

Financialisation and income inequality in selected OECD countries, 1980-2021

WORKING PAPER

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Introduction

Since around 1980, a growing importance of financial markets has been observed in many OECD countries. In recent decades, the share of the value added by the financial sector as the percentage of GDP increased in some countries. Moreover, during the same period, it was observed that non-financial enterprises increasingly became intertwined with financial markets. They began acquiring financial assets and started to base their decisions on shareholder interests, adhering to the so-called shareholder value model. Some scholars refer to these phenomena as the process of financialisation and, within this framework, study the consequences of the development of financial markets (e.g. Epstein 2005; Krippner 2005; Stockhammer 2012).

The aim of this paper is to research the relationship between financialisation and income inequality in OECD countries. Income inequality, as measured by the Gini coefficient or share of total income held by the top 1%, has worsened in many OECD countries in the last four decades. The average value of the GINI coefficient in OECD countries increased from around 0,44 in 1980 to 0,49 in 2021 (WID 2023). While there are numerous theories trying to explain this phenomenon (e.g. the SBTC framework or theories connected to globalisation or changes in labour institutions), the effect of financialisation is studied in this paper.

Financialisation

The process of financialisation is not unanimously defined. While definitions share common features, they approach the role of financial markets in modern society from different angles. According to Krippner (2005: 174) financialisation is „a pattern of accumulation in which profits accrue primarily through financial channels rather than through trade and commodity production”. Krippner’s approach exemplifies the division between financial markets and so called real economy and how the former is gradually becoming more significant. In turn, Stockhammer (2012: 121) defines financialisation as various phenomena connected to each other such as: “shareholder value orientation, increasing household debt, changing attitudes of individuals, increasing incomes from financial activities, increasing frequency of financial crises, and increasing international capital mobility”. Perhaps the most holistic definition comes from Epstein (2005: 3): “financialization means the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies.”. Epstein’s approach, while similar to Krippner’s, indicates that financialisation concerns not only the profits, but also rules of conduct present in the economy and how financial markets may shape other spheres of economic life.

The turn away from real economy towards financial markets was made possible by period of extensive financial deregulation (Stockhammer 2010: 3). This process started in 1970s in the United States but was later observed in other countries. Then, American banks and non-financial corporations (NFCs) were struggling with declining profits, which prompted them to invest in financial assets (Van Arnum and Naples 2013: 1160-61). While financial regulations were still rigid due to the Glass-Steagall act, banks engaged in financial activities by exploiting loopholes. The actual legal changes began in 1974, when banks were allowed to provide financial advice (Cagan 1986: 171). Systemic deregulation began a few years later. In 1978, a Supreme Court decision established that interest rate regulation was to be based on the law of the state in which the bank was headquartered. As a result, banks moved their headquarters to two deregulated states – South Dakota and Delaware – which virtually abolished statewide regulation (Sherman 2009: 5). While initial steps were taken in 1970s, the majority of financial deregulation occurred in 1980s and 1990s. In 1982-83 commercial banks were allowed to engage in retail brokerage activities and to participate in precious metal-based futures (Cagan 1986: 171). In 1994, restrictions on interstate banking and consolidations of bank subsidiaries were lifted and in 1996 bank holding companies were allowed to carry out investment activities

at 25% of their income – in practice, the Glass Steagall Act was no longer in effect (Sherman 2009: 9).

Deregulation triggered the uncontrolled development of the financial market in the 1990s and 2000s. Speculative bubbles increased the pressure for further deregulatory reforms, which, when implemented, allowed banks to engage in so-called financial innovations, that is, mechanisms to increase profits at the expense of high risk (Lucarelli 2012: 434). The market for unregulated derivatives grew rapidly and the securitization of mortgages enabled banks and investors to financialize real estate, which contributed to the speculative bubble and was the direct cause of the global crisis. The increase in access to mortgage credit led not only to an increase in real estate prices, but also to an increase in risk and uncertainty in the economy (Aalbers 2008: 160-161). In 2008, the global financial crisis began, caused by a process of financialization that had begun 30 years earlier (Becker et al. 2010: 225-226; Lucarelli 2012: 443).

While the United States is the best example of the rise of financialization and deregulation of the financial system, a similar process has been observed in many other countries. The case of the United States is significant not only because of the level of intensity of financialization and deregulation in that country, but also naturally because of the position of the US on the international stage. In the literature, the processes discussed in other countries are usually placed within the context of a broader wave of financialization that started in the United States. After World War II, the focus in most Western societies was on the real sphere of the economy in order to achieve productivity to raise living standards (Hansen 2014: 617-618). Then, around 1980s, a wave of financialization occurred in many countries. However, the concept of financialization cannot be treated universally. Although in every country it consists of an increase in the importance of finance, increased deregulation and social and political changes, Becker et al. (2010: 228-240) point out that the process does not always proceed in the same way. For example, in Brazil financialization began with the deregulation of the capital market and in Slovakia with the post-transformation privatization of state capital.

In the 1980s in the UK, the financial system was deregulated and many new financial instruments were created (Bayoumi 1993: 536; Baddeley 2008: 129). Among other things, so-called alternative mortgage products were created, which, although high risk, became widespread in the UK and the Netherlands (Aalbers 2008: 158). In Sweden, 18 financial market regulations were abolished in the 1980s (Englund 1990: 386), as a result of which the average maturity of assets also decreased (*ibid.*: 386) and the amount of lending in the mortgage market

increased significantly (Turner 1997: 194). In the late 1980s and early 1990s, Japan deregulated laws on interest rates of foreign exchange market transactions and allowed financial institutions to operate outside their regulatory framework if they did so through subsidiaries (Honda 2003: 136). This was followed in 1996 by a complete reform of Japan's financial system known as the Financial Big Bang - Tokyo was losing relevance in the global financial market and a series of deregulations were introduced to enable Japanese banks to compete in the derivatives market (Honda 2003: 137-38).

Financial deregulation laid the groundwork for the development of financial markets. The share of value added by the financial sector to the value added by all sectors began growing in many OECD countries. This rapid transformation of economy incentivized economists to study the development of financial markets in developed countries and, more specifically, how financial markets may shape other spheres of socio-economic life. Some scientists research these phenomena within the concept of financialisation. While there is debate whether the term should be understood more universally or contextually¹, in this paper the most common approach is taken. As Sawyer argued, while theoretically financialization does not refer to a specific place or time, it most often refers to phenomena that began to occur in Western economies around 1980.

While studies on financialisation may concern vastly different phenomena (such as financial innovations, financialisation of home, investment strategies, activities of institutional investors), issues studied within the field usually fall into one of two categories: the rise of financial markets in and of themselves and the activity of non-financial corporations. Such a dichotomy is used by Krippner (2005: 184), who stated that both angles are necessary to fully study the process. Thus, in the first approach, the general development of financial markets is studied. This can be associated with the growth of banks, institutional investors, and other financial institutions (Krippner 2005: 182) or the increasing prominence of Anglo-Saxon model at the expense of bank-based model (Epstein 2002: 3). The first approach also involves examining financialisation as a process that supports the role of the rentier class – those who derive profits from activities in financial markets. Goldstein argued (2009: 1) that the rising influence of this class shapes the power relations in society and is a key component of financialisation. The second approach emphasizes a shift in managerial strategies. In the second

¹ For example, Vercelli argues there are three main approaches to understand financialisation (2013: 21): „a „unique” historical episode, or as a recurring phenomenon, or as a stage of long-run process. In the context of the last approach, Vercelli (2013: 23) interprets financialization from an evolutionary perspective, viewing it as the next step in the development of civilization, aimed at increasing the liquidity of asset trading.

half of the 20th century, significant changes occurred in the typical power structures of NFCs. According to Stockhammer (2004: 722), the management model shifted from so-called managerial capitalism, which was oriented towards long-term business growth, to maximizing shareholder value (shareholder value model – SVM). Applying the SVM may come at the expense of strategic goals, such as investing in physical capital or innovation (Huber et al. 2020: 4).

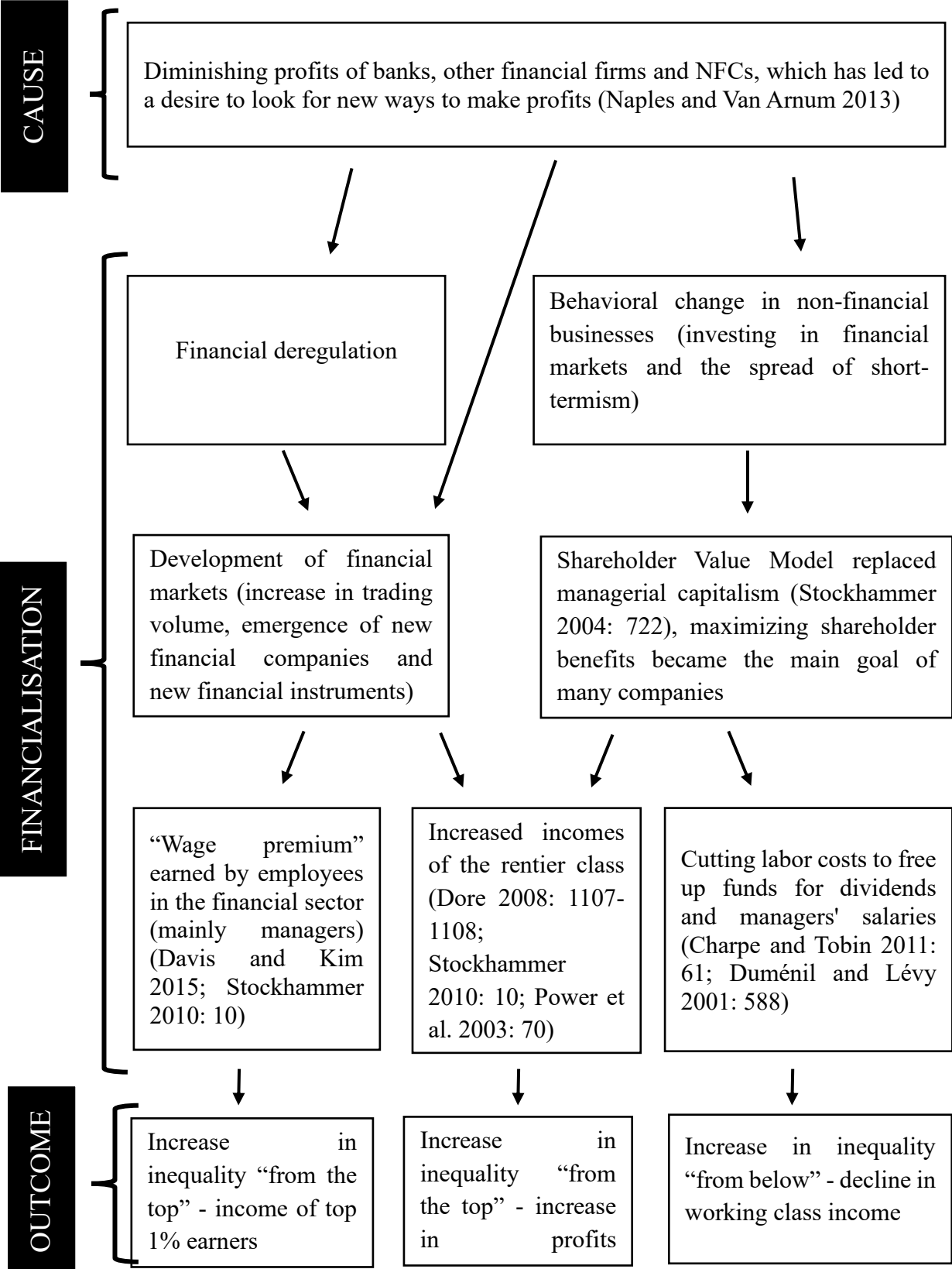
While researching the process of financialisation may be deemed important itself, the process is often studied in conjunction with its effect on other spheres of social life, such as financialisation of home (Bundey 2015; De Vita and Luo 2021), financialisation of healthcare (Hunter and Murray 2019), or financialisation of education (Eaton et al. 2016). Rules of conduct that are typical of financial markets (e.g. Short-termism or maximizing profits) are being *transferred* to other spheres of social life, which may pose danger to realization of basic human needs. The effect financialisation may have on income distribution is another possible consequence of the process.

Financialisation and income inequality – brief literature review

While income inequality may be caused by various factors, this paper focuses on the role of financialisation. Efforts made within the field can be divided into two periods. Since the 2000s to early 2010s, some researchers have begun to theoretically explore the potential channels through which the development of financial markets could contribute to worsening income inequality (e.g. Dore 2008; Kus 2012; Zalewski and Whalen 2010). Then, starting with a seminal paper by Assa (2012), social scientists started to provide empirical evidence to previously suggested theories. Conducting a brief literature review allowed for the identification of four main channels through which the process of financialization led to increased income inequality in developed economies.

The first channel involves the rising incomes of financial sector employees, a trend ongoing since the 1980s (Davis and Kim 2015). This “wage premium” is said to be mainly caused by

Figure 1: The impact of financialisation on income inequality - stylized facts



Source: own elaboration based on provided sources.

bonuses received by managers in financial corporations (Stockhammer 2010), which, according to Zalewski and Whalen (2010: 767), are more reflective of corporate culture than managerial productivity. Wage premium may have also caused a “brain drain” from the real economy (Dore 2008: 1109). As Dore argued: „chemical engineers can make more money as stock analysts specializing in the chemical industry than they ever could designing new chemical products; clever doctors can earn more with health insurance companies”. As a result, the number of specialists interested in working in the real sphere is shrinking.

The second channel concerns the increased income of shareholders (Dore 2008: 1107-1108; Stockhammer 2010: 10). According to Power et al. (2003: 70), financial assets holders gained when compared to other member of society. Speculative trading exacerbated income inequality, as only those who already had savings were able to participate in investing (Kus 2012: 485).

The third channel concerns non-financial enterprises. Some companies started directing their investments towards financial assets at the cost of expanding production capabilities. Generating income from financial markets incentivized such companies to reduce employment (Lin and Tomaskovic-Devey 2013: 1292-1294), which had a negative effect on the incomes of the middle and working class (Kus 2012: 485; Naples and Van Arnum 2013: 1166). At the same time, managers prioritized maximising shareholder value by reducing labour costs (Charpe and Torbin 2011: 61; Duménil and Lévy 2001: 588). These cost reductions were also driven by focusing on the short-term perspective – incomes of managers were often tied to the short-term performance, which incentivized wage reductions (Crotty 2005).

A fourth channel involves a shift in the balance of power in the economy from labour to capital (Stockhammer 2010). Institutional investors had the power to lobby for legal changes in their favor, such as lowering taxes on capital gains or weakening collective bargaining (Zalewski and Whalen 2010: 766-767). The power of workers diminished relative to capital owners and that of regular workers when compared to managers (Tomaskovic-Devey and Lin 2013: 1291). Institutional change was also driven by a shift in monetary and fiscal policy. According to Crotty (2005: 82), cutting labour costs and reducing the role of unions was driven by a desire to reduce government spending, which in turn enabled tax brakes for corporations and wealthiest household without increasing the budget deficit. Additionally, the focus on reducing inflation rate (at the expense of striving to reach full employment), coupled with reduced social spending, was beneficial for agents in financial markets but led to an increase in income inequality (Epstein 2002: 3, 16; Kus 2012: 485-486).

Figure 1 depicts a simplified visualisation of the impact of financialisation on income inequality. Showcased cause and effect relationships (as well as channels described before) are supposed to be treated as stylized facts. Processes observed in financial markets are associated not only with income inequality but also with each other. For example, a change in the balance of power (like a diminish collective bargaining) can be seen as both a cause and effect of changes in the behaviour of of NFCs.

The theoretical findings described above became a foundation for empirical research. In 2010s, many papers examined the relationship between financialisation and income inequality using quantitative methods. Some economists provided evidence that financialisation is associated with an increase in income inequality, as measured by the Gini coefficient (Assa 2012; Kus 2012; Naples and Van Arnum 2013; Hyde et al. 2018; Tridico and Pariboni 2018) or other measures such as share of total income earned by the top 1% or 10% or wage share (Flaherty 2015; Alvarez 2015; Stockhammer 2015; Tanndal and Waldenström 2018; Godechot 2020; Huber et al. 2020). All reviewed papers provided evidence that financialisation contributes to the exacerbation of income inequality. Most studies involve panel date analysis with selected OECD countries. Assa argues (2012) that between 1970 and 2008 in most OECD countries financialisation has led to an increase in income inequality, economic slowdown and increasing unemployment. According to Kus (2012), financialisation measured by the stock market capitalization as a share of country's GDP had a significant effect on income inequality measured by the GINI coefficient in 20 countries OECD countries between 1995 and 2007. Flaherty provided evidence (2015) that financialisation caused an increase in the share of the 1% in total income in 14 OECD countries between 1990-2010. Stockhammer (2015) pointed to the effect of financial globalisation on the diminishing wage share in both developed and developing countries between 1970-2007. Hyde et al. (2018) researched multiple independent variables representing financialisation (e.g. share of employment in the financial sector) and argued that all of the had a significant effect on GINI coefficient in 18 developed countries between 1981 and 2011. Similar conclusions were made by Tridico and Pariboni (2018); Godechot (2020) and Huber et al. (2020).

Other studies involved single countries. Naples and Van Arnum argued (2013) that financialisation had been a leading cause of increasing income inequality in the United States between 1967 and 2010. Lin and Tomaskovic-Devey provided evidence (2013) that in the United States, in the long term, financialisation led to a decrease in wage share of labour in national income and an increase in the share of income earned by top managers. While most

empirical studies employ independent variables representing only one of the two aforementioned approaches to the process (that is, the development of financial markets themselves and not the activity by NFCs), study by Alvarez (2015) is an exception. Alvarez argued that changes in financial gains or losses affected the ratio of wages to total assets in non-financial enterprises (a microeconomic interpretation of the wage share) in France. Another innovative study came from Tanndal and Waldenstrom (2018), who provided evidence that deregulatory *big bangs* (short periods of financial deregulations – 1986 in the United Kingdom and 1997-1999 in Japan) led to an increase in the share of income earned by top 10%, 1% and 0.1%.

Methodology

The hypothesis verified in the study is as follows: the process of financialisation contributes to an increase in pre-tax income inequality in OECD countries. To verify this hypothesis, an econometric model with panel data was used. It was originally decided to examine the period 1980-2021. Its beginning matches the rise of financialisation, while the end was set at 2021 to examine the latest available data. The study used two independent variables, representing the development of the financial sector relative to other sectors of the economy. The share of the value added of the financial and insurance sectors and the financial, insurance and real estate sectors in the value added of all sectors of the economy was chosen. The variables reflect the nature of the financialization process described in the previous section, i.e. the importance of the financial sector relative to the rest of the economy.

Although the use of data on the financial and insurance sectors does not require further explanation, examining the impact of these two sectors and the real estate sector in a single variable may raise concerns. Why is the real estate sector included in studies of the financialization process? This decision stems from the history of quantitative studies of the financialization process. In some publications the share of the financial sector, insurance and real estate (so called FIRE sector) has been used as a representation of financial sector development (e.g. Naples and Van Arnum 2013 or Flaherty 2015). However, Godechot noted (2020) that, although FIRE sector variables are used in the literature, they take into account the activity of an economic branch with little connection to financial markets. Nevertheless, it was decided to use the FIRE sector's contribution to the research as well, in order to continue the body of literature on the subject and gain the opportunity to compare results using the FIRE variable with past publications.

Although it was originally decided to examine the 1980-2021, no available data on the financialisation process covered this period in its entirety. Therefore, to study both the main wave of financialisation between 1980 and 2007 and the period of the last twenty years, it was decided to study them separately using the same independent variables concerning financialisation but obtained from different sources for each period studied. Thus, for the 1980-2007 period, data on the independent variables were extracted from the EU KLEMS (2023) database. Due to the availability of data in the EU KLEMS database, the broadest sample in terms of number of countries for the period 1980-2007 includes 11 OECD member states (Austria, Belgium, Finland, France, Germany, Italy, Japan, Netherlands, Spain, UK, USA).

To examine recent decades (1997-2021), data for the independent variables were obtained from the OECD database (2023). The widest possible sample in terms of number of countries based on OECD data contains 34 countries. The division of the study into two separate periods was necessitated by the lack of compatibility between the values of the independent variables in the databases provided. In addition to examining the sample including the largest possible number of countries, it was decided to examine two other samples over the period of 1997-2021. A sample of 30 OECD member countries was therefore also examined, as four countries (Chile, Costa Rica, Luxembourg, and Mexico) included in the previous sample were characterised by extreme values of dependent variables representing inequality or independent variables representing financial sector's development. Mexico, for example, was characterized by extremely high income inequality with a relatively small role of financial sector in the economy. Within the 1997-2021 period, a sample containing 11 countries from the 1980-2007 period was also examined. Additionally, since the process of financialisation is associated with the biggest economies, samples featuring five countries each (France, Germany, Japan, United Kingdom, United States) were studied for both periods. Although the lack of compatibility between data from the EU KLEMS and OECD databases makes it impossible to examine the 1980-2021 period within the same calculation, examining the same countries in each of the periods examined allows a form of continuity in the research to be maintained. Thus, in the end, the following samples were examined in the model:

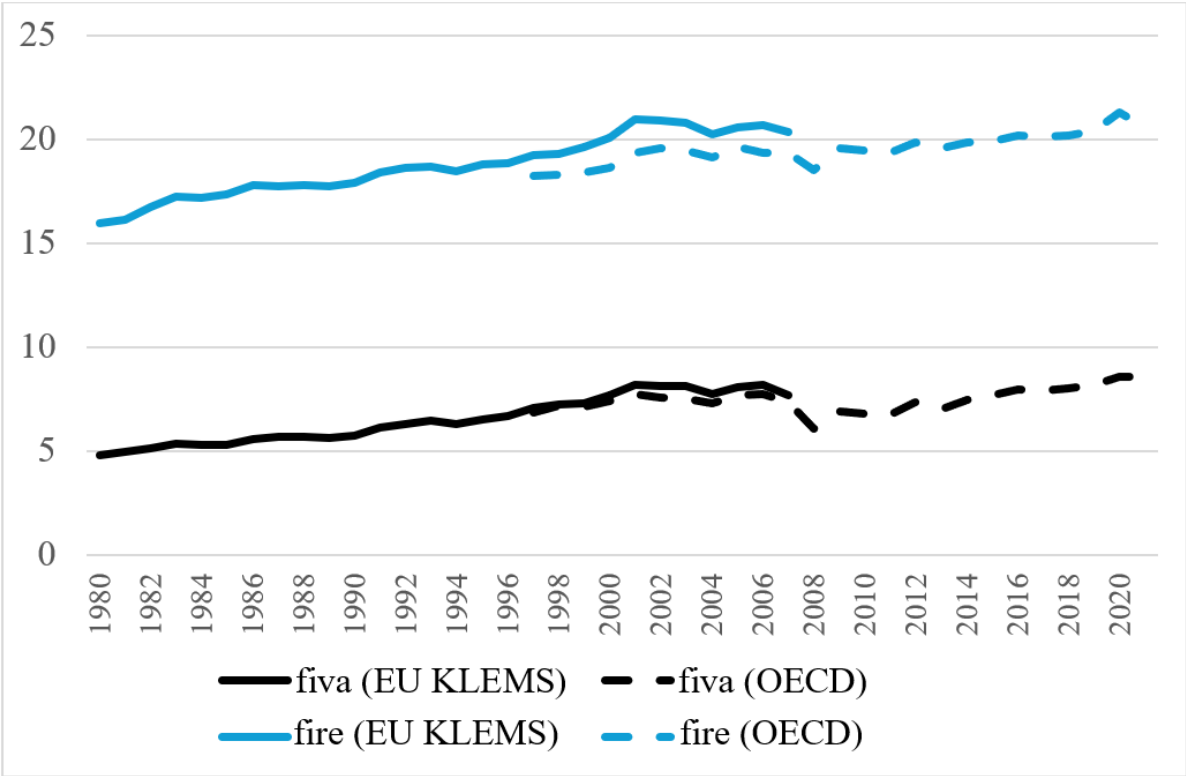
- sample 1: 11 countries, 1980-2007;
- sample 2: 5 countries, 1980-2007;
- sample 3: 34 countries, 1997-2021;
- sample 4: 30 countries, 1997-2021;
- sample 5: 11 countries, 1997-2021;
- sample 6: 5 countries, 1997-2021.

Samples 1, 2, 5 and 6 are particularly relevant, since, as mentioned earlier, the financialization process is most often identified with the largest economies. However, examining samples 3 and 4 can also be considered valuable in order to verify whether the impact of the financialization process on income inequality is a phenomenon that occurs in OECD member countries in general. There are many possible variables representing income inequality. It was decided to use the Gini coefficient of income inequality before taxes and the share of the top 1% earners in total income. The Gini coefficient is a commonly used indicator of inequality that captures the distribution of income across the country. Investigating the share of the top 1% of earners stems from suspicions that the process of financialization primarily leads to an increase in the income received by managers and other high-level employees. Data for these two variables were obtained from the World Inequality Database (2022). Pre-tax income inequality was examined in the model, since differences in the tax systems of different countries could distort the result of the impact of the financialization process on earned income.

Therefore, two dependent variables representing income inequality are used in the model, i.e. the Gini coefficient of income inequality (*gini_ineq*) and the share of the top 1% earners in total income (*one_ineq*). The study used two independent variables representing the development of the financial sector relative to other sectors of the economy. The share of the value added by the financial and insurance sector (*fiva*) and the financial, insurance and real estate sector (*fire*) in the value added of all sectors of the economy. Control variables were also used in the model. For the first studied period (samples 1 and 2), these included: the value added of the IT sector (*it*) as a share of the value added of all sectors of the economy (this variable is intended to represent technological development and the associated higher wages of skilled workers), GDP per capita (*gdppc*) reflecting business cycles, and the importance of international trade (the sum of the value of exports and imports as a share of a country's GDP - *trade*), a variable intended to reflect the globalisation of world trade. For the second studied period (samples 3-6), control variables included GDP per capita and international trade, as well as the level of unemployment in a given country (*unem*). Independent variables representing the share of the financial sector and the FIRE sector are positively correlated with variables

representing income inequality in nearly all cases. For example, in sample number 4, the Pearson correlation coefficient between the variables *Infiva* and *Ingini_ineq* is 0.57.

Figure 2: Values of fiva and fireva variables from EU KLEMS and OECD databases; US [%].



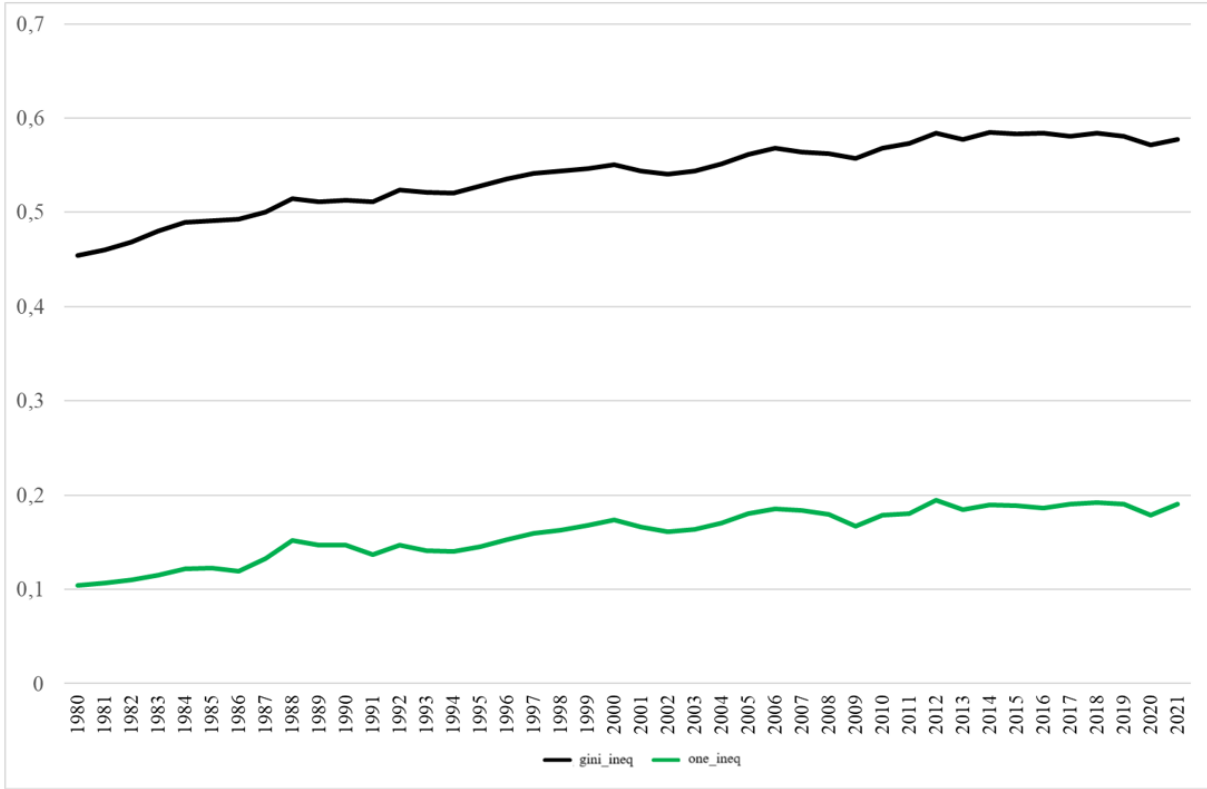
Source: EU KLEMS (2023) and OECD (2023).

It is now worth illustrating the values of the dependent and independent variables in selected countries included in the study. Since the United States is a model example of a country where the financialization process has occurred, the values of the variables for this country are presented first. Figure 2 shows the values of the fiva and fireva variables in the United States from the EU KLEMS and OECD databases. The share of the country's financial sector, according to EU KLEMS data, increased from 4.81% in 1980 to 7.70% in 2007. It is noteworthy that in 2006 the share of the US financial sector was equal to 8.17%. According to OECD data, in the year of the outbreak of the global financial crisis, the share of the US financial sector was equal to 7.33%. According to the institution's data, the values of the fiva variable increased from 6.86% in 1997 to 8.55% in 2021. Putting aside the incompatibility between the two sets of data, it can be observed that the share of the financial sector in the US economy almost doubled between 1980 and 2021. This observation is consistent with the growing role of financial

markets worldwide. The much larger values of the independent variable fire than the value of the variable fiva (regardless of the database) show why using the FIRE sector as a representation of the financialization process may not be an appropriate step in models examining the impact of financialization on inequality. For example, in 2000, according to EU KLEMS data, the FIRE sector's share as measured by the fire variable was 20.07%, while the financial sector's share that year was only 7.66%.

Although the values of the variables from each database are not compatible, they are highly correlated with each other. Values of variables in each of the databases are available for 1997-2007. In this period, the correlation coefficient of the fiva variable from the EU KLEMS and OECD databases is 0.9515 and 0.9406 for the variable fire. Although the share of the FIRE sector in the US economy is about three times that of the financial sector, the values of the correlation coefficient between the fiva and fire variables are also high - in the case of the data from EU KLEMS it is as high as 0.9812, and in the case of the OECD data it is 0.8299. Thus, although the share of the FIRE sector takes into account economic sectors unrelated to financial markets, the high correlation of the values of the fiva variable with those of the fire variable can be considered an argument in using the FIRE sector in the representation of the financialization process in the absence of data on the financial sector itself.

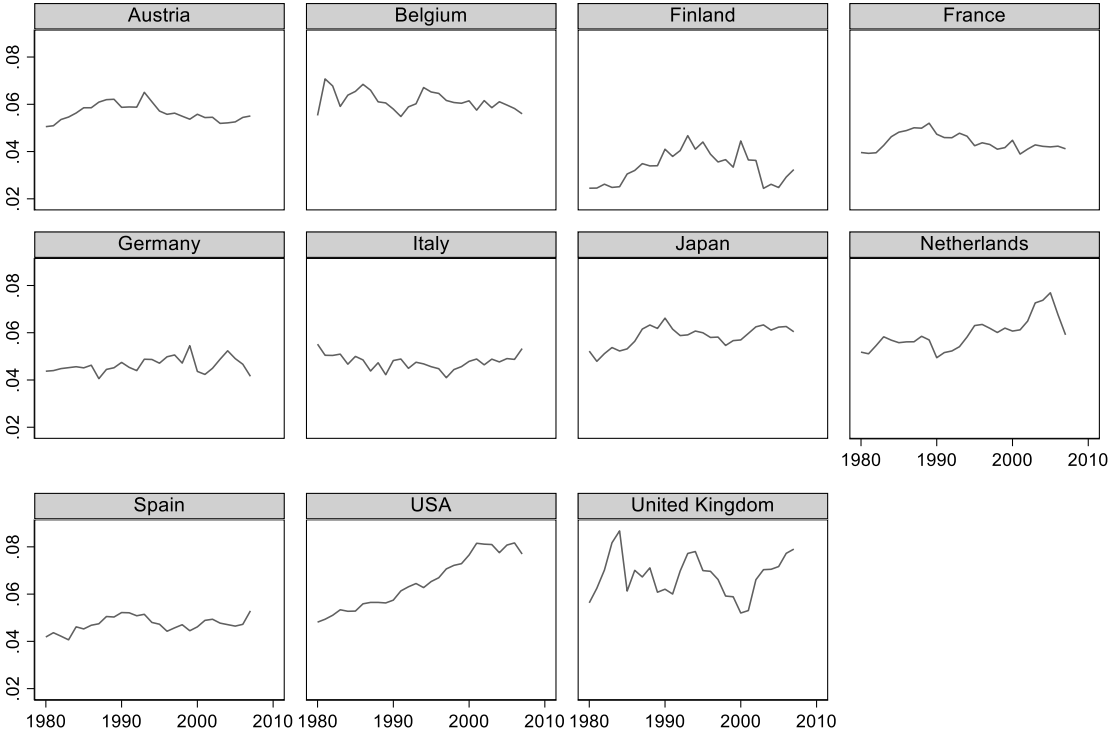
Figure 3: Variables gini_ineq and one_ineq; USA 1980-2021



Source: World Inequality Database (2023).

Figure 3 shows income inequality in the United States using the variables gini and one. It is clear from the data that pre-tax income inequality, as measured by the Gini coefficient, has increased in the country over the period studied. The value of the Gini coefficient in the U.S. increased from 0.454 in 1980 to 0.577 in 2021. In turn, the share of the top 1% of earners nearly doubled over the period under study - from 10.43% in 1980 to 19.03% in 2021. The variable one_ineq obviously captures the share of total income of a very narrow social group and at the same time does not represent changes in income distribution in society as a whole. However, the disproportionately high share of this social group in total income combined with the increase in the value of variable over time makes it worthwhile to use in the model.

Figure 4: Variable fiva in sample 1; 1980-2007, 11 OECD member countries



Source: EU KLEMS (2023).

While the United States is an example of a country where the process of financialization and the increase in income inequality are clearly visible in the statistics, it is also important to look at the values of the fiva, fire, gini_ineq and one_ineq variables in other countries. Figure 4 shows the values of the fiva variable in sample 1, which includes 11 OECD member countries. The values of the fiva variable varied from country to country. A case similar to the US is Japan, where the value of the fiva variable increased steadily over the period shown. In France, the share of the financial sector in the economy increased significantly in the 1980s (from 3.96% in 1980 to 5.01% in 1989), then began to decline, and in the last showcased years stabilized at around 4.2%. The value of the fiva variable in nine of the eleven countries was higher in 2007 compared to the beginning of the period under study. However, such a description of the development of the share of the financial sector in the countries in this sample would be misleading - in some countries (Austria, Belgium or Finland) the share of the financial sector actually increased at the beginning of the period, but later fell or remained at the same level. The share of the financial sector in 2007 in these three countries was only slightly higher than at the beginning of the period - in Belgium, for example, the value of the fiva variable increased from 5.53% in 1980 to 5.60% in 2007.

Figure 5: variable fiva in sample 5; 1997-2021, 11 OECD member countries



Source: OECD (2023).

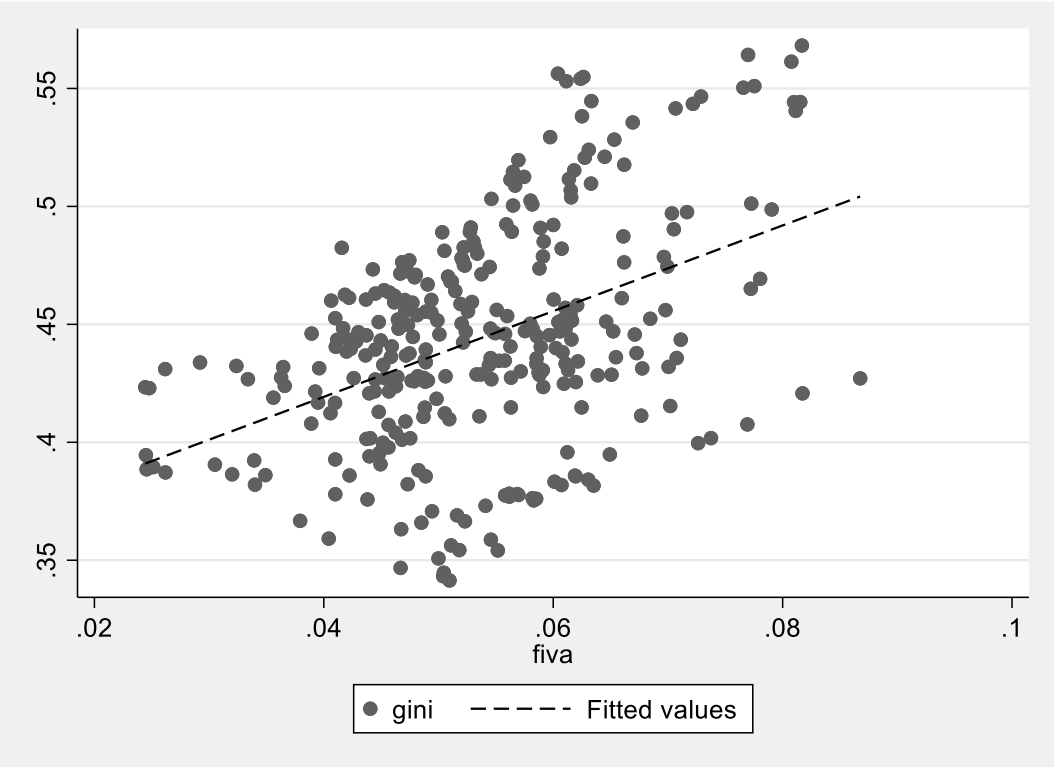
Figure 5 shows the values of the fiva variable from the OECD database in sample 5. As described earlier, sample 1 and 5 include the same set of countries. After the global financial crisis of 2007-2008, the share of the financial sector fell or remained at similar levels in most of the countries shown. Belgium is an exception - after a temporary slump caused by the crisis, the value of the fiva variable increased significantly and in recent years has remained higher than before 2007. Another such case is the United States, where the share of the financial sector exceeded 8% in 2018 and reached as high as 8.55% in 2021. In 2006, before the crisis, the value of the variable reached only 7.76%. Still, the years leading up to the global financial crisis turned out to be the peak period of the financial sector's share of the economy for most of the countries in 5th sample.

Table 1: Values of dependent variables in each country; samples 1 and 5

Country	<i>gini_ineq</i>				<i>one_ineq</i> (%)			
	1980	1997	2007	2021	1980	1997	2007	2021
Austria	0,412	0,447	0,456	0,441	11,2	11,5	11,49	10,74
Belgium	0,435	0,448	0,454	0,448	8,66	8,32	9,52	8,56
Finland	0,395	0,420	0,432	0,452	6,38	10,58	11,55	11,81
France	0,431	0,449	0,450	0,416	8,4	10,09	11,77	8,95
Germany	0,401	0,429	0,484	0,492	9,84	10,27	13,61	13,32
Italy	0,354	0,490	0,496	0,512	5,15	9,17	9,62	12,17
Japan	0,475	0,501	0,556	0,536	10,67	10,48	13,74	12,86
Netherlands	0,354	0,385	0,423	0,411	5,89	6,08	7,87	6,88
Spain	0,463	0,461	0,458	0,441	11,35	10,97	11,33	11,44
UK	0,415	0,482	0,500	0,467	7,18	12,08	14,69	12,74
USA	0,453	0,542	0,564	0,577	10,43	15,98	18,37	19,03
Average	0,417	0,459	0,480	0,472	8,65	10,5	12,14	11,68

Table 1 shows the values of the dependent variables, representing the income inequality of each country, in the four years corresponding to the beginning and end of the periods studied in samples 1 and 5 (and samples 2 and 6 as well), i.e. 1980, 1997, 2007 and 2021. Income inequality, as measured by the Gini coefficient, increased in every country except Spain in the periods 1980-1997 and 1997-2007. In contrast, income inequality, as measured by this coefficient, decreased slightly in many countries between 2007 and 2021. This trend is illustrated by the average value of the gini variable, which rose from 0.417 to 0.480 between 1980 and 2007, before falling to 0.472 in 2021. Very similar conclusions can be reached for the one_ineq variable. It is noteworthy how the case of the United States stands apart from the other countries in samples 1 and 5. While a growing trend of income inequality can be observed in most countries, in the US the share of the 1% in total income reached almost 16% as early as 1997 - several percentage points higher than in any of the countries presented in 2021.

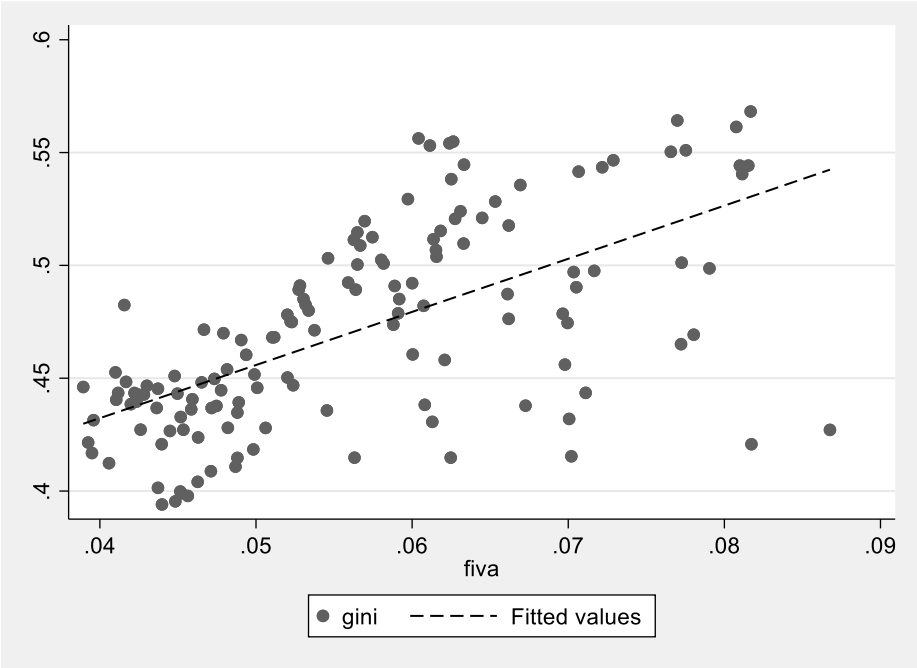
Figure 6: Scatterplot and trend line of fiva and gini_ineq variables; sample 1.



Source: EU KLEMS (2023), World Inequality Database (2023).

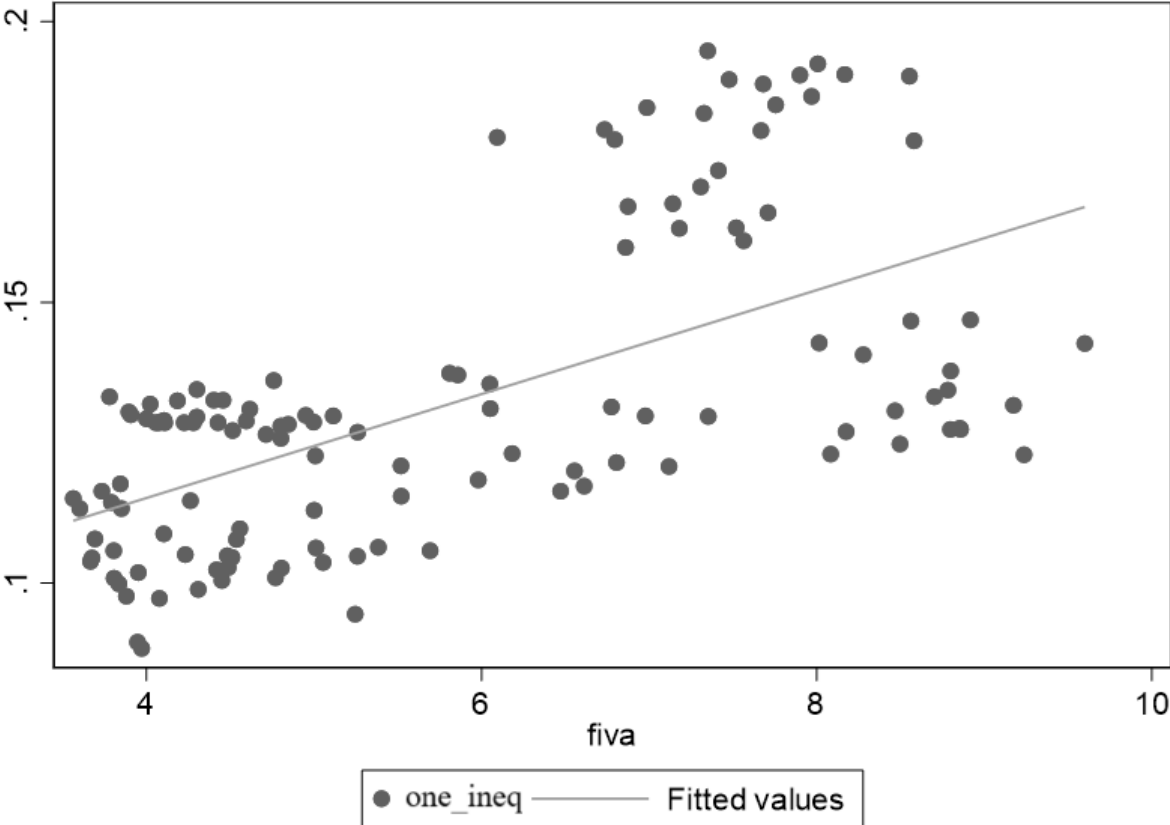
Figures 6-10 show scatterplots and trend lines of independent and dependent variables in selected samples. Figure 6 shows the scatterplot of the variable fiva and gini in sample 1. The trend line is upward, but some datapoints deviate significantly from the rest of the data. The variables lnfiva and lngini have a moderate value of Pearson's correlation coefficient: 0.4123. Sample 5 contains 11 of the same countries as in sample 1. The relationship between the share of the financial sector and income inequality as measured by the Gini coefficient in this sample is still positive, but the value of the correlation coefficient of the natural logarithms of these variables is equal to only 0.2494. The relatively low correlation of these two variables in samples 1 and 5 is one of the reasons for examining samples 2 and 6 containing five large economies.

Figure 7: Scatterplot and trend line of variables fiva and gini_ineq, sample 2



Source: EU KLEMS (2023); World Inequality Database (2023).

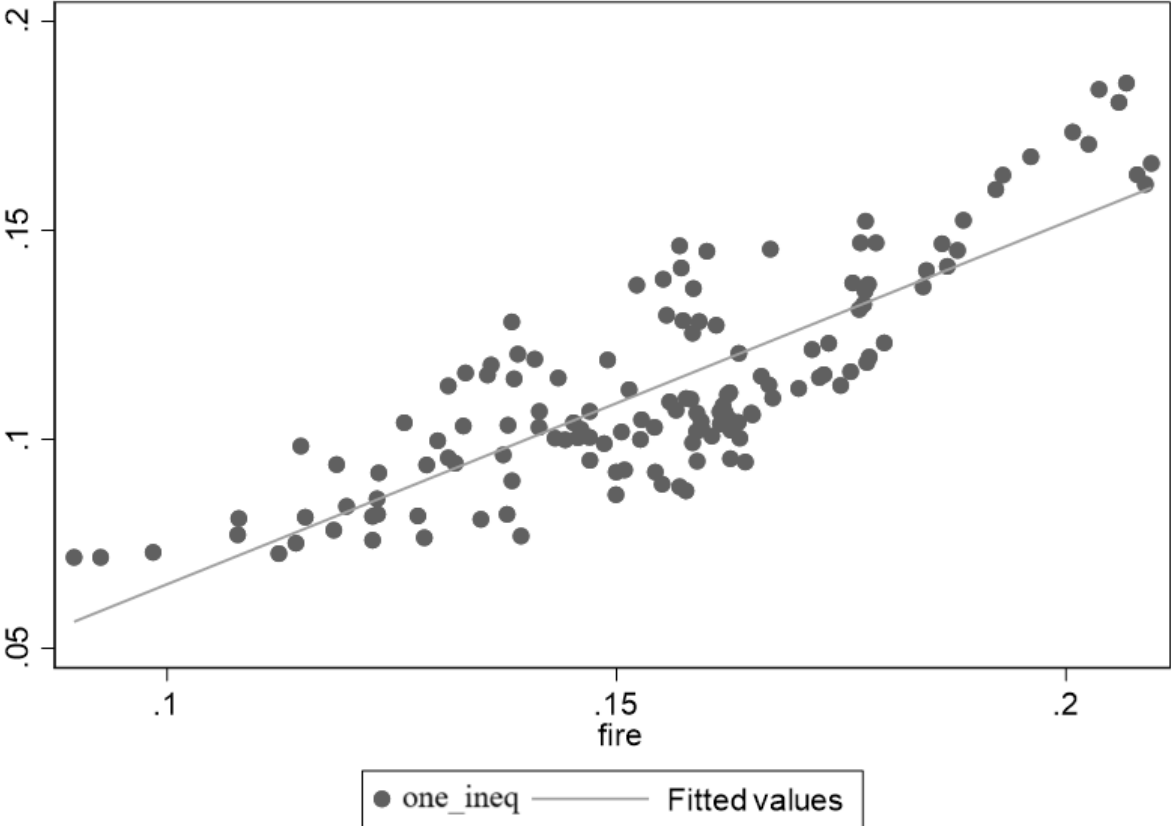
Figure 8: Scatterplot and trendline of variables fiva and one_ineq, sample 6



Source: OECD (2023); World Inequality Database (2023).

Figure 7 shows the scatterplot of variables fiva and gini in sample 2, and Figure 8 shows the scatterplot of variables fiva and one_ineq in sample 6. In each of these cases, a relatively large slope of the trend line was observed. The value of the correlation coefficient of the lnfiva and lngini_ineq variables in sample 2 is 0.6388 and that of the lnfiva and lnone_ineq variables in sample 6 is equal to 0.6326. Overall, in samples 1, 2, 5 and 6, the lnfiva variable is always positively correlated with variables representing income inequality, but the values of the correlation coefficient of these variables showcase, depending on the sample, a moderate or strong correlation.

Figure 9: scatterplot and trend line of variables fire and one_ineq, sample 2

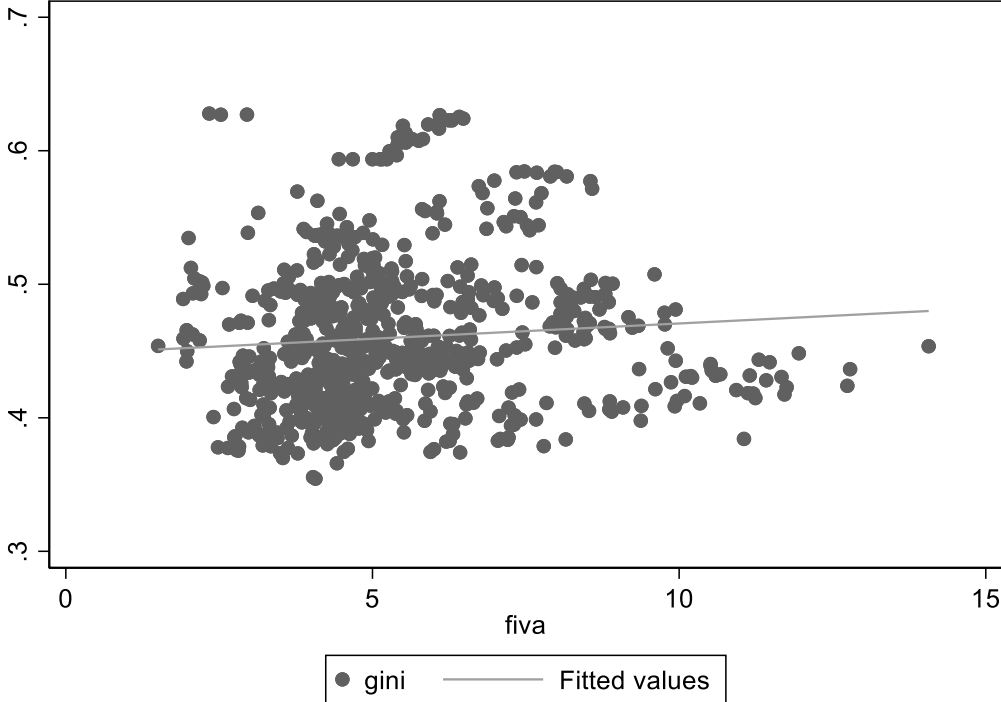


Source: EU KLEMS (2023); World Inequality Database (2023).

Stronger correlation is observed for the variable lnfire with variables lngini_ineq and lnone_ineq. For example, the value of the correlation coefficient of the lnfire variable and lnone_ineq in sample 2 is as high as 0.8198. So, in this case, a very strong correlation is observed, which is particularly evident in the scatterplot of the unlogarithmized values of these variables in figure 9. The graph shows both the large slope of the trend line and the relatively small deviation of individual observations from the trend line. This support the argument that

it can be misleading to use data of the FIRE sector's share to draw conclusions about financialization.

Figure 10: scatterplot and trend line of variables fiva and gini_ineq, sample 4



Source: OECD (2023); World Inequality Database (2023).

The independent and dependent variables, as expected, are much more weakly correlated in samples 3 and 4. Figure 10 shows the scatterplot of fiva and gini_ineq variables in sample 4. Although the trend line is upward, the positive correlation of this pair of variables is relatively invisible. As it has mentioned previously, sample 4 was created by discarding from sample 3 four countries characterized by extreme values of dependent or independent variables. Thus, the variables lnfiva and lngini_ineq in sample 3 are the only pair among the variables examined in the model characterized by a negative value of the correlation coefficient (-0.0159). In summary, the following conclusions and observations can be drawn from the analysis of the Pearson correlation coefficient values and the scatterplots of studied variables:

- Independent variables representing the share of the financial sector and the FIRE sector are almost in every case positively correlated with variables representing income inequality - the exceptions being the variables lnfiva and lngini_ineq in sample 3.

- The share of the FIRE sector tends to be more strongly correlated with variables representing inequality than the share of the financial sector itself.
- In almost all studied samples, the value of GDP per capita is positively correlated with income inequality. The exceptions are samples 3 and 4, which can probably be explained the fact that these samples feature relatively poorer countries characterized by relatively high income inequality (e.g. Chile, Estonia, Costa Rica and Latvia).
- The values of the share of international trade as a share of GDP are negatively correlated with the variables $\ln\text{gini_ineq}$ and $\ln\text{one_ineq}$ in each sample.

It was originally decided to use a fixed-effects model in the study, because in a multi-country panel study it can be assumed that there are fixed and unobservable differences between countries that can affect the values of the dependent variables. Therefore, it was originally intended to study the underlying relationship defined by the following equations:

1. $\ln\text{gini_ineq}_{i,t} = \alpha_0 + \alpha_1 \ln\text{fiva}_{i,t} + \beta \mathbf{X}_{i,t} + \mu_i + e_{i,t}$
2. $\ln\text{gini_ineq}_{i,t} = \alpha_0 + \alpha_1 \ln\text{fireva}_{i,t} + \beta \mathbf{X}_{i,t} + \mu_i + e_{i,t}$
3. $\ln\text{one_ineq}_{i,t} = \alpha_0 + \alpha_1 \ln\text{fiva}_{i,t} + \beta \mathbf{X}_{i,t} + \mu_i + e_{i,t}$
4. $\ln\text{one_ineq}_{i,t} = \alpha_0 + \alpha_1 \ln\text{fireva}_{i,t} + \beta \mathbf{X}_{i,t} + \mu_i + e_{i,t}$

Where:

- i – country;
- t – year;
- α_0 – constant
- α_1 – parameter estimates of independent variable;
- $\mathbf{X}_{i,t}$ – vector of control variables;
- β – vector of parameter estimates of control variables;
- μ – fixed effects;
- $e_{i,t}$ – value of the random component

The number of equations corresponds to four pairs of dependent and independent variables. Natural logarithms of variables are used, so that the model is resistant to the potential occurrence of heteroskedasticity. As described earlier, the model tests six samples, which are characterized by the following structure:

- Sample 1: T = 28, N = 11;
- Sample 2: T = 28, N = 5;
- Sample 3: T = 25, N = 34;
- Sample 4: T = 25, N = 30;
- Sample 5: T = 25, N = 11;
- Sample 6: T = 25, N = 5

However, this estimation method proved to be inadequate due to the non-stationarity of variables. Stationarity tests by Levin, Lin, and Chu (2002) and Im, Pesaran and Shin (2003) were performed, which established that most of the variables in each sample are non-stationary. In samples 1, 2, 5 and 6, the Levin, Lin and Chu (2002) stationarity test was used. This test is used in panel studies, in which a certain number of panels are studied over a long period. In the case of samples 3 and 4, the number of OECD member countries exceeds the number of years studied, therefore the more appropriate test by Im, Pesaran and Shin (2003) was used. In each sample, for at least one variable in levels, the stationarity tests did not allow to reject the null hypothesis assuming non-stationarity of the variable at the 1% significance level. Therefore, according to common econometric practice, each variable was transformed into its first difference. Such a transformation causes fixed effects to be lost and therefore a linear regression model was used to perform the initial estimations. The null hypothesis indicating non-stationarity of the variable was successfully rejected for first differences of each variable in each sample. The model uses natural logarithms of the variables and robust standard errors, the use of which is adequate for variables potentially characterised by heteroskedasticity and autocorrelation. The equations describing the relationship examined in the baseline estimation took the following form:

1. $\Delta \ln gini_ineq_{i,t} = \gamma_0 + \gamma_1 \Delta \ln fiva_{i,t} + \delta \Delta X_{i,t} + \Delta e_{i,t}$
2. $\Delta \ln gini_ineq_{i,t} = \gamma_0 + \gamma_1 \Delta \ln fireva_{i,t} + \delta \Delta X_{i,t} + \Delta e_{i,t}$
3. $\Delta \ln none_ineq_{i,t} = \gamma_0 + \gamma_1 \Delta \ln fiva_{i,t} + \delta \Delta X_{i,t} + \Delta e_{i,t}$
4. $\Delta \ln none_ineq_{i,t} = \gamma_0 + \gamma_1 \Delta \ln fiva_{i,t} + \delta \Delta X_{i,t} + \Delta e_{i,t}$

Where:

- i – country;
- t – year;
- γ_0 – constant
- γ_1 – parameter estimates of independent variable
- $X_{i,t}$ – vector of control variables;
- δ – vector of parameter estimates of control variables;
- $e_{i,t}$ – value of the random component

In addition to the above estimation, a more sophisticated estimation method with lagged dependent variables will be performed in the full version of the paper. To account for endogeneity, a dynamic panel data model (the Arellano Bond estimator) will be used.

Preliminary results and conclusions

Tables 2-5 show the values of the estimators of each independent and control variables in the linear regression model with each dependent variable. The first observation obtained from the presented results is associated with low values of the R^2 coefficient. However, this does not provide grounds for rejecting results, since the low values of this coefficient come from the use of first differences of individual variables. Using variables transformed in this way eliminates the role of overall trends in the variability of the analysed data, which lowers the values of the R^2 coefficient.

When it comes to examining the relationship between the share of the financial and insurance sector and the Gini coefficient of income inequality, the model shows a statistically significant role of the $d.\ln f_{i,t}$ variable in samples 1, 2, 5 and 6, i.e. four samples including 11 and five OECD member countries, respectively, in each of the periods studied. Thus, the model shows that in these countries the share of the financial and insurance sectors relative to the rest of the economy is associated with a more unequal distribution of income as measured by the Gini coefficient. For example, a 1% increase in financialization leads to a 0.0261% increase in the Gini coefficient in 11 high-income OECD countries from 1980 to 2007), suggesting a positive relationship between financialization and inequality in this sample. Analogous conclusions can be reached for sample 5 (the same 11 OECD countries from 1997 to 2021) - the effect of the $d.\ln f_{i,t}$ variable is 0.0466%. Similar conclusions can be drawn regarding the relationship between the variable $d.\ln f_{i,t}$ and the share of the top 1% of earners in total income. Here, the model indicates a statistically significant relationship in sample 2, 5 and 6. This means that among the 11 high-income countries from 1997-2021, an increase of 1% in the share of the financial and insurance sector in the economy is associated with an increase of 0.142% in the share of the top 1% of earners in total income.

These results support the hypothesis that financialisation has contributed to an increase in income inequality in high-income OECD countries. Significant F-statistic appears to confirm the overall validity of these results. At the same time, the model does not show a statistically significant effect of the $d.\ln f_{i,t}$ variable on the level of income inequality (except from sample 2). The model also does not show a statistically significant effect of the financialisation process on the level of inequality in samples 2 and 3, which include most OECD countries. Thus, the model results confirm the hypothesis that the process of financialization contributes to the increase in income inequality in the largest economies of OECD member countries, but they do not indicate whether this phenomenon has impacted the OECD as a whole. Perhaps a dynamic

Table 2: Values of estimators of the independent variable d.Infiva and control variables in a linear regression model including robust standard errors with the dependent variable d.Ingini ineq (samples 1-6)

Variables / indicators	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
d.Infiva	0,0261** (0,0122)	0,0449** (0,0181)	0,017 (0,0128)	0,0181 (0,0136)	0,0466*** (0,0145)	0,045** (0,0217)
d.Init	0,00182 (0,0122)	0,0267 (0,0181)				
d.Ingdp	0,0305*** (0,0109)	0,0443*** (0,0157)	0,131*** (0,0291)	0,145*** (0,0311)	0,0682* (0,0376)	0,00463 (0,0647)
d.Intrade	0,0438* (0,02)	0,0702*** (0,0245)	0,0187 (0,0124)	0,0175 (0,0131)	0,0411*** (0,0157)	0,059** (0,023)
d.Inunem			0,00955 (0,00667)	0,00996 (0,00126)	0,00924 (0,00849)	-0,00417 (0,012)
constant	0,00226* (0,00131)	0,00121 (0,00182)	-0,00456*** (0,00141)	-0,00505*** (0,00126)	-0,00153 (0,00149)	0,00032 (0,00243)
R²	0,0406	0,0876	0,0554	0,064	0,0708	0,0874
AIC	-1619,788	-758,886	-3870,981	-3406,031	-1447,536	-657,505
F	3,44***	3,47**	8,49***	9,14***	6,21***	6,45***
Observations	297	135	816	720	264	120

Source: own calculations.

Table 3: Values of the estimators of the independent variable d.Infire and the control variables in the linear regression model including robust standard errors with the dependent variable d.Ingini ineq (samples 1-6)

Variables / indicators	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
d.Infire	0,0358 (0,0302)	0,0891** (0,0385)	0,0338 (0,0291)	0,0314 (0,0314)	0,0584 (0,506)	0,131 (0,0893)
d.Init	-0,00116 (0,0107)	0,0195 (0,0172)				
d.Ingdp	0,0314*** (0,0109)	0,049*** (0,0164)	0,139*** (0,03)	0,155*** (0,0318)	0,0741* (0,0422)	0,0263 (0,0711)
d.Intrade	0,0456** (0,0203)	0,0751*** (0,0257)	0,019 (0,0123)	0,0182 (0,0129)	0,038** (0,0171)	0,0624*** (0,0216)
d.Inunem			0,00979 (0,00665)	0,0103 (0,00698)	0,0101 (0,00882)	-0,00429 (0,0139)
Constant	0,00201 (0,0014)	0,000467 (0,00192)	-0,005*** (0,0013)	-0,00565*** (0,00136)	-0,002 (0,00186)	-0,000564 (0,00284)
R²	0,0317	0,0823	0,0554	0,0650	0,0459	0,0865
AIC	-1617,055	-758,104	-3870,966	-3406,854	-1440,55	-657,381
F	2,50**	3,31**	8,58***	9,51***	3,21**	4,75***
Observation	297	135	816	720	264	120

Source: own calculations.

Table 4: Values of the estimators of the independent variable d.Infiva and the control variables in the linear regression model including robust standard errors with the dependent variable d.Inone ineq (samples 1-6)

Variables / indicators	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
d.Infiva	0,0766 (0,0621)	0,152** (0,0655)	0,0866 (0,0572)	0,0895 (0,0614)	0,142** (0,0566)	0,149** (0,0647)
d.Init	0,0582 (0,0388)	0,118* (0,0631)				
d.Ingdp	0,1794*** (0,0463)	0,21*** (0,0494)	0,469*** (0,0952)	0,512*** (0,101)	0,343** (0,149)	0,198 (0,207)
d.Intrade	0,351*** (0,0834)	0,383*** (0,0861)	0,0604 (0,047)	0,0581 (0,0496)	0,169*** (0,0627)	0,201*** (0,0619)
d.Inunem			0,0114 (0,0249)	0,0123 (0,0265)	0,0108 (0,0297)	-0,0373 (0,0321)
Constant	-0,00419 (0,00452)	-0,00447 (0,00515)	-0,017*** (0,0044)	-0,0185*** (0,0046)	-0,00918 (0,00585)	-0,00485 (0,00786)
R²	0,0759	0,1229	0,0654	0,0781	0,0963	0,1955
AIC	-800,0525	-401,862	-1800,871	-1621,456	-766,396	-414,792
F	6,11***	6,92***	9,38***	9,71***	6,24	11,11***
Observations	297	135	816	720	264	120

Source: own calculations.

Table 5: Values of the estimators of the independent variable d.Infire and control variables in the linear regression model including robust standard errors with the dependent variable d.Inone ineq (samples 1-6)

Variables / indicators	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
d.Infire	-0,0168 (0,132)	0,241* (0,136)	0,112 (0,12)	0,131 (0,131)	0,0939 (0,168)	0,335 (0,207)
d.Init	0,0393 (0,0383)	0,0896 (0,0628)				
d.Ingdp	0,159*** (0,0445)	0,212*** (0,0501)	0,494*** (0,0996)	0,544*** (0,105)	0,338** (0,15)	0,25 (0,214)
d.Intrade	0,333*** (0,0824)	0,384*** (0,0906)	0,0575 (0,0461)	0,0561 (0,0484)	0,155** (0,0642)	0,205*** (0,0602)
d.Inunem			0,0119 (0,0248)	0,0128 (0,0263)	0,0155 (0,0298)	-0,0346 (0,0352)
Constant	-0,00182 (0,00499)	-0,00548 (0,00591)	-0,0182*** (0,00476)	-0,0203*** (0,00504)	-0,00941 (0,00632)	-0,0069 (0,00832)
R²	0,0687	0,1088	0,0608	0,0737	0,0759	0,1809
AIC	-797,7488	-399,718	-1796,825	-1618,058	-760,497	-412,624
F	5,38***	6,72***	9,36***	9,82***	4,67***	10,15***
Observations	297	135	816	720	264	120

Source: own calculations.

model will capture a significant relationship between financialisation and inequality in these samples.

When it comes to the control variables, the significance of their impact on income inequality varies considerably depending on the examined variant or sample. Notably, no statistically significant impact of the IT sector on the level of inequality was found in samples 1 and 2 in almost every variant studied. This may be caused by the relatively small role of this sector in the economy for a significant part of the examined period. In the case of GDP per capita, a statistically significant impact of this variable on the level of inequality is observed in most variants and samples. Regarding the share of international trade in GDP, the model results indicate a statistically significant role of the $d.lntrade$ variable in samples 1, 2, 5, and 6, regardless of the variant studied. In the case of unemployment levels, the model does not show a statistically significant role for the $d.lnunem$ variable in any sample. In summary, the following conclusions can be drawn based on the preliminary results:

1. The increase in the share of the value added of the financial sector had a statistically significant impact on the increase in income inequality, as measured by the Gini coefficient, in 11 OECD member countries between 1980 and 2007 (including in the five separately studied countries in sample 2). In sample 1, a 1% increase in the $fiva$ variable leads to a 0.0261% increase in the gini variable. These results confirm the hypothesis that (during the initial phase of this process) financialization contributed to the rise in income inequality.
2. The increase in the value added of the financial sector had a statistically significant impact on the rise in inequality, as measured by the Gini coefficient, in the same 11 countries during the period 1997-2021. Although the incompatibility of the independent variable data prevented the examination of the period 1980-2021 within a single calculation, the results from samples 1 and 5 clearly indicate the influence of the financialization process on the increase in income inequality in selected large economies of OECD member countries.
3. Similar conclusions can be drawn regarding the impact of the $d.lnfiva$ variable on the share of the top 1% earners in total income in samples 2, 5, and 6.
4. The results do not provide information on the specific nature of the financial sector's impact on the increase in inequality, but the statistically significant impact of the $d.lnfiva$ variable on the rise in income inequality suggests that the process of financialization is one of the causes of growing income inequality in some OECD member countries and should be considered in income inequality research.

5. The model results do not show a statistically significant impact of the FIRE sector's share on the level of inequality, regardless of the dependent variable representing income inequality.
6. It was also not possible to demonstrate a statistically significant impact of the $d.lnfiva$ and $d.lnfire$ variables on income inequality in samples 3 and 4 in any case. Although such results do not necessarily mean that the financial or FIRE sectors have no impact on the level of income inequality across dozens of OECD member countries, there is no basis for drawing specific conclusions in these two samples. Perhaps, in studying the role of financialization in shaping income inequality in OECD member countries not included in samples 1 and 5, other research methods should be applied.
7. In most cases, a statistically significant impact of GDP per capita on the level of inequality is observed.
8. Results also indicate a statistically significant impact of the share of international trade in GDP on the level of income inequality in samples 1, 2, 5, and 6 in every examined variant.
9. The model does not show a statistically significant impact of the $d.lnit$ and $d.lnunem$ variables on the level of income inequality."

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