

# The Influence of Financial Development on Wealth Inequality in Capitalism: Fresh Evidence From Emerging Countries

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## Abstract

Our study focuses on how financial development (FD) affects wealth inequality (WI) in ten emerging countries from 1995 to 2020. These countries include Brazil, China, India, Indonesia, Malaysia, Mexico, the Philippines, South Africa, Thailand, and Türkiye. We analyzed the impact of economic growth (EG) and trade openness (TO) on WI using the augmented mean group (AMG) estimator. Our research showed that FD leads to an increase in WI among panel groups, particularly in Brazil, China, Mexico, and the Philippines. Additionally, EG and TO have a positive effect on WI for panel samples. We also found a two-way causality relationship between FD and WI, EG and WI, and WI and TO. Our paper concludes with a policy recommendation that government intervention is crucial in ensuring that lower-income individuals have equal access to financial assets.

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**Keywords:** financial development, financialization, wealth inequality, income inequality, emerging countries

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**JEL classification:** D63, F36, F41, F62

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## 1 Introduction

The inequality phenomenon always keeps its critical role in a capitalist world. Both income and wealth inequality (WI) are crucial in determining the global agenda (Atkinson & Piketty, 2010; Frost et al., 2022). However, scholars and researchers mainly concentrate on income inequality (IIQ). Hence, they try to reveal the determinants of IIQ, economic growth (EG) and income equality (Siddiqi & Hertzman, 2001; Altman, 2003; Chen & Fleisher, 1996; Panizza, 2002; Michel, 1991), institutional quality and inequality (Dong & Torgler, 2010; Pryor, 1973; Chong & Calderón, 2000; Gwartney et al., 2004; Scully, 2002; Simpson, 1990; Gradstein, 2007), globalization (Zhou et al., 2011; Adams, 2008; O'Rourke, 2001; Khan et al., 1999; Harjes, 2007; Asteriou et al., 2014; Basu, 2005; Jaumotte et al., 2013; Dorn et al., 2018; Bergh & Nilsson, 2010; Smeeding, 2003), financial development (FD) (Han et al., 2011; Jauch & Watzka, 2016; Greenwood & Jovanovic, 1990; Tekin & Cengiz, 2017; Ibrahim et al., 2019; Ang, 2010; Beck et al., 2007; Clarke et al., 2006; Park & Mercado, 2015). However, inequality is not limited to IIQ. WI also has a comprehensive negative impact on society because WI is higher than IIQ (Piketty, 2014); in other words, WI is distributed more unequally than income in the world. As mentioned in the World Inequality Report written by Chancel et al. (2022), while the global bottom 50 percent earns 8.5 percent of total income (in purchasing power parity measurement), it holds 2 percent of global wealth. More to the point, 76 percent of global wealth and 52 percent of global income are captured by the global top 10 percent.

Although the financialization issue has been investigated in the context of several aspects in the political-economy literature, the nexus between WI and FD has yet

to be analyzed comprehensively. As mentioned above, in a general perspective, FD is linked with IIQ. Notably, Greenwood and Jovanovic (1990), based on the pioneer study of Kuznets (1955), assess that there is an inverted U-shaped relationship between FD and IIQ, indicating that at the beginning of FD, IIQ rises, and it starts to decline after the threshold level. Thus, there is a vast body of literature on the relationship between FD and IIQ. However, WI also is closely linked with capitalist financialization (Piketty, 2014). The theoretical relationship between FD and WI implies different mechanisms. On the one side, it is emphasized that the increase in FD in globalization creates new credit and other financial opportunities for low-income people. Therefore, it reduces income and WI (Shin & Lee, 2019).

In contrast, the opposite view shows that higher FD could give privileged wealthier families access to better financial services or assets with higher returns. Thus, it causes an increase in wealth inequality between the rich and poor (Frost et al., 2022). Due to the existence of very scarce analysis, the relationship between FD and WI requires more findings in a capitalist world. For this purpose, this paper aims to determine the impact of FD on WI in emerging markets during the 1995–2020 period. There are three fundamental reasons for choosing these countries. i) Emerging countries have strong economic performance in the global economy. These countries produce more than 25 trillion dollars as of 2021, representing nearly 30 percent of the global GDP (UNCTAD, 2022). So, the most outstanding contribution to global GDP comes from these countries. In this case, it becomes crucial to determine whether solid economic performance creates more equality in emerging countries. ii) These countries are emerging powers with a rapid globalization process in terms of financial openness (FO) and trade openness (TO). In other words, the rapid globalization process has occurred in these countries for the last sixty years. Financial integration rises progressively. In particular, TO shapes their increasing role in the international market. For example, the average TO for these countries was 42 percent in 1960; it increased more than two times and reached 87 percent in 2021 (World Bank, 2022). iii) Due to the high-level EG, a high level of inequality continues to be one of the

significant problems in emerging countries. The possible contributions of our paper to the related literature are as follows:

1. To the best of our knowledge, it is the first paper to investigate the impact of FD on WI in these emerging countries.
2. In addition to the impact of FD, this study observes the impact of TO as related to FD.
3. This paper performs the second-generation panel methodology (augmented mean group – AMG), considering the cross-sectional dependence (CSD) among countries.
4. To check the consistency of the parameter estimator, the causality test is utilized for implementing comprehensive policy recommendations.

The remainder of the article is structured as follows: Section 2 discusses the theoretical framework of the relationship between FD and WI. Section 3 provides a brief review of the literature. Section 4 explains the data description and the econometric methodology. Section 5 presents the empirical findings, Section 6 provides discussions, and the final section presents some conclusions and policy recommendations.

## 2 Theoretical Framework

### 2.1 Financialization in Capitalism<sup>1</sup>

The term financialization has had a central position in political economy since the 1980s. Mainstream and heterodox approaches agree on the transformative influence of financialization in a capitalist economy (Sotiropoulos & Hillig, 2020). Particularly, financialization is identified with heterodox economics, Marxism,

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1 Financialization is frequently mentioned in capitalism. To point out the nexus between FD and inequality, financialization in capitalism should be understood, at least in some framework. In other words, without arguing financialization, it is possible to miss the link between FD and inequality. Moreover, following the global financial crisis (GFC), serious doubts emerged about the financial sector in the real economy. So, scholars tended to use the term financialization frequently (Shin & Lee, 2019).

and post-Keynesianism (Aalbers, 2017). However, there is no consensus about the definition of financialization. In this context, one of the most striking definitions of the term financialization is offered by Epstein (2005): “financialization means the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies.” Braga et al. (2017) state that “financialization is the systemic pattern of wealth in capitalism that derived from the collapse of the Bretton Woods System. It is a pattern that simultaneously stimulated and resulted from a set of changes in monetary and financial systems.” In addition, Chappe (2022) defines financialization as a term that “has come to refer to a number of separate (though mutually compatible) trends: the decline of the manufacturing sector and the growing importance of financial activities as a share of corporate profit, even for non-financial firms; the growth of the financial sector relative to the rest of the economy; an explosion in the volume of financial trading and innovation.” Palley (2008) states “financialization is a process whereby financial markets, financial institutions, and financial elites gain greater influence over economic policy and economic outcomes. Financialization transforms the functioning of economic systems at both the macro and micro levels.” Based on different definitions of financialization, it is observed that it covers various dynamics, structures, and processes.

Despite the numerous conceptualizations of financialization, it is often closely associated with capitalism from a critical political economy perspective (Langley, 2021). Especially in heterodox economics, financialization is seen as a part and another stage of capitalism. According to Lapavistas (2013), the pressures of competition in the 1970s pushed capitalist economies to look for new profitable areas. The most remarkable development of the 1970s is that the financial sector started to enlarge its domination in the international capitalist system. Ultimately, the expansion of financialization is strongly related to capital accumulation. In this process, non-financial corporations began getting involved in financial sectors. Connected to this, financial corporations concentrated on transacting in international financial markets as a target of increasing their profit. The growth

of financialization during the 1970s caused an increased dependency on financial instruments. Households have increasingly come to realize foremost economic transactions through financial market tools. This new stage of capitalism is characterized by the global movement of financial capital circulation (Sawyer, 2013; Langley, 2021; De Medeiros & Amico, 2019). Thus, financial capitalism has been seen as a new way of creating wealth in the new international economic order characterized by liberalized and deregulated markets (Braga et al., 2017; Christophers, 2015). Therefore, financialization has converted the structure of the economic system in several ways. For example, the financial sector has raised its dominant power over the real sector and transferred gain channels from the real sector to the financial sector (Palley, 2008).

## 2.2 Nexus Between FD and WI

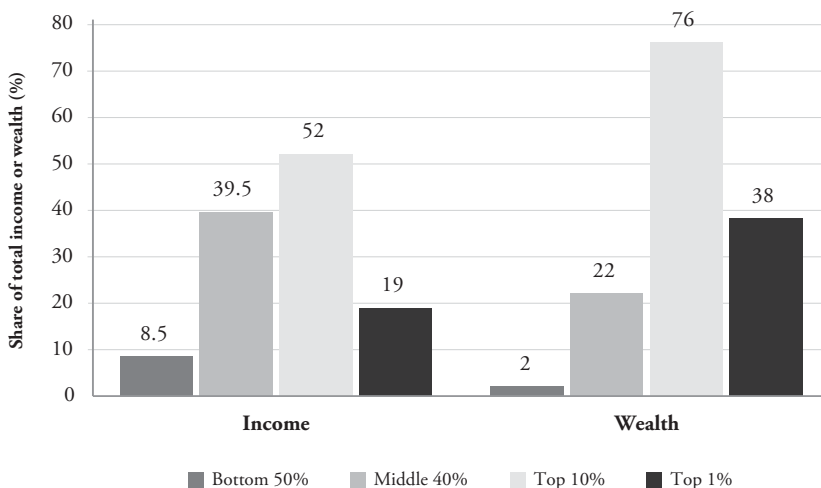
It is clear that there are many different conceptualizations of financialization and FD. In addition to conceptualizing financialization, it is required to define FD. According to Sawyer (2014), FD means the growth and evolution of financial sectors, which is characterized by the expansion of the monetization of the economy and scale of the financial sector. Based on this, there was an absolute belief in the positive effect of FD on economic growth. However, the GFC has caused severe criticism of the role of FD in the real economy. It is even argued that high-level FD causes turmoil in the economy (Shin & Lee, 2019). The topic of FD has been discussed for a long time, but its impact on macroeconomic variables differs depending on a country's structure. Some scholars believe FD generally promotes stability (Summers, 2000). However, others are less positive about FD's effect on macroeconomic stability (Harvey, 2009; Sen, 2020).

In addition to the role of FD on macroeconomic stability, the impact of FD on WI is very limited in the political economy. As mentioned before, the relationship between FD and IIQ has become a preferential topic for research. Nevertheless, we should recognize that WI is increasing day by day under the financial globalization (FG) sphere. This is because, due to the structural change in capitalism, FD has

opened the way in the economy for households, and non-financial enterprises tend to gain benefits through financial investment. Moreover, benefiting from financial markets overlaps with benefits gained through actual sector activities (Krippner, 2005; Van der Zwan, 2014). This perspective is based on neoliberalism, which claims FD reduces income and WI among individuals by creating new financial instruments to enhance their economic conditions (Tomaskovic-Devey & Lin, 2013; Tridico & Pariboni, 2018). However, as neoliberalism asserts, WI has not decreased worldwide.

Figure 1 provides an overview of global income and WI; WI is broader than IIQ. The global bottom 50 percent earns 8.5 percent of global income, and the top 10 percent captures more than half of global income (52 percent). Further, the picture of WI shows a more dramatic case for financial capitalism. The bottom 50 percent obtains just 2 percent of global wealth, although the top 10 percent captures 76 percent. More specifically, this means that the poorest half of the population obtains \$4.100, and the wealthiest 10 percent has \$771.300

**Figure 1:** Global IIQ and WI, 2021



Source: Chancel et al. (2022).

on average (Chancel et al., 2022). Enlarging private wealth compared to public wealth is responsible for increased WI. Especially multimillionaires have covered the outstanding share of wealth in the last 30 years. These groups have obtained 38 percent of all additional wealth (Chancel et al., 2022).

Now, a major question that can arise is what association exists between FD and WI? According to mainstream economics, FD typically has a positive impact on inequality. This is because it provides a broader range of investment options for those with low incomes to participate in financial markets, ultimately leading to greater wealth accumulation (Biondi & Olla, 2020). Additionally, FG has created a new household profile focusing on using debt to invest in financial markets (Kuhn et al., 2018). However, heterodox economics takes a different stance, arguing that FD does not provide equal access to financial markets for the poor and rich. Even if poor people gain access, they may not have the same opportunities to benefit from financial instruments as the wealthy. Ultimately, this can increase WI (Piketty, 2014; Frost et al., 2022).

Many emerging countries experienced high levels of inequality, especially after opening their financial and trade markets to international competition in the late 1980s and early 1990s. This financialization has caused macroeconomic instability and financial crises in these countries, while income and WI have remained persistent. Table 1 shows that WI has increased from 1995 to 2020, with South Africa, Mexico, and Brazil having the highest inequality levels. China's WI has notably increased, with the top 1 percent share doubling from 0.16 in 1995 to 0.32 in 2020. However, Türkiye's WI decreased from 0.45 to 0.36 in 2006 and has since remained stable.

Emphasizing the relationship between FD and WI, more empirical evidence is required to reveal such a relationship. Triggering WI may have a more comprehensive influence than IIQ (Shchepeleva et al., 2022).



**Table 1:** WI: Share of Top 1%

	Brazil	China	India	Indonesia	Malaysia	Mexico	The Philippines	South Africa	Türkiye	Thailand
1995	0.4137	0.16	0.2317	0.3331	0.3379	0.3931	0.4208	0.4737	0.4506	0.4916
1996	0.415	0.17	0.2312	0.3341	0.3366	0.3995	0.4507	0.4888	0.4613	0.4902
1997	0.4104	0.18	0.2327	0.3252	0.3355	0.3898	0.4709	0.483	0.4621	0.4809
1998	0.4119	0.19	0.2336	0.3165	0.3346	0.3947	0.4537	0.4793	0.4709	0.4283
1999	0.4109	0.19	0.2346	0.2874	0.3336	0.3952	0.4383	0.5071	0.4619	0.4282
2000	0.4143	0.2	0.2355	0.2587	0.3322	0.3927	0.4101	0.4947	0.4782	0.4368
2001	0.4108	0.2	0.2388	0.2509	0.3306	0.3966	0.3599	0.5069	0.4769	0.4438
2002	0.3973	0.2	0.2437	0.2456	0.3296	0.3957	0.3546	0.498	0.4759	0.4235
2003	0.4129	0.23	0.2393	0.2456	0.3274	0.402	0.321	0.5004	0.4427	0.4447
2004	0.4359	0.25	0.237	0.2532	0.3254	0.4286	0.3152	0.4907	0.4142	0.4289
2005	0.4503	0.26	0.2376	0.2655	0.3262	0.4343	0.3225	0.513	0.3704	0.4409
2006	0.4313	0.27	0.2432	0.2598	0.3275	0.4493	0.3126	0.5219	0.3621	0.4378
2007	0.4212	0.28	0.269	0.2563	0.3276	0.473	0.319	0.5197	0.345	0.4315
2008	0.4403	0.29	0.2999	0.2717	0.3222	0.49	0.2946	0.5011	0.3676	0.4447
2009	0.4587	0.3	0.2757	0.2598	0.317	0.4717	0.2983	0.5309	0.3893	0.4037
2010	0.4541	0.3	0.3048	0.2731	0.3139	0.4791	0.3051	0.5729	0.386	0.442
2011	0.4662	0.28	0.3171	0.2998	0.3104	0.49	0.3203	0.5824	0.3874	0.4388
2012	0.4705	0.27	0.307	0.3041	0.306	0.4939	0.3356	0.5724	0.3794	0.4561
2013	0.443	0.27	0.3093	0.303	0.3026	0.493	0.3362	0.5678	0.3771	0.4003
2014	0.4617	0.28	0.3168	0.3017	0.2994	0.4913	0.3308	0.5564	0.3761	0.4272
2015	0.449	0.3	0.3191	0.3019	0.2994	0.4854	0.3266	0.5553	0.3756	0.3702
2016	0.4311	0.3	0.3168	0.3014	0.2989	0.4711	0.3268	0.5425	0.3752	0.4403
2017	0.4576	0.32	0.3164	0.2999	0.2978	0.4698	0.3259	0.5532	0.3743	0.4395
2018	0.4832	0.31	0.3229	0.2986	0.2966	0.4728	0.3247	0.5491	0.3733	0.4386
2019	0.4826	0.31	0.3185	0.2977	0.2956	0.4698	0.3238	0.5479	0.3725	0.4379
2020	0.4737	0.32	0.3166	0.2953	0.295	0.4661	0.3137	0.5474	0.372	0.4375

Source: World Inequality Database (2022).

### 3 Literature Review

The existing literature discusses the relationship between FD and inequality. However, most of these works center on the effect of FD on IIQ. For instance, Baiardi and Morana (2018) researched the nexus between FD and IIQ for a panel sample of the euro area (EA) and concluded that the financial Kuznets hypothesis is valid. Chiu and Lee (2019) investigated the association between FD and IIQ by exploring the role of country risks for a panel sample of 59 countries. Panel smooth transition regression results indicate that, overall, unstable economic conditions and financial and political stability widen IIQ. Furthermore, in advanced countries, FD increases IIQ due to the existence of economic and financial stability. Also, in low-income countries, FD worsens income distribution. Cetin et al. (2021) examined the validity of the financial Kuznets curve (FKC) hypothesis by analyzing the role of technology for Türkiye. The long-run estimation results show the validity of the FKC, indicating an inverted U-shaped association between FD and IIQ, and technology is negatively associated with IIQ. Younsi and Bechtini (2020) also investigated the validity of FKC in BRICS countries with a data set for the 1990–2015 period and confirmed the validity of the FKC.

Jung and Vijverberg (2019) studied the effect of financial development on IIQ in China by using data from 1998 to 2014. Spatial analysis results show that FD reduces IIQ. Zhang and Naceur (2019) analyzed the impact of FD with different indicators on IIQ in 143 countries using data from 1961 to 2011. The authors' findings show that financial access, depth, efficiency, and stability reduce IIQ, whereas financial liberalization (FL) increases it. Zare (2019) researched the nexus between globalization and IIQ in 78 countries using data from 2002 to 2015. The results of the generalized method of moments (GMM) show that globalization widens IIQ. However, this effect is narrowed by the level of FD. Ratnawati (2020) tested the nexus between financial inclusion (FI) and IIQ and poverty in ten Asian countries with data from 2009 to 2018. The author's findings concluded that FI reduces IIQ and poverty.

Furthermore, some studies aim to investigate the association between FD and WI. For example, Islam and McGillivray (2020) investigated how WI affects EG for a panel of 45 countries using data from 2000 to 2012. System GMM results show that WI decreases EG. Lenza and Slacalek (2024) investigated the effect of the association between monetary policy, IIQ, and WI in the euro area using data for the 1999Q1–2019Q4 period and concluded that monetary policy narrows IIQ, while it has a small effect on WI. Khan et al. (2022) studied the relationship between FI, IIQ, financial stability, and poverty in 54 African countries with data covering 2001–2019. The authors' findings show that FI reduces poverty and IIQ and promotes financial stability. In another study conducted by Omar and Inaba (2020) for 116 developing countries, it is revealed that FI reduces poverty and IIQ.

To provide further insight, we have compiled a summary of the relevant literature in Table 2.

**Table 2:** *Summary of Literature on FD, Openness, and Inequality*

Study	Sample/period	Methodology	Findings
Ibrahim et al. (2019)	Nigeria October 2014 –September 2015	Ordinary least squares (OLS)	FI has a positive impact on welfare. This positive impact is more extensive in middle and high-income households than in lower-income households.
Destek et al. (2020)	Türkiye 1990–2015	Autoregressive distributed lag (ARDL) bound testing	There exists a U-shaped association between FD and IIQ.
Shchepeleva et al. (2022)	143 countries 2010–2018	Robust least squares (RLS)	The GFC has no substantial effect on WI.
Shin & Lee (2019)	OECD countries 1980–2009	Panel cointegration	Whereas financialization increases IIQ, FG does not affect inequality.
Adams (2008)	62 developing countries 1985–2001	Seemingly unrelated regressions (SUR)	Globalization is responsible for just 15% of income equality. Also, intellectual property rights and openness increase IIQ, whereas foreign direct investment and institutional quality are negatively associated with inequality.
Dorn et al. (2018)	140 countries 1970–2014	Fixed effects (FE) and 2SLS	Globalization is positively correlated with IIQ, except in developed countries.

Park & Mercado (2015)	37 developing Asian countries 2004–2012	OLS	FI decreases IIQ and poverty.
Koçak & Uzay (2019)	Türkiye 1980–2013	Dynamic OLS and fully modified OLS	There is an inverted U-shaped relationship between FD and IIQ.
Jauch & Watzka (2016)	138 countries 1960–2008	GMM and FE	FD has a positive impact on IIQ.
Zhou et al. (2011)	60 countries 2002–2004	Principal component analysis (PCA)	FD has a negative relationship with IIQ.
Ang (2010)	India 1951–2004	Error-correction model (ECM), ARDL	Although FL increases IIQ, FD mitigates it.
Asteriou et al. (2014)	EU-27 countries 1995–2009	FE, random effects (RE), GMM	TO reduces IIQ, while FDI, capital account openness, and stock market capitalization exacerbate it.
Bergh & Nilsson (2010)	80 countries 1970–2005	GMM	TO, social globalization, and deregulation are associated with IIQ.
Caselli (2012)	44 developing countries 1960–2000	OLS	After TO, the growth rate decelerates if countries have a high level of WI.
Frost et al. (2022)	Italy 1991–2016	OLS	Both FD and financial technology have a positive impact on households' financial wealth and financial returns.
Huber et al. (2018)	39 selected countries 1960–2013	Pooled OLS	A larger financial sector is associated with more inequality in liberal market economies. However, strong labor conditions can mitigate the negative impact of financialization.
Hasan et al. (2020)	73 countries 1980–2014	Bayesian model averaging	Financial depth increases WI, and efficiency and access to finance reduce inequality.
Park & Shin (2017)	162 countries 1960–2011	Pooled OLS	There is a U-shaped relationship between IIQ and FD.
Das (2022)	Over 100 countries 1990–2000	GMM	Although FD positively impacts WI, TO decreases it.
Kuevibulvanich (2016)	Heterogeneous agent model	Counterfactual analysis	In the initial phase of liberalization, TO increases WI while it reduces inequality in the long run.
Ranaldi & Milanović (2022)	47 countries 1995–2018	Income factor concentration (IFC) index	There is a link between compositional inequality and higher interpersonal inequality. This relationship is observed mainly in Latin American countries and India.
Arrigoni (2024)	United States, France, and the United Kingdom 1970–2019	FE	FG causes a rise in WI.
Lundberg & Waldenström (2018)	Sweden 2000–2012	Capitalization method	Unequal bank holdings and housing are primary drivers of WI.
Bäckman et al. (2024)	Denmark 1996–2016	Regression estimation	Individual wealth is positively associated with housing returns.

Source: Authors' compilation.

## 4 Data Source and Empirical Procedure

### 4.1 Data and Scope

This study measures the impact of FD, EG, and TO in ten emerging countries: Brazil, China, India, Indonesia, Malaysia, Mexico, the Philippines, South Africa, Thailand, and Türkiye, over the period between 1995 and 2020. The beginning and ending period were chosen depending on the availability of data for WI. Table 3 shows a description of the variables, symbols used for the variables, measurements, and sources.

**Table 3:** Variables Description, Measurement, and Source

Variable	Symbol	Measurement	Source
Wealth inequality	WI	Wealth share of top 1%	World Inequality Database (2022)
Financial market development	FD	Financial markets index	International Monetary Fund (2022)
Economic growth	GDP	GDP growth (annual %)	World Bank (2022)
Trade openness	TO	Share of exports plus imports over GDP	World Bank (2022)

Source: Authors' compilation.

### 4.2 Estimation Procedure

In light of the studies conducted by Frost et al. (2022) and Hasan et al. (2020), we have composed the form of our econometric model shown in the equation below:

$$WI_{it}=f(FD_{it},GDP_{it},TO_{it}) \quad (1)$$

The first version of our empirical model (1) is converted into semi-logarithms, as shown below:

$$\ln WI_{it}=a_0 + a_1 \ln FD_{it} + a_2 GDP_{it} + a_3 \ln TO_{it} + \varepsilon_{it} \quad (2)$$

where  $\ln WI$  is the dependent variable, i.e., the wealth share of the top 1 percent,  $\ln FD$  is the financial markets index,  $GDP$  is gross domestic product annual growth rate representing EG, and  $\ln TO$  is share of exports plus imports over GDP.

#### 4.2.1 The CSD Test

One of the primary stages in panel data econometrics is testing the CSD in the model. It is a crucial step in obtaining robust findings (Ahmad et al., 2020). Therefore, we perform Pesaran's (2004) CD test, which is robust against the CSD and heterogeneity (Baloch et al., 2021). Following the CSD test, we use Pesaran and Yamagata's (2008) delta ( $\tilde{\Delta}$ ) test to determine the slope homogeneity. It is tested under the null hypothesis that slope parameters are homogenous against the alternative hypothesis that slope parameters are heterogeneous.

#### 4.2.2 The Cross-Sectionally Augmented IPS (CIPS) Unit Root Test

In panel data econometrics, in the case of the existence of CSD and slope heterogeneity, it is crucial to implement the convenient estimators. Therefore, in our model, CSD and slope heterogeneity exist. Hence, we used Pesaran's (2007) CIPS unit root test as a second-generation unit root test. The null hypothesis of the CIPS test is that the series contain the unit root process, indicating that the series are not stationary (Androniceanu & Georgescu, 2023). The equation for the CIPS test can be expressed as follows (Qamruzzaman & Karim, 2023):

$$CIPS = \frac{1}{N} \sum_{i=1}^N \delta_i(N, T) \quad (3)$$

In Eq. (3),  $\delta_i(N, T)$  shows the test statistics of covariate-augmented Dickey-Fuller (CADF).

#### 4.2.3 Panel Long-Run Coefficient Estimator

This study performs the AMG estimator of Eberhardt and Bond (2009) and Bond and Eberhardt (2013) to reveal the impact of FD, EG, and TO on WI. As a second-generation estimation technique, the AMG estimator provides some superiorities compared to first-generation estimators. Firstly, it can be employed

in the presence of CSD. Secondly, it does not require variables to be stationary (Bond & Eberhardt, 2013; Destek, 2020). Based on this, it consists of two steps as follows (Badmus et al., 2022).

Step 1:

$$\Delta y_{it} = \gamma_i + \vartheta_i \Delta x_{it} + \rho_i f_t + \sum_{t=2}^T \delta_i \Delta D_t + \varepsilon_{it} \quad (4)$$

Step 2:

$$\hat{\vartheta}_{AMG} = N^{-1} \sum_{i=1}^N \hat{\vartheta}_i \quad (5)$$

where WI is the dependent variable labeled as  $y_{it}$ ; explanatory variables are FD, GDP, and TO, marked as  $x_{it}$ . Also,  $D_t$  is a dummy variable, and  $\vartheta_i$  denotes parameters for cross-section. In addition, we can compute the parameters through the equation shown in Step 2.

#### 4.2.4 The Dumitrescu-Hurlin (D-H) Causality Test

Based on the findings obtained through the panel AMG estimation, we employ the panel causality test of D-H to discover the causality relationship between variables. This test is a modified version of Granger's (1969) causality test for panel data. It can be written in regression form as below (Dumitrescu & Hurlin, 2012):

$$y_{it} = \alpha_i + \sum_{k=1}^K \gamma_i^{(k)} y_{i,t-k} + \sum_{k=1}^K \beta_i^{(k)} x_{i,t-k} + \varepsilon_{i,t} \quad (6)$$

In Eq. (6),  $x_{i,t}$  and  $y_{i,t}$  are the observations of two stationary variables. Dumitrescu and Hurlin (2012) offered Wald statistics to estimate individual regressions for the null hypothesis that there is no causality relationship among variables

( $\beta_{i1} = \dots = \beta_{iK} = 0$ ). For this purpose, Wald statistics can be computed as follows (Mitra, 2019):

$$\bar{W} = \frac{1}{N} \sum_{i=1}^N W_i \tag{7}$$

In addition to Wald statistics, they proposed standardized  $\bar{Z}$  statistics in the case when T is relatively larger than N. Hence,  $\bar{Z}$  statistics is expressed as follows (Lopez & Weber, 2017):

$$\bar{Z}_{N,T}^{HNC} = \frac{\sqrt{N}[W_{N,T}^{Hnc} - \sum_{i=1}^N E(W_{i,t})]}{\sqrt{\sum_{i=1}^N Var(W_{i,t})}} \tag{8}$$

## 5 Empirical Findings

Our first step of econometric analysis is determining the presence of CSD between variables. The results of the CSD test are highlighted in Table 4.

**Table 4:** Results of the CSD Test

Variable	CD-test	P-value
lnWI	4.984	0.000
lnFD	6.006	0.000
GDP	31.437	0.000
lnTO	4.362	0.000

Source: Authors' compilation.

As seen from Table 4, the null hypothesis of no CSD among variables is rejected for all variables, which indicates they are dependent economically and politically.

**Table 5:** Results of Slope Homogeneity Tests

	Statistics	P-value
Delta ( $\hat{\Delta}$ ) test	15.780	0.000
Delta ( $\hat{\Delta}$ ) <sub>adj</sub> test	17.558	0.000

Source: Authors' compilation.



The results of slope homogeneity are provided in Table 5 and state that the null hypothesis of the existence of slope homogeneity across cross-sections is rejected. Hence, this proves slope heterogeneity among cross-sections.

**Table 6:** *The CIPS Unit Root Test Results*

Variable	lnWI	lnFD	GDP	lnTO
<b>CIPS (level)</b>	-1.474	-2.10	-1.220	-1.278
<b>CIPS (first differences)</b>	-4.157	-5.359	-2.925	-3.940
<b>Order of integration</b>	I(1)	I(1)	I(1)	I(1)

Note: Critical values are -2.12, -2.22, and -2.44 at 10%, 5%, and 1% levels of significance, respectively.

Source: Authors' compilation.

In another step of our empirical analysis, we performed the CIPS unit root test that is robust to CSD and heterogeneity. The CIPS unit root test results are reported in Table 6 and indicate that all variables have a unit root process at the level. However, they become stationary at the first difference. Following the preliminary test, we used the AMG estimation technique to determine the impacts of FD, EG, and TO on WI. The results are shown in Table 7.

**Table 7:** *Results of the AMG Estimation*

Country	Constant term	lnFD	GDP	lnTO
<b>Brazil</b>	-1.323**	0.111**	0.200	0.060
<b>China</b>	-2.334***	0.131**	0.278***	0.239***
<b>India</b>	-2.514***	-0.072	0.384***	0.127***
<b>Indonesia</b>	-4.626***	-0.128	0.532***	0.138**
<b>Malaysia</b>	-0.351	-0.006	-0.090*	0.119***
<b>Mexico</b>	-0.859	0.436**	-0.181	0.243**
<b>The Philippines</b>	-1.644***	0.536***	0.133	0.215**
<b>South Africa</b>	-3.495***	0.074	0.716***	-0.161
<b>Thailand</b>	-0.745*	-0.066	0.098	-0.018
<b>Türkiye</b>	0.560*	0.144	-0.280***	0.105
<b>Panel group</b>	-1.733***	0.126**	0.195**	0.106***

Note: \*, \*\*, and \*\*\* denote 10%, 5%, and 1% significance levels, respectively.

Source: Authors' compilation.

According to the AMG estimator from Table 7, FD positively impacts WI in Brazil, Mexico, China, and the Philippines. For example, an increase of 1 percent in FD causes WI to rise by 0.111 percent, 0.131 percent, 0.436 percent, and 0.536 percent in Brazil, China, Mexico, and the Philippines, respectively. The impact of EG on WI differs by country. For example, although EG positively impacts WI in China, India, Indonesia, and South Africa, it negatively affects WI in Malaysia and Türkiye. Related to these results, an increase of 1 unit in EG increases WI by 27.8 percent, 38.4 percent, 53.2 percent, and 71.6 percent in China, India, Indonesia, and South Africa, respectively. In contrast, an increase in EG by 1 unit decreases WI by 9 percent and 28 percent in Malaysia and Türkiye, respectively. Finally, TO is positively associated with WI in China, India, Indonesia, Malaysia, Mexico, and the Philippines. For instance, if TO rises by 1 percent, WI increases as well by 0.239 percent, 0.127 percent, 0.138 percent, 0.119 percent, 0.243 percent, and 0.215 percent in China, India, Indonesia, Malaysia, Mexico, and the Philippines, respectively. In addition to country-specific results, according to the empirical outcomes of the AMG estimation for the panel group, all variables are statistically significant. They indicate that FD, EG, and TO have a positive influence on WI. After determining the coefficient, we employ the D-H causality test to observe the causality relationship between variables. The causality test results are reported in Table 8.

**Table 8:** *The D-H Panel Causality Test Results*

Direction of causality	W-bar	Z-bar	Z-bar tilde	Results
$\ln WI \rightarrow \ln FD$	2.898	4.244***	3.384***	Yes
$\ln FD \rightarrow \ln WI$	2.989	4.447***	3.555***	Yes
$\ln WI \rightarrow GDP$	1.937	2.096**	1.576	Yes
$GDP \rightarrow \ln WI$	5.273	9.556***	7.854***	Yes
$\ln WI \rightarrow \ln TO$	3.548	5.697***	4.607***	Yes
$\ln TO \rightarrow \ln WI$	3.528	5.654***	4.571***	Yes

Note: \*\* and \*\*\* denote 5% and 1% significance levels, respectively.

Source: Authors' compilation.

According to the results, a feedback causality exists between FD and WI, EG and WI, and TO and WI.

## 6 Discussions

Most emerging countries have experienced a rapid process of liberalization since the 1980s. In this process, inequality has become one of the most crucial problems for them. As mentioned above, the relationship between FD and IIQ has become a central ambiguous topic in the relevant literature. However, the rapid financialization process has created a new inequality relationship – between FD and WI – which has received less attention. Thus, this study investigates the impact of FD on WI in the top ten emerging countries, i.e., Brazil, China, India, Indonesia, Malaysia, Mexico, the Philippines, South Africa, Thailand, and Türkiye, from 1995 to 2020.

The empirical findings of the paper present that FD has a positive impact on WI for the panel sample. In the long run, an increase of 1 percent in FD causes an increase of 0.126 percent in WI for the panel group. In addition, the impact of FD on WI is statistically significant in Brazil, China, Mexico, and the Philippines. If FD increases by 1 percent, it leads to a rise in WI by 0.111 percent, 0.131 percent, 0.436 percent, and 0.536 in Brazil, China, Mexico, and the Philippines, respectively. These findings comply with the findings of Shin and Lee (2019) and Jauch and Watzka (2016) and contradict the studies of Hasan et al. (2020), Frost et al. (2022), Park and Mercado (2015), and Zhou et al. (2011). Although these countries have lived through rapid integration into financial globalization, most still need to establish an inclusive financial system. Moreover, the fact that wealth tax rates are lower than income taxes impedes obtaining benefits from the financial market for the poor.

Other empirical results show that EG positively influences WI for the panel group. However, similar to the impact of FD, the impact of EG varies as well. For example, an increase of 1 unit in EG increases WI by 27.8 percent, 38.4 percent,

53.2 percent, and 71.6 percent in China, India, Indonesia, and South Africa, respectively, but reduces WI by 9 percent and 28 percent in Malaysia and Türkiye, respectively. The role of EG in inequality is debated. The decreasing effect of EG on WI can be explained by the view that EG may offer opportunities for indebted individuals to pay their debt, and through EG, individuals can save more income, which gradually promotes new wealth (Berisha & Meszaros, 2020). As Piketty (2014) emphasized, several factors, including economic, social, and political factors, influence WI. In particular, the role of political power is crucial. For instance, tax structure affects individuals' income sources, such as wealth, income, and other sources (Chesters, 2019). The different effects of EG on WI can be attributed to several reasons. Firstly, although overall economic growth is realized in the whole economy, the wealth generated by EG is not distributed equally, and the benefits of EG are concentrated at the top of the distribution. In other words, this indicates that inclusive growth is lacking in a country where EG causes an increase in WI. According to recent UNCTAD (2024) data, the inclusive growth index is 26.0, 18.9, 31.6, and 16.5 for China, India, Indonesia, and South Africa in 2021, respectively. In contrast, it is 43.8 and 37.0 for Malaysia and Türkiye, respectively. This is a significant indicator of why EG increases WI in China, India, Indonesia, and South Africa and reduces WI in Malaysia and Türkiye. In line with this, China is ranked 1st with 814 billionaires, India is ranked 3rd with 271 billionaires, and Indonesia 13th with 47 billionaires in 2024 (Dyvik, 2024). According to Chancel et al. (2022), the reduction of state control over the economy is crucial to rising inequality in China and India. Specifically, enhancing private-sector growth has caused worries about inequalities in these countries. India is one of the most unequal countries in the world, and China may face the same risk soon (Chancel et al., 2022). Secondly, another significant problem in most countries, including our panel sample, is that wealth taxes do not exist (PwC, 2024). Hence, in a country with no direct wealth taxes, governments collect most of the tax revenue from other sources of income and consumption. Therefore, this may widen inequality and dampen the benefits of EG. Thirdly, since technology transforms international trade dynamics in developing countries, it also shapes inequality. For example, exporting firms adopt technology developed by advanced

countries. This tendency creates skill-intensive technologies and reduces demand for low-skilled labor, thereby raising inequality (Qureshi, 2023).

The increasing impact of EG on WI can be explained with a striking mechanism: wealth accumulation increases in the case of EG. Because it eases increasing savings, wealth accumulation increases through savings. Suppose the income obtained by wealth is higher than that generated by labor; WI increases among rich and poor people (Chesters, 2016). In contrast, in Piketty's (2014) formula<sup>2</sup>, a country's high savings rate and a lower growth rate cause an increase in capital accumulation and WI in the long run. Considering the savings rate in the panel sample, we can say that the savings rate fluctuates. For instance, in China, the share of gross savings over GDP was 36 percent in 2000, it jumped to 52 percent in 2008, and declined to 44 percent in 2020; as of 2022, it has risen to 46 percent. In India, it was 27 percent in 1995, increased to 37 percent in 2007, and decreased to 29 percent in 2020; as of 2022, it has risen to 30 percent. In Indonesia, it was 28 percent in 1995, increased to 33 percent in 2011, and declined to 29 percent in 2020; as of 2022, it has risen to 37 percent. The lowest savings rate has occurred in South Africa. It is unstable and has higher volatility. In 1995, the savings rate was 17 percent, and it decreased to 15 percent in 2022. Malaysia has faced a significant fall in the savings rate; it was around 40 percent in 1998, declined to 32 percent in 2001, and as of 2022, it reduced to 27 percent. Türkiye has an increasing trend among the panel samples in terms of the savings rate. In 1995, the savings rate was 20 percent, reaching 30 percent in 2022. Thus, in developing countries, the structure of the savings rate plays a crucial role in inequality (World Bank, 2024).

The last findings show that increasing TO causes a rise in WI in the panel group, implying that integration into the world economy via liberalizing trade policies has yet to provide the expected situations in terms of reducing inequality. In sub-samples, it is concluded that a rise of 1 percent in TO leads to an increase in WI by 0.239 percent, 0.127 percent, 0.138 percent, 0.119 percent, 0.243

2 Piketty (2014), in his famous book *Capital in the Twenty-First Century*, formulates "the second fundamental law of capitalism" as:  $\beta = s/g$  (s: savings rate, g: growth rate). Hence, if s increases and g decreases, it causes a rise in capital accumulation.

percent, and 0.215 percent in China, India, Indonesia, Malaysia, Mexico, and the Philippines, respectively. Our findings are consistent with the study of Ezcurra and Rodríguez-Pose (2014), in which they argue that high-level TO causes a decrease in the gross domestic product in poor regions and consequently increases the inequality level. In comparison, our results contrast with Das's (2022) and Kuevibulvanich's (2016) findings. The D-H test results prove a feedback causality relationship between WI-FD, WI-EG, and WI-TO.

## 7 Conclusions and Policy Recommendations

Our paper aims to make a new contribution to the existing literature about WI. In burgeoning literature, the relationship between FD and income inequality is examined to test the validity of Greenwood and Jovanovic's (1990) hypothesis that states an inverted U-shaped association between FD and IIQ. However, WI may have a more extensive impact than IIQ (Shchepeleva et al., 2022).

To the best of our knowledge, no published research in the field of political economy, including modeling and assessment, has studied the role of FD in WI focusing on the case of emerging countries. Our study examines the impact of FD on WI by incorporating EG and TO in ten emerging countries: Brazil, China, India, Indonesia, Malaysia, Mexico, the Philippines, South Africa, Thailand, and Türkiye using panel data from 1995 to 2020. In doing so, according to the nature of the data, firstly we employed Pesaran's (2004) CD test to check for the presence of CSD between variables; secondly, Pesaran and Yamagata's (2008) delta ( $\tilde{\Delta}$ ) test is used to determine the slope homogeneity. Thirdly, the long-run impact of FD on WI is examined by using the AMG estimation technique, which is robust to the CSD and unit root process. Afterward, the D-H causality test is performed to reveal the direction of the causality relationship between variables.

The key empirical findings suggest that FD increases WI in all panel groups. However, the country-specific results differ. For instance, there is a positive relationship between FD and WI in Brazil, Mexico, China, and the Philippines.

Along with the preceding implications, this study has some limitations. Firstly, our paper focuses only on ten emerging countries due to data availability. Generalizing the relationship between FD and WI in developing countries requires analyzing a large panel sample. Secondly, this paper considers only the role of EG and TO as a control variable owing to the unavailability of data. However, different contributing factors, such as public expenditure and asset price, can deepen our understanding of the relationship between FD and WI.

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