021). Nexus between financial development and income inequality before pandemic Covid-19: Does financial Kuznets curve exist in Malaysia, Indonesia, Thailand and Philippines?. *International Journal of Energy Economics and Policy*, 11(2), 260-271.
- Rodríguez-Pose, A., & Tselios, V. (2009). Education and income inequality in the regions of the European Union. *Journal of Regional Science*, 49(3), 411-437.
- Shahbaz, M. (2013). Financial development, economics growth, income inequality nexus: A case study of Pakistan. *International Journal of Economics and Empirical Research (IJEER)*, 1(3), 24-47.
- Shahbaz, M., & Islam, F. (2011). Financial development and income inequality in Pakistan: An application of ARDL approach.
- Shahbaz, M., Loganathan, N., Tiwari, A. K., & Sherafatian-Jahromi, R. (2015). Financial development and income inequality: Is there any financial Kuznets curve in Iran. *Social Indicators Research*, 124(2), 357-382.

- Yılmaz, V., & Demirgil, B. (2021). Finansal gelişme ve gelir dağılımı eşitsizliğini incelemeye yönelik uygulamalı bir çalışma: Türkiye örneği. *Giresun Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 7(2), 289-306.
- Zhang, Q., & Chen, R. (2015). Financial development and income inequality in China: An application of SVAR approach. *Procedia Computer Science*, 55, 774-781.