SSE Riga Student Research Papers
2018 : 10 (208)

THE BIASED SIDE OF OPENNESS: IMPACT OF SECTOR-SPECIFIC FDI FLOWS ON INCOME INEQUALITY IN DEVELOPED ECONOMIES

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ISSN 1691-4643
ISBN 978-9984-822-

November 2018
Riga

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Abstract

Nowadays the positive effects of financial openness arguments in economic, political, and social debate are as common as democracy supporting statements. These arguments highlight that financial openness ought to benefit the countries involved by providing investment to relatively more competitive industries, and, thus, reduce income inequality. However, recent increases in financial openness have been paralleled with an increasing income gap (Organization of Economic Cooperation and Development [OECD], 2016). Moreover, the growing within-country inequality has become an increasing worry in economically developed countries, which historically have shown a low inequality levels with no significant growth in this aspect (United Nations, 2012).

Past research shows quite mixed results of how foreign direct investment (proxy for financial openness) affects income distribution, while there is very little research analysing developed economies. Previous studies highlighting that the effects might differ depending on the sector to which investments flow and the time horizon. Thus, this research aims to analyse the effects of sector-specific FDI flows on income inequality in economically developed countries.

We analyse uniquely compiled sector-specific FDI flow data of the past 23 years for a sample of 35 economically developed countries using a fixed-effects panel regression. This study offers novel insights about how between-sector skill-biased income distribution, by increasing financing in already demanded sectors, might explain increases in income inequality in developed countries. Hence, decision makers ought to focus on long-term investment attraction, and institutional, human capital development, which have been proven to reduced skill-biased transfers.

Keywords: Foreign Direct Investment, FDI, Income inequality, Disposable income Gini coefficient, Sector-specific investment flows, Developed countries, Skill-biased income distribution.[1]

[1] **Acknowledgements.** We would like to thank our supervisor Nicolas Gavoille for the in-depth practical guidance, objective insights, and much appreciated occasional mental support provided throughout the process of writing the thesis. Additionally, we are grateful to our fellow students and others, who reviewed this paper, for providing thorough and helpful insights about our work during the development process of this research.

1. Introduction

The modern perception of financial openness, which professes itself in economic, political, and social debate, strongly claims that increased openness benefits society. The origins of this view stem from traditional trade theories, which argue that in the long run increased openness ensures more equal income distribution by appropriately rewarding those who are efficient or have larger resource endowments (Stolper & Samuelson, 1941).

Yet, the currently observable developments illustrate worrisome tendencies. World economies have become more financially open and integrated in the past decades (International Monetary Fund [IMF], 2017; European Central Bank [ECB], 2015). However, the increased openness was paralleled with a within country income inequality increase even in most developed countries, which historically have shown low levels of intra-country inequality (IMF, 2017; Organizations of Economic Cooperation and Development [OECD], 2016; Robinson, 1976).

Past research focused on developing countries, which typically were illustrated to suffer from large income inequality. The empirical model by Kuznets (1955) and later theoretical proof by Robinson (1976) suggested that the relationship between income inequality and economic development is inverse U-shaped. It implied that developing economies experience a widening income gap due to technological advancements not affecting all groups equally, while the advanced economies, having gone through this phase, have low inequality. However, developed economies have experienced a widening income gap (OECD, 2016; Cingano, 2014).

Even though the topic of income inequality has been vastly explored, the research about the link between financial globalization and uneven within country income distribution is relatively new and mostly inconclusive. The misused traditional theoretical link proposed by the Stolper-Samuelson theorem predicts that trade openness ought to decrease inequality by increasing the wages of previously low paid, low-skilled workers in the country with large endowments of this factor (Stolper & Samuelson, 1941). However, it is often overlooked that the theory focuses on between country inequality reductions, while in the developed country only after a between sector shift might the inequality decrease. Recent research proposes theories, which might explain how financial openness affects the income gap. Skill-bias theory states that foreign financing increases demand for already demanded sectors increasing income inequality between industries (Atkinson & Bourguignon, 2014; Basu & Guariglia, 2007). Signalling theory - the labour market will adjust the supply of certain

specialists based on signals (financing inflow signalling increased demand), resulting in within industry shifts (Milanovic, 2005; Krugman, Venables, & Fujita, 2001). Even though, several researchers have suggested that sector-specific FDI analysis might give a better understanding of the ongoing effects, due to only recent sector-specific FDI data reporting standardization there is little empirical research. Only one very recent paper (Bogliaccini & Egan, 2017) empirically explores the effects on income inequality using a three-sector division, yet the sample analysed is developing countries.

Given the contradictions between tendencies noticeable and various theories, we contribute to the existing research body in two ways: firstly, we analyse developed economies, which only recently have shown increasing income inequality; secondly, we employ sector-specific FDI data to gain deeper insight about the effects sector skill requirements have on income distribution. Hence, our research question is:

What are the effects of sector-specific FDI transfers on intra-country income inequality in the host economically developed countries?

In order to answer the research question, we collect a unique data sample of FDI flows disaggregated by economic activity for 35 economically developed countries[2], compiling statistics from the databases of Central Banks and National Statistics Offices. The economic sectors are divided into high and low-skilled ones using the methodology applied by the OECD (2011 a) based on weighted R&D intensity in each sector. Panel data is analysed using fixed effects regressions to assess the effects on the Gini coefficient of: (1) FDI flows in two skill-requirement based sectors (high and low-skilled); (2) sector-specific FDI flows. For the latter we make a complementary scatter plot analysis for each sector.

We find that the skill-bias theory might explain the increasing income gap in the developed countries analysed, as investments in high-skilled sectors increase income inequality, while the opposite effect can be noticed for investments in low-skilled sectors. Additionally, we find that the financial development and democracy level have an inequality increasing effect. Sector specific visual analysis supports the skill-biased income distribution theory, while regression results are contradictory.

The paper is structured as follows: *Section 1* - overview of the past literature of income inequality and foreign direct investment theories and empirical evidence; *Section 2* - description of the data; *Section 3* - main regression setup; *Section 4* - results and discussion of their implications; *Section 5* – concluding remarks and suggestions for further research.

[2] Countries selected according to the classifications by the OECD (2016) and United Nations (2017).

2. Literature Review

2.1. Income Inequality Development

In recent years, the global inequality has been at record high levels and intra-country inequality not only is large, but also has been increasing (OECD, 2016; Cingano, 2014; Wade, 2004). This increase in inequality has been a growing concern among economists and policy makers (OECD, 2016), as uneven income distribution has been proven to lag economic growth and have negative effects on the macroeconomic and social environment via increased unemployment, poverty, and crime rates (OECD, 2015; Piketty, 2015; Wade, 2004; Borenzsteina, De Gregoriob, & Leec, 1998). Inequality has even further increased the interest of the global research community, since it is a complex matter influenced by a multitude of drivers, while the reasons for recent increases are still disputed (OECD, 2011).

Much of the debate in the research community about the current state of global and national income inequality, and the main drivers of the income gap, has been driven by the widely differing definitions of the term. Income inequality, as defined by Eatwell, Milgate, and Newman (1987), is "inequality in living standards, or level of well-being, [..]. For each household we require a measure of the level of its resources relative to its needs" (p. 821).

2.2. Inter-country inequality vs intra-country inequality

Two types of income inequalities are distinguished in the previous literature - inter-country, or income distribution between countries, and intra-country inequality that examines income distribution within a country or region. According to Lakner and Milanovic (2015) and Firebaugh and Goesling (2004), global inequality has been decreasing since the 1980s, and, even though very high, is still decreasing.

Within country inequality research has a longer history and the noticeable trends are a source of disagreement - despite the often referred to insights from traditional trade theories by Stolper, Samuelson and Heckscher, Ohlin, it has been increasing in parallel to the period of historically largest globalization (Milanovic, 2011). Most of the previous research on intra-country inequality has focused on developing countries due to the significant income distribution issues the countries face (Basu & Guariglia, 2007; Borenzsteina, Gregoriob, & Leec, 1998; Feenstra & Hanson, 1997). However, studies focusing on developed economies in this aspect are scarce. Kuznets (1955), who states that the link between inequality and the development of a country is inversely U-shaped, might explain the traditional focus on developing countries. According to Kuznets (1955), in countries at the early-stages of

industrial development there will be close to zero inequality due to low-skilled workforce only; yet, as the country develops imperfect knowledge and skill transfers result in increasing inequality. After the country has reached a specific state of development, the income gap decreases, because society becomes more unformed in terms of skill level and income redistribution policies are in force. While the paper by Kuznets provides a classic theoretic framework, one might have doubts about the empirical support. However, Robinson (1976) provides an empirical base for the U-shaped relationship between income inequality and economic development. Thus, one can draw a conclusion that developed economies are in the state where inequality is diminishing. Despite these theories, OECD (2016) and Cingano (2014) show evidence that recently income inequality has been rising in OECD countries, thus, it is of high importance to understand the inequality drivers within advanced economies.

2.3. Factors Affecting Income Inequality

While recent empirical studies are quite conclusive that the intra-country inequality has increased, the drivers of the large recent increase are still a pressing concern. Similarly as for between-country inequality, the increase was paralleled with increased market integration. Thus, attention in the field has been devoted to the impact of openness, and factors affecting it: institutional, trade, and capital market developments, and development over time.

Institutional development has been analysed as a driver of inequality, though the results are mixed. The link between openness and democracy levels (often used as a proxy for governmental institution development) is not strong. Democracy could reduce inequality by increasing incomes of the middle-income group, yet these improvements might not be illustrated by inequality measures, which do not capture the changes in this group (Milanovic, 2005). However, Muller (1988) highlights that the level of democracy is a vital determinant for income distribution, as it illustrates how egalitarian a society is. Bogliaccini and Egan (2017) use democracy as a control variable, explaining that countries with a democratic political system signal a certain business environment development, which eases attracting foreign investments.

Past research has looked at how income inequality is affected through trade. As suggested by Stolper and Samuelson (1941), if each country has high and low-skilled labour, while each has large endowments in only one type of labour, then trade openness between these countries will push up income inequality in the developed economy in short term, but reduce the distribution gap in the long run. The mechanics of this is due to the developed economy having large endowments of high-skilled labour, which is highly demanded by the

developing country (rich in low-skilled labour), due to it being relatively less expensive. As the demand increases for the abundant resources, income inequality is increased as the demand for (and wages) low-skilled workers decrease in the high-skill abundant countries. In a longer term, workers adjust to the demanded skill-level accordingly, shifts in labour between industries take place, and the income gap within the country is reduced. Jaumotte, Lall, & Papageorgiou (2013) report results that trade openness reduces income inequality, despite the development level of a country.

Yet, Milanovic (2005) in his paper finds that trade openness has a negative impact on income inequality in poor countries, since rich individuals in these countries control a larger share of the total income, while the effect becomes positive in middle-income and rich countries. Hence, there is a lack of agreement in past research.

Capital market development, as a mechanism of ensuring capital accessibility, has been studied to see the effects on income inequality. Access to capital ought to boost industry development in the country, yet and recent empirical evidence shows that capital openness might instead increase inequality by further boosting wages of the high-skilled labour or sector which had greater disposable income to begin with (Jaumotte et al., 2013).

Capital market development should benefit those who had limited access to capital previously, thus altering inequality increasing skill-biased capital flows (Furceri & Loungani, 2015).

However, capital flows primarily tend to favour high-skilled labour, while access to foreign capital is easier for groups that already had access to capital (Lin, Kim & Lee, 2015). Capital intensive industries most commonly attract foreign investment, hence, along with openness, the economy is more likely to develop manufacturing, while agriculture sectors are likely to contract (Basu & Guariglia, 2007). Consequently, low-skilled labour, heavily employed in sectors with limited capital needs, will face issues accessing the capital, resulting in an income gap. Atkinson and Bourguignon (2014) also supported this view, though they noted that, as the country's economy develops, this effect will be mitigated, until eventually FDI flows will decrease inequality. Lin et al. (2015) show that capital markets favour high-skilled groups and highly developed markets increase the speed of income divergence. Thus, research about the effects of capital flow development on inequality is inconclusive.

Last factor, which might explain contradictory results in past research, is external capital inflows. There is evidence that increases in inequality might profess themselves in the long run only if capital inflows are not matched with the development of financial markets,

ability to absorb capital, and improved governance (IMF, 2016; Furceri & Loungani, 2015; Lin et al., 2015). Herzer and Nunnenkamp (2013) note that in the medium and short run capital inflows might increase inequality, while if it were the case over the long run, FDI flows would eventually seize, due to improper allocation. On the other hand, in the short and medium run, if the necessity for improved governance and market development does not halt investment, capital inflows, even if skill-biased might reduce income inequality (IMF, 2016). These time differing effects introduce an alternative branch of research on how capital flows affect inequality – similarly to the Kuznets curve these developments might also be inversely U-shaped over time. Consequently, current inequality increases might only be short term. Nonetheless, the debate of whether the increasing income gap are long run, still persists.

2.4. FDI and Inequality. Skill-bias and Signalling Theories

As mentioned previously, cross-border capital flows have increased significantly during the past decades due to financial market globalization. Despite the topic being relatively new in the research community, past research focused primarily on the impact FDI has on growth. A minor share of the previous research has studied FDI effects on income distribution, since the link between the two might not be straightforward.

One link through which income inequality is affected is through technology and knowledge. According to Figini and Gorg (2011), foreign investments can be interpreted as technology (and knowledge) transfers from a more advanced economy to a less developed one. Assuming that a country has a uniform workforce (equal skill level for everyone) income should be equally distributed. When a new technology is introduced, the effect on income distribution is not immediate; rather the demand for high-skilled labour is increased up to a level when it becomes segmented (Figini & Gorg, 2011). Further demand pushes high-skilled labour wages up, while low-skilled labour wages decrease causing an increase in income inequality.

Consequently, skill-biased income distribution predicts that increases in openness and capital flows would be directed towards the high-skilled labour portion also in the developing economy, resulting in a within industry wage gap, while not reducing the between industry inequality (Atkinson & Bourguignon, 2014; Pavnick, 2011; Feenstra & Hanson, 1997). Past research gives theoretically strongly justifies potential skill-bias, while empirically it is tested by dividing labour into high and low-skilled groups (Franco & Gerussi, 2013; Jaumotte et al., 2013). Based on the findings of these studies, skill-biased income distribution will be

noticeable in case technology transfers are not perfect, which is likely if there is initially poor (1) technological, (2) institutional, (3) capital development (Lin et al., 2015; Jaumotte et al., 2013; Pavnick, 2011; Te Velde & Xenogiani, 2007; Basu & Guariglia, 2007; North, 1994).

Feenstra and Hanson (1997) in one of the first and most cited papers about skill-biased income distribution illustrate issues caused by poor technological transfers with an example from Mexico. When near-border manufacturing facilities received large capital flows from the US, the highest skilled factory workers were hired, and they received higher wages than those working for local companies, increasing the within manufacturing industry income inequality (Feenstra & Hanson, 1997). Later on, this specific case was proven to be a common scenario, in case of poor technological transfers. Each country has a natural endowment of different resources and tends to develop the industries in which they have natural advantage. International capital flows then tend to favour the sectors that are already highly developed in a country, resulting in exacerbated skill and income inequality when the country receives external capital (Te Velde & Xenogiani, 2007; Basu & Guariglia, 2007).

North (1994) suggests that institutional quality is the underlying driver of technological development, as the technological advancements depend on economic incentives provided by political and economic institutions.

Grimalda, Barlow, and Meschi (2010) highlighted the role of absorptive capacity, capital necessary for globalization to reduce the intra-country income gap using the example of post-Soviet countries. If the country does not have the necessary human or physical capital with necessary market mechanisms in place to reap the benefits from trade and investment increases, then openness might actually worsen its income situation compared to other countries (Grimalda et al., 2010).

On the other hand, Krugman et al. (2001), Card and DiNardo (2002), provide empirical evidence that skill-biased technological change might not fully explain the widening income gap. Card and DiNardo (2002) illustrate that during the end of the 20th century, though large technological advancements were noticeable, income inequality did not increase as rapidly. Hence, another possible link in which FDI affects income distribution is the demand for labour.

According to Atkinson and Bourguignon (2014), foreign investments push up wages for the most demanded part of labour, hence, inequality increases. This is linked to the signalling theory, first introduced by Krugman et al. (2001), that counters the drivers of inequality trends previously proposed, by stating that if demand for certain skill level of labour is

perceived as a signal in the labour market, increasing inequality might be an equilibrium outcome. Inflows of capital and trade signal to the labour market that certain skills, level of education is primarily demanded, and then the labour market is more likely to supply too many individuals with high education (Krugman et al., 2001). The demand might increase in case there are substantial shifts in high-skilled labour export or there is a skill-biased technological change. This signal then is likely to cause the proportion of population, which has higher education, to increase, at which point even for jobs, which formerly required low-skilled workers; high-skilled individuals will be hired. The labour market will consequently demand more high-skilled labour and increase wages of the high-skilled portion within each industry as well, thus increasing the wage gap.

Unlike skill-biased income distribution theories, the signalling effect would predict that there might be only weak income convergence, while it does not require any substantial technological shifts to take place (Milanovic, 2011; Krugman et al., 2001). Often attention in present research is drawn to the technological advancements, and the increased high-skill requirements they impose, yet the developments have not affected all sectors equally. Moreover, according to signalling theory, no actual machinery developments in a sector must take place, only the perception in the labour market must change, increasing the anticipated skill levels even for sectors where high education levels are not necessary and there are no major technological advancements that might have affected it.

During the period of increased world market integration fuelled by technological advancements, policy, and social perception shifts favouring financial openness, such labour market signals have been common. Hence, recent demand might have created another equilibrium state, which can be described with constantly increasing within country inequality, noticeable today.

Given all the arguments and potential effects, it is important to understand whether FDI affects income distribution in developed economies. Understanding whether skill-bias or signalling can explain the recent increase in income inequality developed economies are facing might give practical implications on how to counter the ongoing trend.

3. Data

Developed economies, after improvements in income distribution related to post-war policies, which benefited low-skilled groups, have been struggling, yet past research focused on emerging economies, which have historically had more notable issues with inequality (OECD, 2016; United Nations, 2012). Thus, in this paper we analyse a sample of developed countries, using the variables reported in *Table 1*.

Variable	Variable Name	Data Source
Disposable Income Gini Coefficient	*Gini_disp*	SWIID
Market Income Gini Coefficient	*Gini_market*	SWIID
P90/P10 Inequality Measure	*P90P10*	Eurostat
S80/S20 Inequality Measure	*S80S20*	Eurostat
Trade (Net Imports to GDP)	*Trade*	IMF, calculated by authors
Private Sector Credit to GDP	*Private_credit*	Global Financial Development Database (GFD) by The World Bank
Level of Democracy	*Polity2*	Polity IV Database
Upper Secondary Education Enrolment Rate	*SecEdu*	The World Bank Database
Exchange Rate to Euro	*Exchange_rate*	European Central Bank, Central Bank of Iceland
Foreign Direct Investment Flows into High-skilled Sectors to GDP	*FDI_Hin*	Central Banks, Statistical Offices of the sample countries, OECD; share to GDP calculated by authors using IMF data
Foreign Direct Investment Flows into Low-skilled Sectors to GDP	*FDI_Lin*	Central Banks, Statistical Offices of the sample countries, OECD; share to GDP calculated by authors using IMF data
Direct Investment Flows Abroad into High-skilled Sectors to GDP	*FDI_Hout*	Central Banks, Statistical Offices of the sample countries, OECD; share to GDP calculated by authors using IMF data
Direct Investment Flows Abroad into Low-skilled Sectors to GDP	*FDI_Lout*	Central Banks, Statistical Offices of the sample countries, OECD; share to GDP calculated by authors using IMF data

Table 1*. Variable Specifications and Data Source. Created by the authors.*

Most of the previous research has focused on the Gini coefficient as the main income inequality measure with other measures used only occasionally (e.g., top income share, wage inequality, Theil coefficient). The measurement methods of inequality have generated a lot of debate, since it has been proven that inequality development trends are sensitive to the measure used for assessing inequality and method of calculating the measure (Lakner & Milanovic, 2015; Anand & Segal, 2008). Gini coefficient has been proven to poorly capture

income inequality when it comes to the extremes: the richest and the poorest part of the society (Eatwell et al., 1987). Yet, the World Bank (n.d.) explains that the Gini coefficient is the most sensitive to inequality changes in the middle of the Lorenz curve. Since developed economies do not face extreme equality issues, the Gini coefficient is suitable for analysing advanced economies (OECD, 2016).

In previous research, two main sources of the Gini coefficient are distinguishable - the OECD database and the Standardized World Income Inequality Database (SWIID), while there are several others. The Luxembourg Income Study (LIS) is considered to be the most precise, yet this database has an issue of extremely limited coverability in geographic areas and time (Solt, 2016). Other databases, such as Eurostat or OECD use more than one set of assumptions, hence, the coverage is improved, but comparability decreases (Solt, 2016).

The SWIID database offers currently the widest coverage, while maintaining a sufficient degree of comparability (Solt, 2016). The SWIID database offer disposable and market income Gini coefficient data. Market-income Gini coefficient represents income before taxes and transfers, so households whose income is heavily based on pensions or other transfers may show an untrue income distribution within the society, while disposable income Gini coefficient shows income distribution after all transfers giving results that are more easy to interpret (Solt, 2016). Thus, for this research the disposable income Gini coefficient for the period 1994-2016 for all the sample countries is obtained from the SWIID 2016 database (*See Table 1 for variable specifications*).

Other inequality measures for robustness checks of regression results include market income Gini coefficient (SWIID), P90/P10 and S80/S20 measures, obtained from the OECD and Eurostat databases, respectively. While the Gini coefficient is more sensitive to income distribution changes in the middle-class, P90/P10 and S80/S20 measures are calculated as the difference between the top and bottom parts, thus, the two measures capture effects of the tails of income distribution within a society.

Aggregate FDI impact on income inequality has been studied previously, while disaggregated sector-specific FDI might give more insightful results of how foreign investments affects income inequality in the host country, as suggested by several authors (Franco & Gerussi, 2013; Jaumotte et al., 2013). However, such data is neither compiled by any database, nor has been used in previous research, hence, we create a unique dataset using data from Central Banks and Statistical Offices of the sample countries.

The main issue is that methods for disaggregating FDI by economic activity have not been the same for all countries. In our sample this limitation is overcome by selecting countries which report data according to the more internationally unified Balance of Payments Manual 6 (BPM6)[3]. We define developed countries based on the OECD (2016) and United Nations (2017) classifications. Consequently, our sample consists of 35 economically developed countries for the years 1994 to 2016 (the period for which FDI flow data has been recalculated according to BPM6) (*See Appendix A for details on Sample Countries*). To account for country size, we use FDI expressed as a share of Gross Domestic Product (GDP from the IMF database). FDI inflows and outflows are obtained, used.

3.1. Sector Allocation into High and Low-Skilled

Based on past research, sectors can be allocated into high or low skilled ones based on: (1) educational attainment necessity; (2) necessity and intensity of an on-the-job training; (3) amount of investment in research and development required for the functioning and profitability of the firms in the industry (International Labour Office [ILO], 2012; OECD, 2011 a).

Due to limited data availability of secondary education attainment and training by sectors in each country, the allocation of sectors into high-skilled and low-skilled was executed utilizing the methodology used by OECD (2011a): comparing the amount of R&D expenses to the Value added by the operations in each of the sectors. According to OECD (2011 a), the proportion of R&D to Value added illustrates the necessity of innovation and research for enterprises in an industry to remain competitive - the more continuous innovation required, the more likely the labour employed is high-skilled. To assess the appropriateness of the allocation, the division is compared to: ISCO-08 (used by ILO, based on secondary education attainment) as well as the allocation by OECD (based on R&D intensity).

For the sector allocation to be reliable and comparable, certain issues must be overcome: first, some sectors, such as Information and Communication, developed later, limiting the sample size for those; second, there are drastic differences in sector size. To tackle the first issue, we analyse data for the period from 1999 to 2016, when most industries

[3] BPM6: introduced in 2009, adopted by most developed countries by 2014 (European Central Bank, 2015; IMF, 2009). All selected sample countries have not only adapted BPM6, but have revised past data, to ensure data comparability.

were quite developed, and reported annual data. To overcome the second hurdle, the data is weighted to account for the size of the sector, reducing the coefficient for industries, which might appear high-skilled merely due to the absolute size of the sector.

For the sector allocation we calculate the weighted R&D share expressed, as can be seen in the following equation:

$$w_i \times \frac{R\&D_i}{Value\ added_i} > Avg\left(\sum_{i=1}^{20} w_i \times \frac{R\&D}{Value\ added_i}\right) \text{ where } w_i = \frac{Avg(Turnover_i)}{\sum Turnover}$$

The average R&D share is calculated for the period 1999-2016 for all sample countries. To account for the sector size (e.g., Manufacturing is the single largest sector in most of the sample countries) we use weights. Weights are calculated as the share of average Turnover for each sector (for all sample countries 1999-2016, expressed in euro (*See Appendix B for currency conversions*)) over the sum of the Turnover of all sectors. If the result obtained for a sector is above the average, it is considered to be high-skilled; otherwise – low.

From the results, the following are high-skilled sectors: Manufacturing (C); Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles (G); Information and Communication (J); and Professional, Scientific and Technical Activities (M). However, according to the ILO (2012) and OECD (2011 a) sector skill allocation, the Financial and Insurance Activities sector requires mainly high-skilled labour as well. Since our results show a significantly larger value for Manufacturing than for any other sector (*for more detailed information, see Appendix C*), it significantly drives up the average value of R&D proportions. Consequently, the exclusion of Manufacturing (C) from the calculation of the average value, might reveal that there are some other sectors which are quite similar to those already classified as high-skilled.

After adjusting the results accordingly, the Financial and Insurance Activities sector (K) classifies as a high-skilled sector, which is in line with other sources of skill requirement sector divisions (ILO, 2012; OECD, 2011 a). Consequently, five sectors are considered as high-skilled: Manufacturing (C), Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles (G), Information and Communication (J), Financial and Insurance Activities (K) and Professional, Scientific and Technical Activities (M), which is in line with the sector allocation by OECD and ILO.

According to past research there is a plateau of factors, which might affect income inequality other than foreign investment, implying that the introduction of control variables might

improve the quality of the model (*See section "Methodology and Model selection" for an in-depth justification of variable selection*). The following controls will be used: educational level; financial development; level of democracy; and trade data.

	Number of observations	Mean	Standard Deviation	Min	Max
Gini_disp	763	29.8012	4.5546	20.3	46.8
Gini_market	763	46.6764	4.8252	29	60.3
P90P10	320	3.9897	0.9097	2.7	6.5
S80S20	494	4.7585	1.3261	2.9	11.3
FDI_Hin	514	0.1599	0.8669	-0.3571	10.3378
FDI_Lin	512	0.0396	0.2874	-1.0705	4.8752
FDI_Hout	488	0.1476	0.9498	-1.0218	14.2328
FDI_Lout	489	0.0359	0.3167	-0.9643	5.3205
private_credit	745	87.2739	48.5205	6.71	262.46
SecEdu	701	108.0827	27.7209	44.4164	249.6075
Trade	788	-0.0135	0.0772	-0.3523	0.2067
Polity2	759	9.4427	1.5628	-5	10

Table 2. *Summary Statistics. Created by the Authors.*

Proxy for the education level, potentially affecting the overall proportion of the high-skilled population (Jaumotte et al., 2013), will be the enrolment rate in upper secondary education as a share of total population. Data for all the sample countries is retrieved from the World Bank database.

The proxy for financial development as suggested by Lin et al. (2015) and Jaumotte et al. (2013), will be private sector credit as a share of GDP. The proportion of private credit is obtained from the World Bank Global Financial Development Database for all countries.

Since globalization typically expresses itself not only via increased investment flows, but also increase in trade openness (Jaumotte et al., 2013; Franco & Gerussi, 2013; Grimalda et al., 2010; Milanovic, 2005), trade data retrieved from the IMF database, expressed in domestic currency, nominal values will be used. To avoid the issue of different national currencies, we calculate Net Trade (calculated as Imports minus Exports) as a share of GDP, which is also retrieved from the IMF database.

Past research additionally controls for measures typical in political economy research associated with income distribution; the most common variable being democracy levels (Milanovic, 2005). Data for democracy levels is retrieved from the Polity IV database. We use Polity2 measure that gives an annual evaluation of the democracy level in a country on a scale -10 to 10, where a more democratic country receives a higher score.

4. Methodology and Model Specification

The previous research does not provide conclusive evidence of which is the most appropriate econometric method to quantify the effects of FDI on income inequality, though most use fixed-effects panel regressions (Wade, 2004). Hence, we employ a fixed-effects regression, while in this section, we outline the model set-up, which helps to overcome past data limitations and assess the impact disaggregated FDI flows have on income inequality.

4.1. Baseline Model Setup

Our baseline model is *Regression 1*, which analyses the impact that FDI flows have on the Gini coefficient depending on sector skill requirements (division into high and low-skilled sectors). To arrive at the baseline model, we assess: (1) if FDI inflows or outflows should be analysed separately or in a single regression; (2) the specifications of the usage of the disposable income Gini coefficient; (3) the usage of various control variables and the adjustments necessary to ensure that the controls increase the quality of the model.

4.1.1. FDI

The main independent variable in the following regressions will be *FDI inflows and outflows to GDP*, measuring the effects increases in foreign investment have on income distribution. The sector-specific approach to FDI flows allows us to understand the potential effects on income inequality of between-industry shifts, rather than within-industry changes (Franco & Gerussi, 2013). Thus, the results obtained might be explained mainly by the skill-bias theory.

Comparison of FDI Inflows and Outflows. To choose between using FDI inflows and outflows in high (low-skilled) sectors or to use the combination of both it is important to firstly, note the economic differences of these effects; secondly, assess the alternative model quality by running test regressions.

Firstly, FDI inflows and outflows illustrate two completely different effects, and thus their link to income inequality for the different flows is not the same. FDI inflows illustrate investment flows into a country "A", while the outflows are the investment flows from country "A" to other countries. The economic differences of these effects is quite notable and they are not symmetric. The link of FDI inflows to income inequality has been proven to be via the increases in productivity through various channels, while the impact on inequality of FDI outflows is not as direct, and hence is seldom looked into in past research. Jaumotte et al.

(2013) and Alderson and Nielsen (1999), however do focus on the effect financial outflows have on income distribution, illustrating that the increase in financing flowing out from the country increases the exposure to foreign markets, standards and thus impacts inequality.

Secondly, we run test regressions using inflows and outflows as independent variables. As can be seen in *Appendix D Table 1*, usage of both inflows and outflows in one regression reduces the quality of the model by notably increasing the number of explanatory variables, reducing the number of observations.

Hence, in the main model, FDI inflows and outflows will be looked into in separate regressions.

Considering the recent developments of income inequality in the sample, we expect that the effects of investment flows on income distribution ought to follow the skill-biased distribution theory. Thus, an increase in financial flows in and out of high-skilled sectors ought to increase income inequality, while flows in and out of a low-skilled sectors ought to reduce inequality.

4.1.2. Gini Coefficient

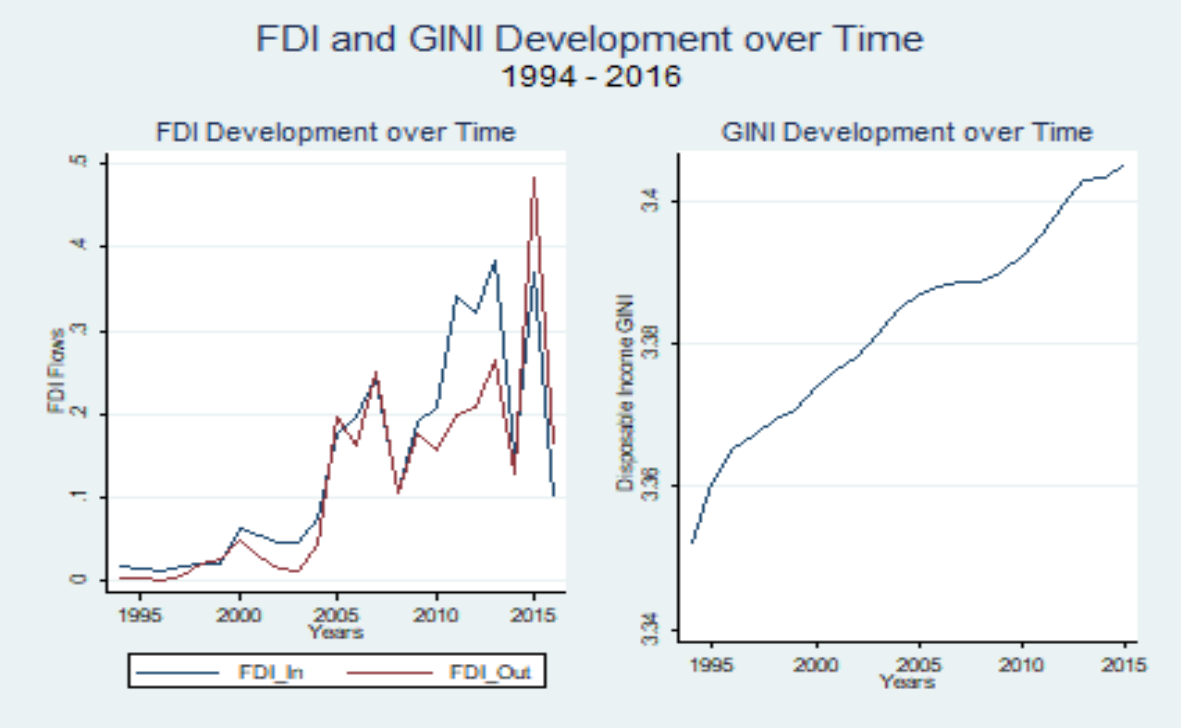
We will be looking into the specifications of the dependent variable to assess if: normalized values ought to be used; absolute values or differences in the measure should be utilized; the relationship between it and FDI flows varies over time and differing lags ought to be introduced.

Choice of Usage of Normalized Values of the Gini Coefficient. Several researchers (Furceri & Loungani (2015); Cingano (2014); Jaumotte et al. (2013)) use logarithmic values for the Gini coefficient to account for non-normal distribution.

Normalization of the Gini measure might be needed in case there is large (or very small) variance or the values are clustered around a certain number. As seen in summary statistics (*Table 2*) the variance of the measure is quite small, so the values might be accumulated in a narrow range. According to Kuznets (1955) and Robinson (1976), countries at a similar stage of economic development might show similar levels of income inequality. Considering that all sample countries are economically developed the values of the Gini coefficient might also be in a relatively narrow range. Moreover, the methods of measuring and calculating the coefficient cause large outliers (values 1 or 0) to be highly unlikely.

Finally, skewness and kurtosis tests, which were run, support the usage of normalized values (*See Appendix D Table 2 for Skewness and Kurtosis tests for inequality measures*).

Choice of Difference or Regular Value Usage for the Gini Coefficient. As can be seen in *Graph 1,* FDI flows fluctuate considerably over time, compared to the development of the Gini coefficient over the years. Hence, the subtle changes of the Gini coefficient might not reflect properly the effect of the highly volatile investment flows. Using the changes in the disposable income Gini coefficient over time might improve the accuracy of the model by increasing the volatility of the measure.



Graph 1. FDI flow and Disposable Income Gini Coefficient variation over time. FDI Inflow and outflow are the average values of in/outflows for all sample countries for each year in millions of Euro. Logarithmic value of the Gini coefficient used, average value for all countries for each year. Created by the authors.

As can be seen in the *Appendix D Table 3,* differences of the Gini coefficient are more volatile than levels. Moreover, as can be seen in test regression results (*Appendix D Table 4*), usage of the differences yields the best results with the smallest error term correlation and the smallest statistical significance for the constant term, with no effect on the number of observations. Consequently, the changes of the logarithmic value of the Gini coefficient will be used (ΔLn_Gini).

Choice of the Number of Lags. Income distribution is affected by various macroeconomic factors and limitations of measurement that cause the values of income distribution measures

to change slowly over time (Solt, 2016). Similarly, explanatory variables utilized do not develop rapidly, hence evaluation of the impact that previous years' results have on the current period's income inequality might be needed (Liu, 2006).

As a preliminary test for the need to use lagged values and the amount of lags to include into the final regression, we analyse the correlation of past values with the present ones. When assessing the correlation between the current period disposable income Gini coefficient and its past values (up to 10 previous years), it can be noticed that past values correlate very strongly with the current period ones (*See Appendix D Table 5 for correlation tables*). Yet, the inclusion of a very large number of lags would drastically reduce the number of observations, hence a smaller number of lags might be more appropriate.

The same correlation tendencies can be noticed, when the correlation between the Gini coefficient and past FDI flows is analysed (*See Appendix D Table 6*). The correlation tendencies however are different for sectors with different skill requirements. While, the correlation continuously becomes stronger with larger time lags for high-skilled sectors, for low-skilled sectors the strongest correlation with the Gini coefficient is for the one year lagged values.

As correlation may not be sufficient to define the number of lags to be used, comparative regressions are run. As can be seen in *Appendix D Table 7*, inclusion of the 5-year lagged values, reduces the number of observations to 262, while usage of 2-year lagged values reduces the sample to 350 from a potential sample of 512 observations (the number of available data points for FDI inflows, *see Table 2*). Yet, according to the regression results reported in *Appendix D Table 7,* the highest R^2, lowest error term correlation is for regressions using two year-lagged FDI values, while using past year lagged values of the Gini coefficient, ensures that there is still a relatively large number of observations.

4.1.3. Control Variables

Though some research shows that trade openness might not have a strong effect on income distribution (Edwards, 1997), most recent research confirms that there is an impact on income distribution that can be attributed to trade openness (Lin et al., 2015; Milanovic, 2011). To account for trade openness, we use *ratio of trade (export-imports) to GDP*, as suggested by Lin et al. (2015), Jaumotte et al. (2013), and Franco and Gerussi (2013). Based on the aforementioned research, we expect trade openness to reduce inequality, as it has been proven to.

Financial market development is proven to impact income distribution as well as foreign direct investment flows (Milanovic, 2005). Accounting for this, an exclusion of a financial development proxy would cause the impact of FDI on inequality to appear more significant than it actually is. Hence, we include a control variable used by Lin et al. (2015) and Jaumotte et al. (2013): *private credit as a percentage of GDP*. Based on the findings of Lin et al. (2015) we expect that an increase in financial market development ought to increase income inequality, since such market development favours only certain groups, which already could easily access capital.

As stated in previous research, political system and the level of democracy affects income distribution (Wong, 2016; Milanovic, 2005; Muller, 1988). In our regression the democracy level will be measured with the *POLITY2* measure, which measures the democracy level in a -10 (autocracy) to 10 (perfect democracy) point scale, by analysing the competitiveness, openness and nature of state's elections (Center for Systemic Peace, n.d.). Based on past research, we expect that as the society becomes more egalitarian, increased democracy levels will reduce income inequality.

Similarly as Cingano (2014), Jaumotte et al. (2013), and Franco and Gerussi (2013), we use education as a control variable in order to account for the high-skilled labour proportion in the country, proxied as the *share of population with at least upper secondary education.* Consequently, as the proportion of high-skilled labour increases, we expect that an increase in secondary education attainment ought to increase inequality.

Income inequality changes slowly over time and country specifics differ across the sample. Moreover, the sample time period covers several economic cycles (multiple crises and recovery periods), which might give reasonable grounds for the inclusion of time fixed effects.

Both FDI inflows into a host country and outflows from the home country can be negative, due to potential disinvestment. Similarly, the proxies for trade openness (*Trade/GDP*) and democracy level (*POLITY2*) are not non-negative values. Then, even though, the variables are not normally distributed, they will not be normalized. However, based on unreported skewness and kurtosis test results, financial development, democracy level, and education attainment proxies will be normalized.

This leads to *Regression 1*:

$$\Delta lnGINI_{it} = \alpha + \beta_1 \Delta lnGINI_{it-1} + \beta_2 FDIhigh_{it} + \beta_3 FDIhigh_{it-2} + \beta_4 FDIlow_{it} + \beta_5 FDIlow_{it-2} + \beta_6 Control_{it} + \varepsilon_{it} \quad (1)$$

Where $\Delta lnGINI$ is the dependent variable - change of logarithmic value of disposable income Gini coefficient, measure of income inequality, while $\Delta lnGINI_{it-1}$ - previous year's disposable income Gini coefficient change (logarithmic values). *FDIhigh* is the FDI inflows or outflows for high-skilled sectors (% of GDP); $FDIhigh_{it-2}$ is the FDI inflows or outflows for high-skilled sectors two years ago (% of GDP); *FDIlow* is the FDI inflows or outflows for low-skilled sectors (% of GDP); $FDIlow_{it-2}$ is the FDI inflows or outflows for low-skilled sectors two years ago (% of GDP). *Control* is a vector of variables, including: percentage of credit to private individuals to GDP, logarithmic values; net exports, share to GDP; *POLITY2*; percentage of population with at least upper secondary education; time and country fixed effects.

Inclusion of Control Variables and Usage of Country and Time Fixed Effects. To assess the effect that country and time specific features and events, as well as control variables and the effects their inclusion in regressions pose on further analysis, a comparison of model quality and regression results must be done.

Firstly, a comparison was made between *Regression 1* (*See Appendix D Table 8*) without the inclusion of fixed effects and with the inclusion of country and time fixed effects. Inclusion of the fixed effects limits the impact that country specific features, which do not vary over time, might have on the results. Time-fixed effects control for time varying changes affecting all sample countries similarly.

As can be seen in *Appendix D Table 8*, the probability of there being linear development trends of income inequality is quite low (hypothesis of there being no linear development trends cannot be rejected in 91.7% of cases). According to Atkinson (2003), evidence for the Gini coefficient having a quadratic trend is very ambiguous and there is no straightforward way to quantify it, so we do not consider quadratic time trends. Thus, regression results with and without time fixed effects are qualitatively similar, and in further regressions only country fixed effects will be included.[4]

Secondly, a comparison of regressions with control variables and without control variables, but with a limited sample were made. This comparison helps to determine whether

[4] To account for time varying differences, which affect all sample countries and thus might call for time fixed effects, an unreported test regression was run. In this regression, it was assessed whether the impact on income distribution of the financial crisis of 2008 had a statistically significant effect. To account for the possible pre and post-crisis effects on income distribution a dummy variable was introduced, which was 0 for all years before 2008 and 1 otherwise. Based on regression results, it was observed that the dummy was not statistically significant - no time fixed effects adjusting needed.

the effects of the inclusion of controls are due to the decrease in the sample size or due to control variables not being robust, and thus affecting the results.

Inclusion of the control variables reduces the R^2 to 30.63% and increases the correlation of error terms (*See Appendix D Table 8 for test regression results*). A large increase in the error term correlation might stem from the limited number of observations of the control variables, or an inclusion of an unnecessary variable, which, if it has an opposite effect on income inequality, might be cancelling out the effects of other independent variables. Yet, when it comes to the impact on the size and significance of the main independent variables (FDI flows) the inclusion of control variables alters the magnitude, not the direction of the effect flows have on income distribution (the only exception is the low-skill sector inflow in the current period, which, nonetheless, is statistically insignificant in all regressions). This illustrates that there are factors, which affect both the investment flows and inequality, the exclusion of which would reduce the reliability of the regression results.

Consequently, we included all of the aforementioned controls in *Regression 1*.

4.2. Model 2 Setup: In-depth Sector Considerations

In past research, specific attention was already drawn to analysis of the differences of how high and low-skilled sectors impact income inequality (Bogliaccini & Egan, 2017; Jaumotte et al., 2013). However, it was noted that the effects of investment to, from separate sectors could indicate differing tendencies, which might not align with the skill-bias theory, and could potentially give valuable insight. This leads us to specify *Model 2*, which consists of: (1) a visual analysis of scatter plots for sector-specific FDI flows and (2) *Regression 2*, which analyses the impact that sector-specific FDI flows have on the Gini coefficient.

To arrive at our Model 2, first a comparable sector division is needed. Sector allocation for most classifications is based on the economic activity of the enterprises (the processes primarily used when producing the output) and which are significant enough to have large impact on the economy overall (Eurostat, 2006). The specific sector allocation of data for this research was primarily based on the methodology of data reporting employed by national statistical offices and central banks, which generally utilize national adaptations of the *NACE Revision 2* (the European sector classification standards) and resulted in 20 broad sectors (United Nations, 2008). However, the fragmented division causes two issues for further analysis: firstly, data for some insignificant sectors is aggregated in national adaptations of the *NACE Rev 2* and disaggregation is often impossible; secondly, the

breakdown of FDI into such small groups limits the potential impact that FDI of a specific sector might have.

To solve both of these issues a less fragmented sector division is needed, which can be achieved by aggregating sectors. Such an aggregation is the Standardized National Accounts [SNA] conversion proposed by Eurostat (2006) (*See Appendix C*), which combines sections of *NACE Rev 2*. and *ISIC Rev 4*. into 10 to 11 high-level sectors, based on sector economic activity similarities.

Hence, our FDI inflow and outflow data will be grouped into 10 sectors. The "Other services" sector will not be included due to the results from an analysis of this sector not giving an interpretation that could further be practically implemented.

Considering recent inequality trends, we expect that specific sector FDI flows will align with the results predicted by the skill-bias theory. Thus, inflows into sectors 3, 5, 6, 7, and 9 (high-skilled) will increase inequality.

After combining the economic sectors into 10 categories, we make a scatter plot analysis. The visual analysis of sector-specific scatter plots helps to gain preliminary insights of effects FDI inflows have on income inequality, depending on the economic sector.

Subsequently, we run *Regression 2* to gain an in-depth understanding of the impact that specific sectors play on income distribution. The following methodology adjustments will be made to overcome potential issues with the large number of explanatory variables. Firstly, only current period values of FDI inflows will be looked into to limit sample reductions that the inclusion of lagged values causes. Secondly, only FDI inflows will be analysed, since most countries report inflows more thoroughly, while most past research also primarily focuses on inflows (Wade, 2004). Thirdly, all control variables except country fixed effects will be excluded to reduce the number of independent variables. Lastly, sector allocation will be regrouped to reduce the number of sectors.
Hence, we will run the following FDI sector-specific *Regression 2*:

$$\Delta lnGINI_{it} = \alpha + \beta_1 \, FDISector_{\,n,it} + \beta_2 Control_{it} + \varepsilon_{it} \qquad (2)$$

Where $\Delta lnGINI$ is the dependent variable - disposable income Gini coefficient (logarithmic values); $FDISector_n$ - the disaggregated FDI inflows for sectors 1 to 10 (% of GDP). *Control* - country fixed effects.

5. *Results and Discussion*

In this section, we present and analyse the results from our models, starting with results and discussion of *Regression 1*, followed by the investigation of the results retrieved from *Model 2*.

Variable	**Δ*ln(Gini_disp)***	
Specification	*FDI inwards*	*FDI outwards*
ln(Gini_disp)-1	0.5126***	0.5061***
	(7.55)	(7.82)
FDI_Hin	0.0013***	
	(4.45)	
(FDI_Hin)-2	-0.0036***	
	(-2.78)	
FDI_Lin	-0.0003	
	(-0.07)	
(FDI_Lin)-2	-0.0144***	
	(-3.36)	
Trade	0.0113	0.0105
	(0.69)	(0.57)
lnPrivate_credit	0.0052**	0.0061*
	(2.11)	(1.95)
Polity2	0.0006***	0.0005***
	(4.67)	(3.65)
lnSecEdu	-0.0057	-0.0047
	(-1.26)	(-0.71)
FDI_Hout		0.0029***
		(3.26)
(FDI_Hout)-2		-0.0047***
		(-2.81)
FDI_Lout		-0.0015
		(-0.41)
(FDI_Lout)-2		0.0009
		(0.16)
_cons	-0.0007	-0.0098
	(0.04)	(-0.37)
Observations	350	328
R^2	0.3063	0.3074
Correlation with error term *corr_u*	-0.3482	-0.3219
Fixed effects	Countries	Countries

Table 3. *Main Regression for FDI Inflows and Outflows. Created by the authors.*

5.1. Baseline Model: Impact of FDI Flows on Income Inequality sectors by skill level

As can be seen in *Table 3,* previous year's disposable income Gini coefficient change is statistically significant and the coefficient is positive. This indicates that a positive change in income inequality measure by 1% in the previous period increases the income inequality measure by 0.51% in the current period, *ceteris paribus*.

The effect of FDI inflows in high-skilled sectors in the current period have a statistically significant effect on income inequality. An increase in the current period's FDI inflows to GDP into high-skilled sectors by 1% increases the Gini coefficient by 0.13%, all else constant. An increase in high-skilled sector FDI inflow to GDP two years ago by 1%, on the other hand, reduces the Gini coefficient by 0.36%, *ceteris paribus*.

An inflow in low-skilled sectors has a statistically significant effect only if the inflow occurred two years ago. An increase of 1% of FDI inflow to GDP into low-skilled sectors results in a reduction of income inequality in the current period of 1.44%, all else constant.

Interestingly, some control variables used, which were expected to reduce inequality, show opposite, statistically significant tendencies. An increase in private credit to GDP by 1% increases income inequality in the current period by 0.005%, all else constant. While an increase in democracy levels in the current period by 1 point increases income inequality by 0.057%, *ceteris paribus*.

Consequently, the current period's investment inflow into high-skilled sectors increase income inequality, which aligns with the skill-bias theory, and could potentially explain the recently noticeable increase in income inequality. Otherwise, increasing foreign financing flows reduce income inequality. Inflows both in current and previous' periods of investment into low-skilled sectors reducing income inequality aligns with the aforementioned expectations. From this, it can be noted that an increase in investment in low-skilled sectors might reduce income inequality by creating additional demand for such labour and thus pushing up the income of individuals employed in these sectors; while, additional investment into already highly demanded sectors pushes income of that part of the population even higher, worsening inequality.

Nonetheless, increases in foreign financing in high-skilled sectors two years ago show tendencies which differ from our expectations - a reduction of inequality. This might be related to the signalling theory. Since skills cannot be obtained immediately, even though there might be a signal that certain skills are more highly demanded, the effects from the signal might be observable only in later periods (Krugman et al., 2001). Then if high-skilled labour is demanded, but there is a lack of it, in the short run the income of labour in theses sectors will be pushed up, but as the market adjusts and the income gap will decrease. However, for these shifts to take place a longer period than two years is needed. Hence, the results rather support the notion that longer-term investment reduces inequality via

appropriate redistribution policies, which, though have become weaker, are in place in developed countries (OECD, 2016).

The noticeable effects that the lagged values of the Gini coefficient have, imply that if a year ago there was a mild increase in income inequality, the current period's increase will be greater, which is illustrated by the trend of continuously increasing inequality, as seen in most OECD countries (OECD, 2011).

Even though variables controlling for trade openness and human capital development show the same impact on income inequality as reported in past research; capital market development and democracy proxies show peculiar results.

Trade openness variable similarly as in multiple past research papers is statistically insignificant (Milanovic, 2005; Dollar & Kraay, 2004), suggesting that the theorem proposed by Stolper and Samuelson (1941) might not hold in the context of developed economies. Yet, it has a positive coefficient - increased trade could increase income inequality. This aligns with our expectations, based on past research: trade openness increases inequality by favouring those who are already highly demanded, similarly as foreign investment (Milanovic, 2005; Spilimbergo, Londono, & Szekely, 1999).

The human capital development proxy (secondary education attainment), though also statistically insignificant, shows that increase in high skilled labour in a country decreases income inequality. This also aligns with past research - countries with more developed human capital are more capable of absorbing increased investment flows and ensure efficient redistribution (Cingano, 2014; OECD, 2011; Galor & Zeira, 1993).

However, previous literature is inconclusive about effects of financial market development on income inequality. Our results support the more recent view that capital market development might increase inequality. This could be explained by financial market developments potentially favouring primarily those who already had access to financing, while low-skilled sectors (and individuals) that struggled with the attraction of financing remain unaffected from increased financial openness (Jaumotte et al., 2013; Lin et al., 2015).

When it comes to the impact democracy levels show on income inequality, findings of more recent research are in line with what can be seen in our results - as a state becomes more democratic, income inequality seems to rise. More traditional research states that more democratic states ensure that the society is more egalitarian and, thus, it is easier for its citizens to create groups and organizations which would ensure the protection of their rights (Muller, 1988). Yet, recent empirical studies have shown that the effect democracy has on income distribution depends heavily on the initial level of equality in the society, and if there

was quite an equal income distribution in countries which had a weak democracy, democratization might actually increase income inequality (Acemoglu, Naidu, Restrepo, & Robinson, 2015; Mahler, 2008).

An increase of FDI outflows to GDP from a country's high-skilled sectors show the same pattern as the results for FDI inflows and are statistically significant. Income inequality, all else held constant, increases by 0.29% in the current period, if there was an increase in investment outflows to GDP in high-skilled sectors in the same period of 1%. Furthermore, FDI outflows to GDP of 1% two years ago from a high-skilled sector reduce income inequality by 0.47%, *ceteris paribus*. Outflows from low-skilled sectors do not appear to have a statistically significant impact on income inequality.

Previous period's income inequality still has a positive effect on the current period's income inequality: increasing previous period's Gini coefficient difference by 1% results in a positive change of the current period's income inequality coefficient by 0.51%.

Both financial development and the democracy level in a country positively impact the income inequality coefficient. An increase of 1% of private credit to GDP increases income inequality by 0.006%, *ceteris paribus*. Furthermore, an increase in the democracy level of 1 point, increases the Gini coefficient by 0.053%, all else constant.

Hence, skill-biased income distribution theory might be able to explain the increase in income inequality also for FDI outflows. The inequality-decreasing effects of previous periods' outflows from high-skilled sectors (similarly as for inflows) indicate that longer-term investment focus for developed countries with efficient redistribution mechanisms might reduce income inequality.

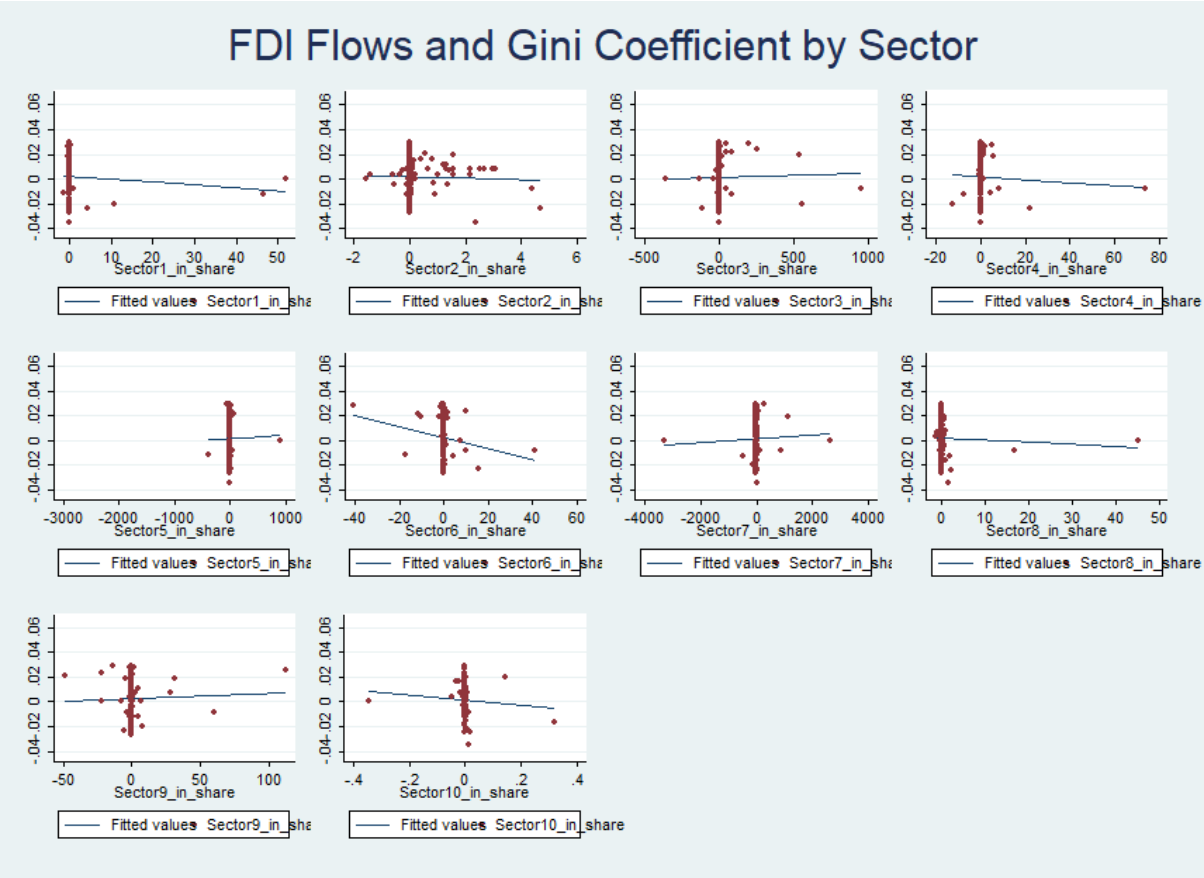
5.2. Model 2: Analysis of Sector-Specific FDI Impact on Income Inequality

5.2.1. Scatterplot Analysis

After analysing effects of high and low-skilled sectors, we look into the effects of sector-specific FDI flows on income inequality. As it can be seen in *Graph 2*, FDI flow values in most cases are concentrated around zero for any given sector and value of the Gini coefficient. High-skilled sectors 3, 5, 7, and 9 show a positive trend line, suggesting that income inequality increases with investment inflows in Manufacturing; Wholesale and Retail Trade; Financial and Insurance Activities; Professional, Scientific and Technical Activities

sectors. These results support the skill-biased theory, which aligns with the results of *Regression 1*.

Yet, Information and Communication sector (sector 6, also classified as high skilled) shows a very strong opposite pattern. Even though, based on such a brief visual analysis, strong claims cannot be made, analysing data for sector 6, it must be noted that the sector relatively recently started rapidly developing. The rapid growth hence might indicate that the sector has enough absorptive capacity not to have a negative effect on income distribution (Grimalda et al., 2010).



Graph 2. *FDI Inflows and Gini Coefficient by Sector. Created by the authors.* In graph: Sector_1in (Agriculture, Forestry, and Fishing); Sector_2in (Mining and Quarrying; Electricity, Gas, Steam and Air Conditioning Supply; Water Supply, Sewerage, Waste Management and Remediation Activities); Sector_3in (Manufacturing); Sector_4in (Construction); Sector_5in (Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles; Transportation and Storage; Accommodation and Food Service Activities); Sector_6in (Information and Communication); Sector_7in (Financial and Insurance Activities); Sector_8in (Real Estate Activities); Sector_9in (Professional, Scientific, and Technical Activities; Administrative and Support Activities); Sector_10in (Other).

Overall, particular sector analysis requires a more thorough assessment to draw stronger conclusions, since the trend lines do not account for many factors potentially affecting inequality.

5.2.2. Regression 2 Analysis

As can be seen from *Table 4,* the impact on income inequality of various sectors of the economy is quite diverse and inconclusive.

When analysing sectors inflows in which have a statistically significant impact on income inequality on an at least 90% confidence level, it can be seen that the effects on inequality of inflows in all sectors do not show similar tendencies, as was seen in the base regression. An inflow in the current period into *Construction Sector* (low-skilled) reduces income inequality in the current period, which aligns with the results of *Regression 1*. On the other hand, an increase in FDI inflows in the current period in *Financial and Insurance Activities Sector* (high-skilled) reduces income inequality, in contrast to what can be observed in the base regression.

Variable	***Δln(Gini_disp)-1***
Δln(Gini_disp)-1	0.5332***
	(4.48)
Agriculture, Forestry and Fishing Sector	0.4867
	(0.82)
Mining and Quarrying; Electricity, Gas, Steam and Air Conditioning Supply; Water Supply, Sewerage, Waste Management, Remediation Activities Sector	0.0170
	(0.63)
Manufacturing Sector	-0.0161
	(-1.35)
Construction Sector	-0.2407*
	(-1.68)
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles; Transportation and Storage; Accommodation and Food Service Activities Sector	-0.0324
	(-1.31)
Information and Communication Sector	-0.0038
	(-0.46)
Financial and Insurance Activities Sector	-0.0158**
	(-2.67)
Real Estate Activities Sector	-0.0031
	(0.14)
Professional, Scientific and Technical Activities; Administrative and Support Activities Sector	0.0450
	(1.26)
Public Administration and Defence; Compulsory Social Security; Education; Human Health and Social Work Activities Sector	-0.1534
	(0.59)
Constant term *_cons*	0.0012***
	(6.51)
Observations	156
R^2	0.4564
Correlation with error term *corr_u*	0.1464
Fixed effects	Countries

Table 4. *Sector-specific Regression for FDI Inflows. Created by the authors.*

It must, however, be noted that the confidence interval for most sectors is quite large, indicating that the effects of separate sector investment inflows are close to zero, and might

be either negative or positive. Consequently, inflow of investment into each separate sector might not have a strong impact on the overall income inequality, due to the size of each separate sector investment flows.

Thusly, only the overall development of investment in high or low-skilled sectors might have a notable impact on income inequality.

5.3. Robustness Checks

Considering that there are multiple limitations of the disposable income Gini coefficient related to data collection, measurement, and calculation methodologies, it is important to check the robustness of the results acquired in *Regression 1* with different inequality measures (Milanovic, 2005). Due to limited data availability for other inequality measures, in robustness checks we exclude all control variables, but country fixed effects[5].

Market income Gini coefficient. The measure is rather weakly correlated with other income distribution measures, since it illustrates the distribution of market income, which is not affected by the redistributive, tax policies, cultural and individual peculiarities, such as consumption patterns of a country (Solt, 2016). Hence, market income Gini coefficient is used as a primary robustness check to see if a change in the income definition used significantly affects the results.

As can be seen in *Table 5,* previous period's income inequality still has a positive and statistically significant impact on the current period's income inequality measure. This aligns with the persistent tendencies of income inequality to increase.

The statistically significant effects of foreign direct investment inflows in high-skilled sectors in both periods show the same direction of impact on income inequality. Moreover, the inflow two years ago in low-skilled sectors appear to reduce income inequality, which aligns with the results reported using the disposable income Gini coefficient. The previously significant effects remain statistically significantly different from zero.

Overall, this robustness check indicates that the impact FDI inflows have on income distribution are robust to the type of income definition used for calculating the inequality measure.

[5] In an unreported regression we use a restricted sample to account for a reduced number of observations, however such restriction does not affect the significance or direction of effects.

Variable	*ΔlnGini_disp*	*ΔlnGini_market)*	*ΔlnS80S20*	*ΔlnP90P10*
1 year lagged value of the dependable variable	0.5841*** (7.56)	0.5519*** (7.45)	-0.2242*** (-3.29)	-0.1153 (-1.25)
FDI_Hin	0.0013*** (3.91)	0.0006*** (3.18)	-0.0005 (-0.34)	-0.008 (-0.63)
(FDI_Hin)-2	-0.0037*** (-2.76)	-0.0026*** (-4.48)	-0.0008 (-0.29)	-0.0059** (-2.34)
FDI_Lin	0.0016 (0.50)	-0.0006 (-0.32)	-0.0693** (-2.07)	-0.0759*** (-3.22)
(*FDI_Lin)-2*	-0.0129*** (3.42)	-0.0090*** (-3.02)	0.0029 (0.18)	0.1154** (2.11)
Observations	396	396	262	191
R^2	0.4049	0.4093	0.0402	0.0089
Constant term *_const*	0.0010*** (4.70)	0.0013*** (5.81)	0.0049*** (5.39)	0.0027*** (6.95)
Correlation of error term *corr_u*	0.0326	0.1575	-0.2975	-0.4558
Fixed effects	Countries	Countries	Countries	Countries

Table 5. Robustness Checks With Alternative Inequality Measures. Created by the Authors.

P90P10 and S80S20 Measures. The regression results, using P90P10 and S80S20 inequality measures, as can be seen in *Table 5,* are not completely consistent with the results of regressions using the Gini coefficient, and between themselves.

In contrast to the results obtained with *Regression 1*, lagged values of inequality measures have a negative sign, implying that an increase in inequality in the previous period reduce inequality in the current one. Lagged value of changes in logarithmic value of S80S20 is statistically significant, however, the hypothesis that change in logarithmic values of P90P10 measure has no effect on the value of the measure in the current period cannot be rejected. These results quite clearly indicate that the differences of inequality measures (definitions, methods of measurement, and data gathering) are quite notable.

Effects on the P90P10 measure from FDI inflows appear to be statistically significant for the FDI inflows in high-skilled sectors two years ago. An increase in FDI to GDP of 1% two years ago reduces income inequality by 0.59%, all things equal. An inflow in low-skilled sectors of 1% in the current period reduces income inequality by 7.6%, *ceteris paribus*. These results align with those of the *Regression 1*. However, unlike in *Regression 1*, an inflow of FDI to GDP in low-skilled sectors two years ago increases income inequality by 11.5%.

The impact on the S80S20 measure is statistically significant only for inflows in low-skilled sectors in the current period, but the results align with those of the *Regression 1*. An

increase in FDI inflows to GDP in low-skilled sectors of 1% in the current period reduces income inequality in the same period by 6.2%, all else constant.

As it can be seen in *Table 5*, the two alternative measures differ only partially from regressions with disposable or market income Gini coefficients. Some potential sources of these discrepancies are: the limited amount of data for the alternative income distribution measures; notably different income and inequality definitions; differences in the construction of inequality measures. However, the results might also indicate that the main regression results are non-robust and they actually illustrate some other underlying drivers of income inequality, which is captured by FDI inflows. Yet, if we only look at the statistically significant results of the impact FDI flows have on income inequality, even when using different inequality measures, the results align with those of the base *Regression 1*. Moreover, the results using disposable income and market income Gini coefficients fall in line both when it comes to the direction of the effects and the significance.

Hence, the results do appear to be robust to differing income definitions. However, since all results do not align when it comes to the usage of completely different income inequality measures, it cannot be ruled out that, as noted by Lakner and Milanovic (2015), and Anand and Segal (2008), inequality development and drivers do depend on the measure being used.

5.4. Practical Implications

The recent increase in income inequality in developed countries gives major concern for policy makers on how to mitigate the ongoing trend. Our results show the existence of the skill-biased changes, yet longer-term investment in both high and low-skilled sectors reduce inequality. Thus, if a country's target is to promote efficiency, the emphasis should be on ensuring that investment is attracted to efficient high-skilled sectors. While, to ensure more equal income distribution, mechanisms, which enable different sectors to enjoy technological advances equally, should be in place.

As discussed in past literature, to ensure less biased technological transfers certain level of technological development should already be in place, which is the case for developed countries (Basu & Guariglia, 2007). Which leaves the focus to be on the improvement of institutional quality and development of capital. It is vital to ensure efficient decision-making and processes on an institutional level to limit bias, and ensure that long-term investment is attracted (North, 1994). Furthermore, investments in human capital development via educational quality and attainment improvements are needed. As noted by

Grimalda et al. (2010) such improvements ensure increased absorptive capacity of investment, limit technology transfer biases, and, as shown by our results, do not worsen income inequality.

Due to globalization, individual policies have an increasing role, because among other considerations, countries cater to potential investors through their chosen policy mix (Blomstrom et al., 2003). Consequently, only one of these policy solutions might not yield the required results, but a wholesome consideration of FDI attraction and distribution is needed.

5.5. Limitations and Further Research

The limitations of this research are related to the limitations of the foreign direct investment data; income inequality measure choice; and such possible model limitations as potential reverse causality and omitted variable bias.

The limitations posed by the foreign direct investment data are related to the specific sector division, time period of reported data, and the division of sectors into high and low-skilled ones. The central banks and statistical offices of sample countries report sector specific data. Though international standards for sector division were created in 1948, most countries started implementing the current standards (BPM6 and ISIC Rev. 4) only in recent years (United Nations, 2008). Hence, most countries opted for national adaptations of the classification before 2007, which had to be adjusted and might have caused some issues with the comparability of data. Furthermore, the time period for which FDI is available is quite limited foremost by the fact that foreign financial flows started only with the increased integration of the world economy around 1970s.

Limitations resulting from the use of the Gini coefficient as the inequality measure are the measurement methods, calculation of the measure, and the methodology of data gathering. All of these limitations were already analysed in depth, yet it still ought to be born in mind that alternative inequality measures might reveal some different development tendencies and effects of investment on income distribution.

Finally, the model limitations are potential reverse causality; omitted variable bias.

Even though past research studies the causal relationships between investment flows and income inequality, a strong link still has not been established (Figini & Gorg, 2011). Thus, it is hard to argue that the causal relationship might run both ways: increased foreign investment can decrease inequality and countries with lower inequality levels might attract more investment. However, the focus of this research is not to define a causal relationship,

but rather an in-depth analysis of the correlation between factors, which still is vital for the understanding of the macroeconomic processes.

A potential omitted variable could be tax policy proxies, since a large portion of past research focuses on the effects tax policy has on the attraction of foreign investment. Moreover, tax policies have been used as an illustration of the redistributive policies of a country. In the current research these factors were accounted for as a part of the democracy level proxy, which accounts for the existence of citizens' civil liberties and the possibilities to express their preferences in various matters (Center for Systemic Peace, n.d.). Even though the link is not very direct, these rights ensure that citizens have an impact on the redistributive policies in a country. The inclusion of additional variables illustrating redistributional qualities of tax policies might give more depth to the results however, it would also call for an increase in the sample size, which might not be feasible due to the restrictions posed by the sector-specific FDI data.

Considering the limitations of the existing research, to make stronger conclusions about the impact sector-specific FDI flows have on income distribution further research could analyse an extended data sample. This could be done by either using alternative data gathering methods or extending the existing sample once a unified sector division (such as required by BPM6, used in this paper) has been implemented by all countries and past data has been recalculated up to the 1970s when more foreign direct investment activity started. Furthermore, future research could benefit from analysing the impact of foreign investment on inequality using alternative inequality measures, which, based on past research and our findings do affect the results, but have been largely neglected in the past. Lastly, useful insight could be gained by including an in-depth analysis of tax policies and the impact those have on income redistribution in developed countries, the impact these policies have on sector-specific investment behaviour.

6. Conclusions

The continuously increasing income gap in developed countries in past decades seems to contradict traditional pro-openness arguments and traditional theories of development economics, which claim that developed countries ought to face low income inequality.

To shed some light on the contradictory findings of past research about: the potential link between financial openness and income inequality and tendencies that ought to be observed in developed countries, we thrive to assess what have been the effects of sector-specific FDI flows on income inequality in host developed countries.

We analyse a fixed-effect regression using a unique created dataset of 35 developed countries for a period of 23 years. First, we assess whether the impact of investment differs depending on the sector skill level requirement. We find that there are some indications that the increasing income inequality might stem from skill-biased investing – investment flowing primarily into already demanded high-skilled sectors. Yet, medium and long-term investment even in high-skilled sectors seems to reduce inequality, an indication of the importance of attracting long-term investment. Additionally, we find that financial market development might also favour those for whom attracting financing was already easier, while increased democracy levels appear to increase the income gap, as the medium-income group increases.

Second, we analyse the impact that investment in separate sectors might have on income distribution in a country via a visual analysis and a fixed-effects panel regression. The visual analysis supports the notion that increased foreign investment in high-skilled sectors might increase demand for already demanded sectors. However, an in-depth regression reveals that some high-skilled sectors (Information and Communication, Financial and Insurance Activities) show differing tendencies. This illustrates that if a sector has the capacity to absorb and grow using the additional investment, it will not worsen income distribution in a country.

Based on these findings, it is vital for decision and policy makers to focus on improving institutional quality and investment in human capital, both of which ensure less-biased transfers and attraction of primarily long-term investment.

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8. Appendices

Appendix A. Data Availability of Sector-specific FDI Flows for Sample Countries

Country	FDI flows	Country	FDI flows	Country	FDI flows
Australia	2001-2016	Germany	1996-2015	Norway	1994-2016
Austria	2006-2016	Greece	2003-2016	Poland	2003-2016
Belgium	2012-2016	Hungary	2008-2016	Portugal	2008-2016
Bulgaria	2014-2016	Iceland	1998-2016	Slovak Republic	2000-2014
Canada	2000-2016	Ireland	2006-2016	Slovenia	2006-2016
Croatia	1994-2016	Italy	1994-2016	Spain	1994-2016
Cyprus	1997-2016	Latvia	2001-2016	Sweden	2000-2016
Czech Republic	2000-2016	Lithuania	2004-2016	Switzerland	1998-2016
Denmark	2005-2016	Luxembourg	2002-2016	Turkey	2001-2016
Estonia	2000-2016	Malta	2011-2016	United Kingdom	1994-2016
Finland	2004-2016	Netherlands	2004-2016	United States	1998-2016
France	2000-2016	New Zealand	2002-2016		

Appendix B. Currency Conversion

Currency conversion poses two issues: the euro was introduced only in 1999; and country specific conversion differences.

We use the yearly average of the European Central Bank's reported reference exchange rate to convert each currency to euro. For non-euro countries, we have to make the pre-euro data comparable. As specified by the OECD (2001), one of the most common methods to get data for the pre-euro period is to convert it using the first euro exchange rate (January 1999). Alternatively, converting national currencies using ECU (temporary currency during the euro introduction period) or USD would require many approximations and make the data less precise. Hence, though, the organization suggests that using first euro exchange rate limits the possibility to aggregate data before the euro introduction and after, such conversion method is the most easily calculable, comparable one, and most commonly used by nations' financial institutions.

An exception is Iceland: ECB data is used only until 2007, since it reports ISK exchange rate only until December 3, 2008 (when the Central Bank of Iceland changed its monetary policy to maintain stability and increase the value of the Icelandic krona, according to The Central Bank of Iceland (2008)). For the period 2008-2016 the Bank of Iceland's reported exchange rate is used. Another special case is Turkey that performed redenomination on its Turkish lira (previously TRL, since 2005 TRY), effectively removing six zeros from the exchange rate (Central Bank of the Republic of Turkey, 2004). Hence, two different exchange rates are taken from the ECB, while the OECD reports Turkish data for the TRL period expressed as TRY (TRL rate divided by 1 million) (OECD, n.d.).

Appendix C. Sector Allocation: High and Low-skilled; SNA Code

	Average R&D share	Average Turnover (mEuro)	Weighted R&D share	High/low skilled sector division	SNA Sector Number
A (Agriculture, Forestry and Fishing)	3664.19	5844.13	14.413	Low-skilled	1
B (Mining and Quarrying)	5226.51	16594.91	59.642	Low-skilled	2
C (Manufacturing)	55226.66	302478.47	11243.226	High-skilled	3
D (Electricity, Gas, Steam and Air Conditioning Supply)	4786.80	53221.43	171.466	Low-skilled	2
E (Water Supply; Sewerage, Waste Management and Remediation Activities)	3512.46	8287.22	19.591	Low-skilled	2
F (Construction)	1600.84	63733.30	68.669	Low-skilled	4
G (Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles)	3950.86	412835.47	1097.871	High-skilled	5
H (Transportation and Storage)	886.90	54508.17	32.538	Low-skilled	5
I (Accommodation and Food Service Activities)	116.51	18813.33	1.475	Low-skilled	5
J (Information and Communication)	36308.20	45826.41	1119.871	High-skilled	6
K (Financial and Insurance Activities)	7544.73	126608.55	642.916	High-skilled	7
L (Real Estate Activities)	162.01	18887.78	2.060	Low-skilled	8
M (Professional, Scientific and Technical Activities)	40798.49	48340.62	1327.407	High-skilled	9
N (Administrative and Support Activities)	1270.92	31371.76	26.835	Low-skilled	9
O (Public Administration and Defence; Compulsory Social Security)	128.05	11152.26	0.961	Low-skilled	10
P (Education)	169.46	33810.28	3.856	Low-skilled	10
Q (Human Health and Social Work Activities)	761.01	173527.14	88.880	Low-skilled	10
R (Arts, Entertainment and Recreation Activities)	1015.01	21505.05	14.691	Low-skilled	11
S (Other Service Activities)	1255.34	38066.23	32.162	Low-skilled	11

Appendix D. Base Model Specifications

Variable	***Δln(Gini_disp)***		
Specification	*FDI inwards*	*FDI outwards*	*FDI inwards and outwards*
ln(Gini_disp)-1	0.5126*** (7.55)	0.5061*** (7.82)	0.491*** (6.56)
FDI_Hin	0.0013*** (4.45)		-0.0037** (-2.23)
(FDI_Hin)-2	-0.0036*** (-2.78)		-0.0032 (-0.66)
FDI_Lin	-0.0003 (-0.07)		-0.0045 (-0.75)
(FDI_Lin)-2	-0.0144*** (-3.36)		-0.0171 (-1.55)
Trade	0.0113 (0.69)	0.0105 (0.57)	0.0125 (0.69)
lnPrivate_credit	0.0052** (2.11)	0.0061* (1.95)	0.0068** (2.28)
Polity2	0.0006*** (4.67)	0.0005*** (3.65)	0.0005*** (3.74)
lnSecEdu	-0.0057 (-1.26)	-0.0047 (-0.71)	-0.0052 (-0.77)
FDI_Hout		0.0029*** (3.26)	0.0089*** (2.93)
(FDI_Hout)-2		-0.0047*** (-2.81)	-0.0002 (-0.04)
FDI_Lout		-0.0015 (-0.41)	0.0037 (0.38)
(FDI_Lout)-2		0.0009 (0.16)	-0.0061 (-0.54)
_cons	-0.0007 (0.04)	-0.0098 (-0.37)	-0.0104 (-0.38)
Observations	350	328	325
R^2	0.3063	0.3074	0.3016
Correlation with error term *corr_u*	-0.3482	-0.3219	-0.4346
Fixed effects	Countries	Countries	Countries

Table 1. Comparison Regressions of FDI Inflows, Outflows, and Net Flows. Created by the Authors.

Variable	**Probability of Skewness**	**Probability of Kurtosis**	**Joint Prob>chi²**
Gini_disp	0.0000	0.0001	0.0000
Gini_market	0.0000	0.0000	0.0000
P90P10	0.0000	0.7532	0.0000
S80S20	0.0000	0.0000	0.0000

Table 2. Income Inequality Measure Skewness and Kurtosis Tests. Created by the Authors.

	Number of Observations	Mean	Standard Deviation	Min	Max
lnGini_disp	763	3.3833	0.1494	3.0106	3.8459
d.lnGini_disp	728	0.0024	0.0107	-0.0348	0.0637

Table 3. Summary Statistics of the Disposable Income Gini Coefficient. Created by the Authors.

Variable	***Δln(Gini_disp)***	***ln(Gini_disp)***
Δln(Gini_disp)-1	0.5126***	
	(7.55)	
ln(Gini_disp)-1		0.9329***
		(31.19)
FDI_Hin	0.0013***	0.0020***
	(4.45)	(9.05)
(FDI_Hin)-2	-0.0036***	-0.0032***
	(-2.78)	(-2.57)
FDI_Lin	-0.0003	-0.0080
	(-0.07)	(-0.90)
(FDI_Lin)-2	-0.0144***	-0.0163***
	(-3.36)	(-3.80)
Trade	0.0113	-0.0265
	(0.69)	(-0.92)
lnPrivate_credit	0.0052**	0.0071
	(2.11)	(1.29)
Polity2	0.0006***	0.0006***
	(4.67)	(3.04)
lnSecEd	-0.0057	-0.0028
	(-1.26)	(-0.44)
_const	-0.0007	0.2060
	(-0.04)	(1.59)
Observations	350	350
R^2	0.3063	0.9952
Correlation of error term *corr_u*	-0.3482	0.8385
Fixed effects	Countries	Countries

Table 4. Alternative Model Comparison for Different Disposable Income Gini Coefficient. Created by the authors.

	lnGini_disp
lnGini_disp	1.0000
l1.lnGini_disp	0.9979
l2.lnGini_disp	0.9931
l3.lnGini_disp	0.9868
l4.lnGini_disp	0.9794
l5.lnGini_disp	0.9714
l10.lnGini_Disp	0.9393

Table 5. Correlation of Lagged Values of the Gini Coefficient. Created by the Authors.

	lnGini_disp		*lnGini_disp*
FDI_Hin	-0.0965	*FDI_Lin*	-0.1820
l1.FDI_Hin	-0.0942	*l1.FDI_Lin*	-0.1578
l2.FDI_Hin	-0.1004	*l2.FDI_Lin*	-0.1346
l3.FDI_Hin	-0.1074	*l3.FDI_Lin*	-0.1061
l5.FDI_Hin	-0.1104	*l5.FDI_Lin*	-0.0977
	lnGini_disp		*lnGini_disp*
FDI_Hout	-0.0942	*FDI_Lout*	-0.1799
l1.FDI_Hout	-0.0944	*l1.FDI_Lout*	-0.1596
l2.FDI_Hout	-0.0969	*l2.FDI_Lout*	-0.1469
l3.FDI_Hout	-0.1086	*l3.FDI_Lout*	-0.1207
l5.FDI_Hout	-0.1222	*l5.FDI_Lout*	-0.0921

Table 6. Correlation of Lagged Values of the Gini Coefficient and FDI Flows. Created by the Authors.

Variable			Δ*ln(Gini_disp)*		
Δ*ln(Gini_disp)-1*	0.4866*** (7.64)			0.5097*** (7.41)	0.5126*** (7.55)
Δ*ln(Gini_disp)-2*		0.2326*** (3.09)			
Δ*ln(Gini_disp)-5*			-0.1882*** (-2.74)		
FDI_Hin	0.0004* (1.80)	0.0023*** (7.68)	-0.000006 (-0.00)	0.0018*** (3.24)	0.0013*** (4.45)
l1.FDI_Hin	-0.0017*** (-5.32)			0.0026 (1.34)	
l2.FDI_Hin		-0.0042*** (-3.03)		-0.0064** (-2.07)	-0.0036*** (-2.78)
l5.FDI_Hin			-0.0031 (-0.30)		
FDI_Lin	-0.0037 (-0.71)	-0.0076 (-1.03)	-0.0144 (-1.00)	0.0011 (0.28)	-0.0003 (-0.07)
l1.FDI_Lin	-0.0072* (-2.00)			-0.0020 (-0.47)	
l2.FDI_Lin		-0.0184*** (-4.14)		-0.0181*** (-2.98)	-0.0144*** (-3.36)
l5.FDI_Lin			-0.0228*** (-4.05)		
Trade	0.0048 (0.28)	-0.0029 (-0.11)	-0.0195 (-0.52)	0.0102 (0.61)	0.0113 (0.69)
lnPrivate_credit	0.0064** (2.10)	0.0087** (2.04)	0.0202*** (3.44)	0.0054** (2.17)	0.0052** (2.11)
Polity2	0.0005*** (4.07)	0.0008*** (3.83)	0.0015 (0.79)	0.0006*** (4.59)	0.0006*** (4.67)
lnSecEdu	-0.0098 (-1.54)	-0.0076 (-1.04)	0.0016 (0.16)	-0.0062 (-1.33)	-0.0057 (-1.26)
Constant term *_const*	0.0128 (0.47)	-0.0095 (-0.28)	-0.1113 (-1.53)	0.0009 (0.04)	-0.0007 (-0.04)
R^2	0.2552	0.0970	0.0732	0.3159	0.3063
Number of Observations	377	347	262	347	350
Corr of error term *corr_u*	-0.4230	-0.6395	-0.8725	-0.3335	-0.3482
Fixed effects	Countries	Countries	Countries	Countries	Countries

Table 7. Comparison of the Lag Structure. Created by the Authors.

Variable	Change of Disposable income Gini coefficient (logarithmic values) Δ*ln(Gini_disp)*			
Specification	Without Control Variables	Without Control Variables. Time Fixed Effects	Without Control Variables. Limited Sample	With Controls
Δ*ln(Gini_disp)-1*	0.6243*** (16.60)	0.5845*** (7.57)	0.5342*** (6.56)	0.5126*** (7.55)
FDI_Hin	0.0017* (1.73)	0.0013*** (3.86)	0.0012*** (4.02)	0.0013*** (4.45)
(*FDI_Hin)-2*	-0.0023* (-1.88)	-0.0037*** (-2.78)	-0.0036*** (-2.98)	-0.0036*** (-2.78)
FDI_Lin	0.0035 (0.84)	0.0016 (0.51)	0.0008 (0.23)	-0.0003 (-0.07)
(*FDI_Lin)-2*	-0.0113** (-2.10)	-0.0129*** (-3.44)	-0.0133*** (-3.49)	-0.0144*** (-3.36)
ln(Private_credit)				0.0052** (2.11)
ln(SecEdu)				-0.0057 (-1.26)
Trade				0.0113 (0.69)
Polity2				0.0006*** (4.67)
c.Year		-0.00001 (-0.10)		
Testparm *c.Year* (Prob > F)		0.9170		
Observations	396	396	350	350
R^2	0.4262	0.4052	0.3548	0.3063
Constant term *_const*	0.0006* (1.58)	0.0223 (0.11)	0.0010*** (4.67)	-0.0007 (-0.04)
Correlation of error term *corr_u*	0 (assumed)	0.0344	-0.0633	-0.3482
Fixed effects	Countries	Countries	Countries	Countries

Table 8. Inclusion of Control Variables. Test Regressions. Created by the Authors.