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The Effects of Economic Globalisation and Ethnic Fractionalisation on Redistribution*

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Abstract

We examine the effect of economic globalisation on income redistribution and hypothesise that it depends on ethnic fractionalisation. In highly fractionalised countries, powerful ethnicities are able to extract globalisation-induced benefits, whereas their governments face substantial political obstacles when redistributing income between ethnic groups. Using the newly constructed KOF Globalisation Index, we find supportive evidence for the interactive effect of ethnic fractionalisation and de jure financial globalisation on redistribution. In particular, the total effect of de jure financial globalisation on redistribution is negative in highly fractionalised countries. Governments in these countries are apparently not only reluctant to offset potential consequences stemming from de jure financial globalisation, but they even reduce redistribution to lower levels.

Keywords: Income redistribution; Globalisation; Ethnic fractionalisation.

JEL-codes: D31, D63, F15, O11, O15

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1. Introduction

The impact of globalisation on the economy and politics has been discussed extensively in recent years. Globalisation is enhancing economic growth by facilitating the possibilities to trade internationally, leading to a specialization of production processes and an increase in the variety of goods and services offered (Wade, 2004). Thus, there is quite some consensus that globalisation leads to a prospering economy (see, e.g. Dreher, 2006; Dollar and Kraay, 2004; Villaverde and Maza, 2011). However, stronger competition associated with globalisation is often suggested to have increased inequality. Gozgor and Ranjan (2017) show that globalisation increases market-based income inequality and redistribution. Similarly, Bergh and Nilsson (2010) find that trade liberalization as well as (lagged) economic globalisation increase after-tax income inequality, thereby implying that governments are either unwilling or unable to countervail the potentially adverse effects through redistribution.

This paper focuses on differences in the political reaction to counteract the effects of globalisation by redistributing income through the tax and subsidy system. The analysis of Gozgor and Ranjan (2017) is the paper most related to our study. They estimate the effect of globalisation on redistribution and find that globalisation increases redistribution, which is measured by the difference between market-based and after-tax Gini-coefficients. Our analysis deviates from the empirical model by Gozgor and Ranjan (2017) in various ways. In particular, we investigate to what extent ethnic fractionalisation might be a conditioning factor on the willingness or ability of the government to engage in redistributive policies. We define ethnic fractionalisation by the probability that two randomly drawn individuals belong to the same ethnic group, where a higher value of ethnic fractionalisation is associated with a lower probability. Already Becker (1957) suggested that countries with a high degree of ethnic fractionalisation are expected to favour lower levels of redistribution. In addition, Houle (2017) suggests that the effect of income inequality on redistribution is weaker if the poor fraction of the population is ethnically fractionalised. In our study, we combine the findings of Gozgor and Ranjan (2017), Becker (1957) as well as Houle (2017) and present an analysis of the effects of globalisation on redistribution dependent on ethnic fractionalisation. The ethnic fractionalisation argument is thereby similar to the one in Houle (2017). To the best of our knowledge, there is no other study that looks at the link between redistribution, globalisation and ethnic fractionalisation.

In a world in which on the one hand increased competition disciplines governments and on the other hand the electorate wants to be compensated for the increased uncertainty related to

globalisation, we hypothesise that the latter will only be able to truly compensate for the first in societies with a low degree of ethnic fractionalisation, i.e. in more homogenous environments in which the willingness to redistribute is higher. Furthermore, we analyse whether government-induced de jure measures, such as import restrictions, or actual de facto flows of goods and services trigger redistribution. We believe that in particular de jure changes in the degree of globalisation can give rise for compensating redistribution measures during the political process. The main explanation for this assumption lies in the nature of de jure globalisation measures. In particular, de jure measures as well as redistribution levels are both directly determined by government policy. In order to at least partially compensate for the possible adverse consequences of globalisation-inducing decisions, an increase in the de jure degree of globalisation is likely to also trigger additional redistribution decisions in the political process. In order to differentiate between de facto and de jure measures of globalisation, we exploit a new feature of the KOF Globalisation Index. Its latest edition provides a distinction between de facto and de jure measures of globalisation. De facto measures incorporate actual flows in the economy, whereas de jure encompasses regulatory features, such as import and capital restrictions.

In our study, we separate results for trade and financial globalisation. Whereas the trade globalisation literature often finds that this form of globalisation does not have a strong impact on inequality and thereby does not have to trigger redistribution measures (Jaumotte et al., 2013; Richardson, 1995; Reuveny and Li, 2003), recent literature focusing on financial integration note clearly an upward pressure on inequality (De Haan and Sturm, 2017; De Haan et al., 2018; Furceri and Loungani, 2018; Van Velthoven et al., 2019). Following this more recent line of literature, we expect that the inequality pressure stemming from financial integration is raising redistribution. By using the newly revised KOF Globalisation Index that distinguishes between trade and financial globalisation, we are the first to simultaneously look into these different dimensions of globalisation and ethnic fractionalisation as well as their impact on redistribution.¹ Hence, the main contribution of this paper is to provide evidence that ethnic fractionalisation, in addition to different

¹ Another study that distinguishes between trade and financial as well as de facto and de jure measures of globalisation is Jha and Gozgor (2019). Their empirical results suggest that, on average, globalisation decreases taxation in labour-abundant economies, but increases it in capital-abundant economies. In contrast, financial globalisation has a negative effect on taxation. Most importantly, their analysis focuses on taxation rather than overall redistribution. Even though the authors claim that taxation is mainly used for redistribution in their theoretical model, taxation is still not equivalent to general redistribution. In addition, their analysis focuses on the effect of globalisation on taxation depending on capital-labour ratios. Our study introduces the ethnic component to explain the differing effects between countries.

dimensions of globalisation, is an important driver for the heterogeneous effects of globalisation on redistribution.

In total, we cover 62 countries over eight 5-year periods from 1975 to 2014.² Using a standard fixed-effects panel regression framework, our results show that the effect of de jure financial globalisation on redistribution depends on the level of ethnic fractionalisation. In particular, the effect of globalisation on redistribution is strongly negative for highly fractionalized countries, such as India and South Africa, but statistically insignificant for more ethnically homogenous countries. There are no effects of trade globalisation using the same model. In addition, de facto measures are also not statistically significant. These results are confirmed by instrumental variable estimations and various robustness checks.

The next section provides an overview of the existing literature related to income redistribution, globalisation as well as ethnic fractionalisation. Section 3 describes our data and the empirical model we use to estimate the effects of globalisation and ethnic fractionalisation on redistribution. In Section 4, we present the fixed-effects regression results. In order to account for potential endogeneity concerns, we employ an IV estimation in Section 5. Robustness checks are provided in Section 6. The last section concludes.

2. Theoretical background

The literature on the effects of globalisation on redistribution can be characterised by two opposing theoretical arguments. According to the “compensation effect” argument, globalisation creates both increased demand for insurance against external risks and the need to distribute its economic gains fairly across different groups within society (see, e.g. Rodrik, 1998; Burgoon, 2012). Based on this line of thinking, there is quite some consensus in the literature that globalisation leads to more redistribution (see, e.g. Leibrecht et al. 2011, Bergh and Nilsson, 2010 and Meinhard and Potrafke, 2012). In contrast, according to the “disciplining effect” argument, globalisation limits the government’s ability to redistribute, causing a decline in the level of redistribution (see, e.g. Dreher et al., 2008a, and Onaran et al., 2012). For instance, an increase in globalisation levels leads to less restrained movement of capital and labour. In order to attract capital and high-skilled labour, governments engage in tax competition (Sinn, 1997). As a result, governments collect less taxes which weakens their redistribution capacity and, hence, overall redistribution. In general, both

² A list of countries is provided in Table A.3.

effects occur when confronted with increased globalisation levels. Governments face amplified pressure while trying to countervail potential negative consequences. However, the respective magnitudes determine whether the compensating or the disciplining effect dominates.

Redistribution connects income inequality to the role of government in preventing any undesired consequences of political and economic developments. Governments appear generally inequality-averse and, thus, strive to counteract actual or potential rises in income inequality. A common claim is that increasing specialization due to globalisation tends to strengthen income differences within countries. Dreher and Gaston (2008), Potrafke (2015) and Gozgor and Ranjan (2017) suggest a positive effect of globalisation on income inequality using the KOF Globalisation Index. Combining this suggests that inequality-averse governments increase the level of redistribution after they implement globalisation-increasing *de jure* measures. There is some literature on rising disparities in income leading to investment-reducing social unrest, political instability and diminishing property rights security (Keefer and Knack, 2002). In addition, several papers provide evidence that inequality may reduce the pace and durability of growth (see, for instance, Persson and Tabellini, 1994; Berg et al., 2012; and Ostry et al., 2014). Furthermore, Sturm and de Haan (2015) show that countries with similar market-based economic systems exhibit differences in income inequality before and after redistribution, thereby implying that redistribution policies differ tremendously across countries. Hence, redistribution policies are likely to be shaped by other factors than merely the type of economic system.

Meltzer and Richard (1981) show that redistribution levels depend on the position of the decisive voter in the income distribution. Income distributions are skewed to the right, implying that the median voter has an income below the mean and, therefore, is in favour of more redistribution (Janeba and Raff, 1997). Alesina and Rodrik (1994), Alemán and Woods (2018), Gründler and Köllner (2017), Mahler (2008), Houle (2017) and Scervini (2012) confirm this hypothesis. However, there are also studies, like Luebker (2014), that conclude there is no such direct link. Following this broader literature, we will include market-based income inequality as a control to test whether more inequality triggers more redistribution.

A recent line of research suggests that ethno-linguistic fractionalisation can help explain cross-country differences in income redistribution (cf. Desmet et al., 2012; Sturm and De Haan, 2015; Haller et al., 2016). Ethnic fractionalisation has an effect on redistribution through a variety of channels, such as the provision of public goods (Alesina and La Ferrara, 2000; Vigdor, 2004; Habyarimana et al., 2007), the potential for conflict (Collier and Hoeffler, 2004; Blimes, 2006) as

well as the level of corruption (Easterly and Levine, 1997; Shleifer and Vishny, 1993). Haller et al. (2016) focuses on ethnic diversity and historic ethnic exploitation, such as slavery, to explain international variations in within-country income inequality. A crucial assumption is that a society with a high level of ethnic variety faces difficulties when trying to organise and push general interests onto the political spheres. This implies an inherent inequality between the powerful and the ethnic minorities persistently imprinted by former power relations.

We build upon and extend this line of literature and analyse whether the effect of globalisation on redistribution depends on the level of ethnic fractionalisation. In particular, we hypothesise that the prevalence of either the compensating or disciplining effect is depending on ethnic fractionalisation. The literature suggests that the allocation of resources is, among others, determined by the ethnic composition of a country's population. We believe that the level of ethnic fractionalisation heavily influences the distribution of the benefits coming from globalisation. Sturm and De Haan (2015) argue that the impact of ethno-linguistic fractionalisation is conditional on the level of economic freedom, a proxy for capitalism. Countries that are highly fractionalised exhibit less income distribution, while capitalist countries with low levels of fractionalisation redistribute to a higher degree. Gründler and Köllner (2018) uncover negative effects of ethnic and cultural diversity on redistribution. Their main hypothesis is based on Luttmer's (2001) "racial group loyalty" argument, which states that individuals are more likely to support redistribution policies when they benefit their own racial group. Similarly, Eger (2010) concludes that immigration negatively affects the support for the welfare state in Sweden. Furthermore, Alesina and La Ferrara (2005) suggest that as a country becomes ethnically more fractionalised, it chooses to have a smaller size of government due to heterogeneous preferences, which lower the marginal utility of public goods thereby leading to a decrease in overall public good provision. Consequently, redistribution levels are reduced.

Following the literature on ethnic fractionalisation, we expect the results to diverge substantially for different levels of fractionalisation and, hence, our first and main hypothesis is that the effect of globalisation on redistribution depends on the level of ethnic fractionalisation.

As governments are assumed to be inequality-averse, they are inclined to balance out negative consequences of their own doing. In order to gain majorities, compromises are likely to occur in the political process. If policies change towards more political openness, then it is likely that these policies trigger measures of redistribution to directly compensate losers through the political process. For that reason, we expect that in particular *de jure* measures of globalisation, i.e. formal

trade and capital mobility restrictions, are going to be linked to redistribution policies. This reasoning would be in line with the “compensating” hypothesis stated above. However, if governments are unable to increase redistribution levels due to international pressure to keep taxes low, the compensating mechanism might be outweighed by the disciplining effect. Our claim is that the compensating effect is either tenuous or even completely absent in highly fractionalised countries. First, a highly fractionalised society is less likely to support higher redistribution levels as benefits are more likely to be ascribed to other ethnic groups. This is in line with Luttmer’s (2001) “racial group loyalty” argument and also applies to non-democratic countries, in which government executives are less likely to compensate other groups than their own. Second, an ethnic fractionalised country has various interests and preferences, thereby exacerbating the chances to reach a consensus, which translates into overall lower government spending according to Alesina and La Ferrara (2005). Thus, the disciplining effect strongly dominates and, thereby, generates overall negative effects on redistribution. In contrast, we hypothesise that countries with low levels of fractionalisation experience both, compensating as well as disciplining, effects of globalisation in more equivalent proportions. Therefore, the effects of globalisation is expected to have either a small or no effect on redistribution. Whether also de facto globalisation, i.e. actual flows of goods and service and/or financial assets, triggers actual redistribution policies is less clear. The level of de facto globalisation is primarily determined by the market economy and less directly linked to policy decisions.

In the income inequality literature, Reuveny and Li (2003) study the effects of economic openness and democracy on income inequality. Using a cross-country analysis, they find that democracy as well as trade reduces income inequality, whereas foreign direct investment increases it. This suggests that different dimensions of globalisation have different consequences. Therefore, we analyse the effects of globalisation on redistribution by distinguishing between trade and financial globalisation. We add to the literature by providing a comprehensive analysis for different components of economic globalisation. The literature on the effects of trade on income inequality is inconclusive; trade either has an increasing, reducing or insignificant effect on income inequality (Bergh and Nilsson, 2010; Jaumotte et al., 2013; Richardson, 1995; Reuveny and Li, 2003). As a consequence, governments might effectively not have to change redistribution policies. In contrast, financial globalisation is likely to benefit mostly the higher fractions of the income distribution as they are more likely to earn capital income and be able to invest in foreign countries. De Haan and Sturm (2017) and De Haan et al. (2018) show that financial liberalisation, which is related to our de jure financial globalisation measure, indeed increases income inequality. Furceri and Loungani

(2018) analyse the distributional effects of capital account liberalisation. Their results exhibit inequality-increasing effects of this form of liberalisation. In addition, Van Velthoven et al. (2019) suggest that income inequality caused by financial liberalisation leads to more redistribution than inequality derived from other sources. Following this line of literature, we expect in particular an effect of financial globalisation on redistribution, while trade globalisation might not have a clear impact.

3. Empirical Model and Data

In order to analyse the effect of globalisation and ethnic fractionalisation on redistribution, we interact the two variables to capture their interdependency. We use the following empirical model to estimate the effects:

$$Redist_{i,t} = \alpha_1 Ineq_{i,t-5} + \alpha_2 Glob_{i,t} + \alpha_3 EF_{i,t} + \alpha_4 Glob_{i,t} * EF_{i,t} + \alpha_5 X_{i,t} + \alpha_i + \alpha_t + e_{i,t},$$

where *Redist* is the dependent variable on redistribution. *Ineq* denotes the lagged value of market-based income inequality. *Glob* represents the globalisation variables. In particular, we show results for overall economic globalisation as well as its subcomponents, namely de facto trade, de jure trade, de facto financial and de jure financial globalisation. We include all subcomponents into the estimation model in order to rule out omitted variable biases triggered by the correlation amongst them. For instance, the actual flow of goods (de facto trade component) depends on import restrictions (de jure trade component). *EF* denotes ethnic fractionalisation and *X* contains further control variables. Country- and period-fixed effects are captured by α_i and α_t .

Solt's (2016) Standardized World Income Inequality Database (SWIID), Version 7.1, provides data on income inequality in the form of Gini-coefficients for 192 countries from 1960 to 2017. In addition, the SWIID categorises the coefficients in market-based and net (after-tax) Gini coefficients. Market-based Gini coefficients proxy inequality levels resulting from market processes. In contrast, after-tax Gini coefficients result from various tax and benefit policies implemented by governmental authorities. Using both Gini coefficients, Solt (2016) constructs a relative measure for redistribution.³ In particular, he uses the relative difference between market-

³ Solt (2016) only provides this measure of redistribution for those cases where data quality allows a direct comparison between market and net Gini-coefficients. In particular, Solt (2016) omits observations for countries for which the source data do not include more than three observations of either market- or net-income inequality. This reduces the sample considerable to only 66 countries covering the 1975-2014 period.

based and after-tax Gini-coefficients:

$$Redist = \frac{Gini_{market} - Gini_{net}}{Gini_{market}},$$

which gives the percentage reduction in market-based income inequality due to taxes and transfers.⁴ The construction of the measure is simple and transparent and thereby very useful for empirical analysis. However, the measure has one main caveat, because it falsely assumes that the pre-tax income distribution is independent of the welfare state. This is commonly referred to as the counterfactual problem since we do not observe market-based incomes in absence of any form of welfare state.⁵ In particular, Uusitalo (1985), Bergh (2005) and Brady and Sosnaud (2010) suggest that education systems and labour market outcomes, both determined by government policies, affect the market-based income distribution. For instance, the level of taxes and transfers has an effect on labour supply decisions and thereby on the income distribution. In addition, the authors indicate that the described measure is exaggerating actual redistribution, because it completely neglects intra-individual redistribution within the life-cycle (e.g. pensions). However, we are mainly interested in the change of redistribution levels in the course of increased globalisation. In our analysis, we do not judge the absolute level of redistribution, nor do we rank countries by their redistribution levels. Also, we do not restrict our findings to only inter-individual redistribution, but rather overall redistribution. Hence, the caveat is relevant for correctly interpreting our results, but it is not necessarily undermining them.

In order to capture globalisation, we use the KOF Index of Globalisation, which was first developed by Dreher (2006) and recently completely revised and updated by Gygli et al. (2018). The index is published annually by the KOF Swiss Economic Institute. The current version consists of data for 209 countries covering 1970-2016. Further, the index contains three main categories, namely economic, social and political globalisation. In our analysis, we focus on the economic component of the index, thereby following Feenstra and Hanson (1996), Ezcurra and Rodríguez-Pose (2013) and Sturm and de Haan (2015). The economic component includes variables such as trade (as a

⁴ The correlation coefficient between this measure and its absolute version, i.e. $Gini_{market} - Gini_{net}$, equals 0.98. The qualitative results are therefore not expected to differ when using this alternative measure.

⁵ This discussion applies also to our lagged market-based income inequality measures, which is included as a control in the estimation model. Basically, the measure is not capturing inequality in absence of a welfare state but rather inequality before taxes and transfers occur.

percentage of GDP), foreign direct investment and import barriers. An advantage of the new index is its distinction between *de facto* and *de jure* measures of globalisation. De facto measures, such as foreign direct investments and international trade, describe actual cross-border flows. In contrast, de jure measures capture governmental regulations that affect international transactions, e.g. trade agreements and tariffs. In addition, Gygli et al. (2018) divide economic globalisation into trade and financial globalisation.⁶ Examples for variables included in the trade component are actual trade in goods and services (de facto) and trade taxes and tariffs (de jure). Foreign direct investment and international reserves are examples that go into the measure of de facto financial globalisation, whereas investments restrictions and international investment agreements are examples representing de jure financial globalisation.

A measure of ethnic fractionalisation is constructed from the Ethnic Power Relations (EPR) Core Dataset of 2014 (Cederman et al., 2010 and Vogt et al., 2015). That database provides annual data on politically relevant ethnic groups, their shares in total population, and their access to executive state power in all countries with a population of at least 500,000 persons. It starts in 1946 and includes 164 countries. Following Alesina et al. (2003), we approximate ethnic fractionalisation using a Herfindahl-based index:

$$EF_t = 1 - \sum_i s_{i,t}^2,$$

where $s_{i,t}$ is the share of group i over the total population in period t . A country is considered to be more fractionalized when the probability that two randomly drawn individuals belong to the same group is lower (see Easterly and Levine, 1997; Alesina et al., 2003; Alesina and La Ferrara, 2005).⁷ This formula yields an ethnic fractionalisation level for each year in a country.

Following the literature presented in Section 2, we include several control variables in our baseline model. The log of real GDP per capita strives to account for any effects driven by income levels (see, e.g. Wade, 2004; Bergh and Nilsson, 2014). With increased levels of development,

⁶ A complete overview of the variables for each component is provided on the website of the KOF Swiss Economic Institute: https://www.ethz.ch/content/dam/ethz/special-interest/dual/kof-dam/documents/Globalization/2018/Structure_2018_2.pdf, last accessed on March 20, 2019.

⁷ In that sense, the ethnic fractionalisation measure is related to ethnic diversity, but constitutes a more precise measure by incorporating the population fractions of each politically relevant ethnic group, thereby generating a dynamic measure of ethnic fractionalisation that varies over time.

redistribution is generally assumed to increase. Data on real GDP and population is provided by the Penn World Table constructed by Feenstra et al. (2015). It provides data on expenditure-side real GDP, using prices for final goods that are constant across countries and over time, measured in millions of 2005 US dollar. We combine the data on GDP and population to construct log real GDP per capita.⁸

Following Adam and Tzamourani (2016), Bulír (2001), Chiu and Molico (2010), Doepke and Schneider (2006a, 2006b), Meh et al. (2010) and Schneider (2014), we include inflation reflecting the potential effect of monetary policy on income inequality and the subsequent reaction of governments in the form of redistributive measures to counteract undesired levels of inequality.⁹ In order to test the Meltzer and Richard (1981) hypothesis, which states that countries with inherently large levels of inequality redistribute more on average, we include the lagged value of the market-based Gini-coefficient.¹⁰ In Table A.2 in the appendix, we test additional control variables. The table shows that no additional control variable is significant when added to the main specification described above.¹¹

In our analysis, we focus on medium- to long-term effects of globalisation on redistribution. Therefore, we construct averages over 5-year periods. Annual data on income inequality and, thus, on redistribution is noisy (Delis et al., 2014). In particular, the SWIID data contains imputations for missing years, which is adding to the noise. Using data at five-year intervals also alleviates these issues. Table 1 summarizes the data used. We cover 62 countries for 1975-2014, i.e. eight 5-year periods.¹²

⁸ We test the Kuznets hypothesis by including squared log of real GDP per capita and find no evidence of such a relationship, see Table A.2 column (2). We therefore do not include squared log GDP per capita in our redistribution model.

⁹ To reduce the impact of high inflation periods, we follow e.g. Samarina and Sturm (2014), Dreher et al. (2008b, 2009, 2010) and Cukierman (1992) and use the following transformation for the inflation rate: $\pi/(1 + \pi)$. In this way extremely high inflation rates do not dominate the variation in this variable and we thereby reduce the likelihood that the results are driven by few extreme observations.

¹⁰ Note that the lagged value on market-based income inequality is not directly related to the (contemporaneous) redistribution measure and, hence, does not necessarily pose a problem on the identification or the interpretation of the results. One potential concern is related to the Nickell bias. This concern is accommodated in Part 5 when we conduct a system GMM estimation.

¹¹ Summary statistics for the additional control variables are provided in Table A.1.

¹² Figure A.1 shows the histograms of our three key variables. Whereas ethnic fractionalisation is quite uniformly distributed (when ignoring the relatively large share of countries that report a zero degree of fractionalisation), economic globalisation closer matches a normal distribution. Our measure of redistribution, on the other hand, is twin peaked.

Table 1: Summary statistics

Variable	N	Mean	SD	Min	Max	Source
Relative redistribution	374	22.89	16.43	-3.78	52.32	Solt (2016)
Ethnic fractionalisation	374	27.27	23.14	0.00	87.57	Ethnic Power Relations (Vogt et al. 2015)
log GDP per capita	374	9.59	0.82	7.03	11.18	PWT 9.0 (Feenstra et al. 2015)
Inflation rate	374	2.20	5.11	-25.26	14.01	DPI (2015) (Cruz et al. 2016)
Market-based Gini Coefficient	374	46.68	6.04	23.92	68.07	Solt (2016)
Overall economic globalisation	374	59.45	16.30	15.07	93.15	KOF (Gygli et al. 2018)
De facto trade globalisation	374	46.19	20.68	11.73	98.36	KOF (Gygli et al. 2018)
De jure trade globalisation	374	67.88	20.16	11.77	97.86	KOF (Gygli et al. 2018)
De facto financial globalisation	374	58.96	21.32	6.42	98.63	KOF (Gygli et al. 2018)
De jure financial globalisation	374	64.71	20.54	9.79	91.08	KOF (Gygli et al. 2018)

Notes: At most 62 countries are covered in eight 5-year periods from 1975 to 2014.

4. Results of the effects of globalisation and ethnic fractionalisation on redistribution

This part of the paper presents the fixed effects estimation results for the effect of globalisation and ethnic fractionalisation on redistribution. Table 2 gives an overview of the effects using the different components of economic globalisation described in the data part. The most relevant coefficient in our analysis is the one in front of the interaction term, $Glob_{i,t} * EF_{i,t}$. A significant estimate would suggest that globalisation effects are dependent on ethnic fractionalisation. The first three columns show the effects of ethnic fractionalisation (column 1), overall economic globalisation (column 2) and the different de facto and de jure globalisation measure (column 3) on redistribution. Though the negative sign is in line with previous literature suggesting less distribution in ethnically fractionalised countries (Gründler and Köllner, 2018; Alesina and La Ferrara, 2005), ethnic fractionalisation in general does not have a significant direct effect on redistribution. Economic globalisation and its subcomponents do not have statistically significant effects on redistribution either.

In column (4) to (9), we show the results for the effects of globalisation and ethnic fractionalisation when they are interacted. The respective globalisation variable is depicted in the top row. For instance, we interact de facto trade globalisation with ethnic fractionalisation in column (5), whereas the other three globalisation variables enter merely as control variables. Interestingly, overall economic globalisation as well as both trade globalisation variables and de facto financial globalisation are not significant. Only when looking into de jure financial globalisation, we find a significantly negative interaction term. In addition, we test whether the effect is robust when only de jure financial globalisation is included. The result is depicted in Column (9). Both columns, (8) and (9), indicate that higher degrees of fractionalisation reduces the impact of de jure financial

globalisation on our measure of redistribution. Hence, the effect of de jure financial globalisation on redistribution is dependent on the level of ethnic fractionalisation. The F-tests in the last row of Table 2 associated to column (8) and (9) suggest that globalisation is overall a significant explanatory variable. Using column (8), we derive that a one standard deviation increase in de jure financial globalisation leads to a decrease in redistribution between 0.06 and 0.14 standard deviations (or 0.98 and 2.3 units) in highly fractionalised countries.

Table 2: Effect of globalisation on redistribution depending on ethnic fractionalisation (FE)

Dependent variable: Redistribution	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ethnic Fractionalisation	Overall Economic Globalisation	Decomposed Economic Globalisation	Interaction Overall Economic Globalisation	Interaction De facto Trade Globalisation	Interaction De jure Trade Globalisation	Interaction De facto Financial Globalisation	Interaction De jure Financial Globalisation	Interaction De jure Financial Globalisation
Market-based Gini (lagged)	-0.092 (-1.186)	-0.092 (-1.216)	-0.114 (-1.481)	-0.093 (-1.232)	-0.114 (-1.472)	-0.114 (-1.485)	-0.114 (-1.468)	-0.114 (-1.494)	-0.094 (-1.219)
log GDP per capita	-1.257* (-1.890)	-1.257* (-1.867)	-0.781 (-1.094)	-1.297* (-1.968)	-0.765 (-1.077)	-0.808 (-1.184)	-0.784 (-1.118)	-0.918 (-1.399)	-1.168* (-1.702)
Inflation rate	-0.031* (-1.811)	-0.031* (-1.807)	-0.0274 (-1.552)	-0.027 (-1.537)	-0.029 (-1.630)	-0.027 (-1.538)	-0.027 (-1.492)	-0.023 (-1.264)	-0.025 (-1.405)
Ethnic Fractionalisation	-0.025 (-0.956)	-0.025 (-0.937)	-0.0162 (-0.710)	0.009 (0.143)	-0.035 (-0.838)	-0.004 (-0.105)	-0.014 (-0.349)	0.040 (1.342)	0.041 (1.282)
Overall economic globalisation		0.001 (0.015)		0.015 (0.398)					
De facto trade globalisation			0.018 (0.838)		0.008 (0.247)	0.019 (0.853)	0.018 (0.845)	0.010 (0.463)	
De jure trade globalisation			-0.008 (-0.456)		-0.010 (-0.634)	-0.003 (-0.137)	-0.007 (-0.470)	-0.013 (-0.785)	
De facto financial globalisation			0.020 (1.085)		0.021 (1.155)	0.019 (1.035)	0.020 (0.972)	0.016 (0.927)	
De jure financial globalisation			-0.021 (-0.860)		-0.020 (-0.791)	-0.021 (-0.872)	-0.021 (-0.859)	0.016 (0.661)	0.018 (0.798)
Interaction (Glob x EF) (see column header for Glob measure)				-0.001 (-0.575)	0.000 (0.570)	-0.000 (-0.336)	-0.000 (-0.048)	-0.001** (-2.268)	-0.001** (-2.422)
R-squared	0.231	0.231	0.255	0.234	0.257	0.255	0.255	0.274	0.263
Number of observations	374	374	374	374	374	374	374	374	374
Number of countries	62	62	62	62	62	62	62	62	62
Number of periods	8	8	8	8	8	8	8	8	8
F-test period-fixed effects (p-value)	0.00130	0.00107	0.0266	0.00108	0.0217	0.0232	0.0274	0.00285	0.00111
F-test Ethnic Fractionalisation (p-value)				0.566	0.684	0.731	0.779	0.0695	0.0424
F-test KOF Globalisation Index (p-value)				0.834	0.507	0.872	0.545	0.0715	0.0555

Notes: Table shows the effects of different globalisation variables on redistribution using the fixed-effects model. The respective interacted globalisation variable is depicted in the top row. The interaction term combines the respective globalisation and the ethnic fractionalisation variable. For instance, column (8) shows the results of the effect of de jure financial globalisation on relative distribution depending on ethnic fractionalisation (captured by the interaction term between de jure financial globalisation and fractionalisation). Standard errors are clustered at the country level. *** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics in parentheses. Country- and period-fixed effects not shown. All F-test results are transformed to p-values. F-test on period-fixed effects examines whether time fixed-effects are correctly included in the estimation (H0=no effect). F-tests on globalisation and ethnic fractionalisation denote the joint significance of the interaction term and globalisation or ethnic fractionalisation, respectively (H0=no effect).

Following the advice of Brambor et al. (2006), another and arguably more proper way to summarize our results is by graphically presenting the marginal effects of a change in our globalisation measures on redistribution conditional on different levels of ethnic fractionalisation. The top row

of Figure 1 shows that de facto as well as de jure trade globalisation are insignificant regardless of the level of ethnic fractionalisation. On the other hand, the lower-right part of Figure 1 reveals that the effect of de jure financial globalisation on redistribution is positive (albeit insignificant) for low levels of ethnic fractionalisation, but decreases swiftly with the level of fractionalisation. For high levels of fractionalisation, it becomes significantly negative. The hypothesis that ethnically more fractionalised countries redistribute on average less in face of globalisation is thereby supported by these results. This feature is in line with previous literature suggesting that heterogeneous preferences, implied by a high degree of fractionalisation, lead to smaller governments (see Alesina and La Ferrara, 2005).¹³ In addition, the results confirm our previous arguments about the magnitudes of the compensation and disciplining effects of globalisation. In particular, the insignificant positive effects on redistribution can be interpreted as showing that the disciplining effect is offset by the compensation effect in countries with low levels of ethnic fractionalisation. In contrast, the effect is strongly negative in highly fractionalised countries, thereby suggesting the dominance of the disciplining effect over the probably hardly existing compensation effect.

In line with what we hypothesised, the results indicate that financial rather than trade globalisation is a relevant determinant of redistribution within countries. Furthermore, it extends recent literature that highlights the negative impact of financial variables on income inequality (De Haan and Sturm, 2017 and Jaumotte et al., 2013). The combined result of previous findings in the literature and ours indicate that financial globalisation not only increases inequality, but also reduces redistributive policies in case a country is ethnically fractionalised.

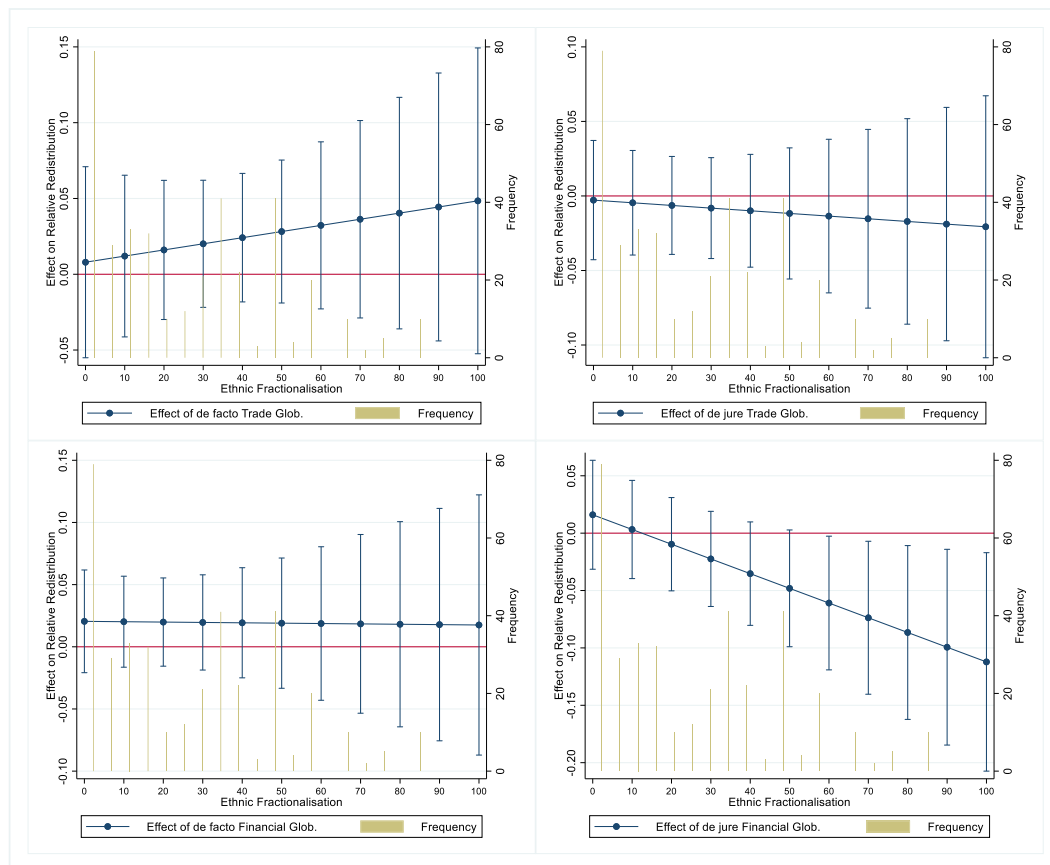
Furthermore, our results show that it is rather de jure as opposed to de facto financial globalisation that has an impact on relative redistribution. Both de jure financial globalisation and redistribution policies are directly controlled by governments through legislative or executive procedures. For instance, trade agreements and investments restrictions are negotiated by government

¹³ Table 2 shows that the overall effect of ethnic fractionalisation is also statistically significant (F-test Ethnic Fractionalisation for columns (8) and (9)). Thus, the effect of ethnic fractionalisation on redistribution is dependent on de jure financial globalisation. In

Figure A.2 in the appendix, we plot the effect of ethnic fractionalisation on redistribution for different levels of de jure financial globalisation (column (8)). The plot suggests that the effect of ethnic fractionalisation on redistribution is negative on average and especially for high levels of globalisation. Also, the histogram shows that most countries in our sample exhibit globalisation levels above 50. This result can be related to the literature on ethnic fractionalisation, such as Gründler and Köllner (2018), Luttmer's (2001), Eger (2010) and Alesina and La Ferrara (2005), which show that ethnically fractionalised countries redistribute less. Our analysis confirms the literature by showing an average negative effect. In addition, it extends the previous papers by suggesting the average effect is driven by highly globalised countries. Hence, not only is the effect of globalisation on redistribution dependent on ethnic fractionalisation, but also vice versa.

representatives. A country's government or executive power has a direct influence on the outcomes of these negotiations. Similarly, the government or parliament decides on tax levels and benefit structures, which determine the subsequent level of redistribution. Additional redistribution policies might be necessary in order to get a political majority for further increases in de jure financial globalisation.

Figure 1: Average Marginal Effects



Notes: Figure shows the average marginal effects of trade and financial globalization (columns (5)-(8) in Table 2) on relative redistribution (left y-axis) for different levels of ethnic fractionalisation (x-axis). Each dot denotes the total effect (including the interaction term) of globalization (see legend) on redistribution. Whiskers show 95% confidence intervals. The right y-axis denotes the frequencies of respective ethnic fractionalisation levels.

As for the controls, the lagged market-based Gini-coefficients do not show significant results in any of the specifications. Thus, there is no evidence for the Richard-Meltzer hypothesis in our

model.¹⁴ The effect of inflation is consistently negative and only statistically significant in columns (1) and (2). An increase in inflation leads to on average less redistribution. Similarly, an increase in GDP per capita has a negative effect on redistribution. A possible explanation for this finding is that for a given level of initial market inequality, an increase in average income benefits every fraction of the income distribution. Hence, the low income groups become wealthier in absolute terms and therefore demand less redistribution. As a consequence, the level of redistribution decreases. This effect is significant in columns (1), (2), (4) and (9).

5. Instrumental variable estimation and results

A potential bias in the presented analysis is stemming from the endogeneity of the globalisation variable. In particular, the analysis of the impact of globalisation on redistribution is potentially subject to reverse causality as redistribution might have an effect on the level of globalisation. For instance, countries that have a strong welfare state and, thus, a strong preference for redistribution, might be more (or less) willing to globalise. We employ an IV estimation strategy to circumvent potential biases and test the robustness of our results.

Bergh and Nilsson (2014) tackle reverse causality by using two kinds of instruments for globalisation, namely the number of years in which McDonalds is present in a country as well as the preceding average economic globalisation of neighbouring countries. Similarly, Duncan and Sabirianova Peter (2016) construct instruments by calculating the mean of various tax progressivity measures for the respective country's neighbours and then assigning each contiguous neighbour an equal weight. Further extensions include a one-year lag of the neighbours' average progressivity and that of the "neighbours of the neighbours". Thus, both papers instrument a countries' globalisation level by their neighbours' levels. Three challenges are associated with this approach. First, island countries do not have neighbours, which makes the construction of the instrument problematic. There are only two options, namely either these countries are excluded from the IV analysis or it requires a complex matching of close island neighbours. Both options are expected to result in substantial biases. Second, data on neighbours might be unavailable. Third, globalisation instruments that are constructed using merely one to two countries might not be that representative for the globalisation level of a country.

¹⁴ The results are robust to the exclusion of this variable. Thus, potential biases arising from the similarity of the dependent variable and the right-hand side variable on market-based Gini-coefficient as suggested by Jäntti et al. (2018) do not exist in our framework.

We do agree that a country is more likely to increase its level of globalisation when nearby countries are highly globalised. In order to deal with the above-described issues, we use all available countries' globalisation levels to construct an instrument for a country's level. In particular, we weigh each country's globalisation level by the inverse of the country's geographical distance to the country whose globalisation level we aim to instrument.¹⁵ For instance, we instrument the Swiss globalisation level by including other countries' globalisation levels, weighted by their distance to Switzerland. As a result, globalisation levels of Germany, France and Italy obtain a high weight as opposed to e.g. those of Bolivia, Vietnam and South Africa. However, some countries might have a large geographical distance to Switzerland, but still contribute considerably to Swiss globalisation levels due to their economic size. Also, some nearby countries might have a stronger impact than others. In our previous example, the level of globalisation of Germany should probably receive a larger weight than that of Austria when instrumenting globalisation of Switzerland. Therefore, we also introduce real GDP as an additional weight to incorporate a country's economic size and, thus, its influence on globalisation levels in other countries. Furthermore, in line with Bergh and Nilsson (2014) as well as Duncan and Sabirianova Peter (2016), we use lagged values for the countries' globalisation levels to capture the time required by a country to adapt its globalisation level to the level of nearby countries. The following equation depicts the mathematical representation of our instrument.¹⁶

$$IV_{i,t} = \frac{\sum_{i \neq j} \frac{1}{Distance_{i,j}} * GDP_{j,t} * Glob_{j,t-5}}{\sum_{i \neq j} \frac{1}{Distance_{i,j}} * GDP_{j,t}}$$

The instrument relies on the assumption that external globalisation levels, particularly levels of countries in close proximity, have a strong indication of a country's globalisation level. This constitutes the necessary condition for the relevance of the instrument. Further, an adequate instrument is uncorrelated with the error term, which is denoted as the exclusion restriction condition. Hence, our claim is that domestic redistribution levels are not directly affected by the level of globalisation abroad.¹⁷ More formally, this instrument satisfies the exclusion restriction condition if the following two assumptions hold: the distance measure has to be exogenous and the

¹⁵ The described instrument was also used in Lang and Tavares (2018).

¹⁶ Distance is defined as the distance between the two largest cities.

¹⁷ A similar argument is used by Acemoglu et al. (2019) for the effect of democracy on income.

bias stemming from the endogeneity of globalisation is required to be independent of the distance measure (see Bun and Harrison, 2018; Hanna and Oliva, 2015; Nizalova and Murtazashvili, 2016). Geographical distances are by construction exogenous. Furthermore, our endogeneity concern emanates from reverse causality, namely that redistribution might have an effect on globalisation. This potential bias is independent of any kind of geographical distances.

An advantage of this instrument is that it allows us to build one specific instrument for each dimension of globalisation, namely economic, trade and financial globalisation as well as their de facto and de jure parts. Hence, every type of globalisation receives its own instrument. For example, the instrument for de facto trade globalisation in Switzerland is constructed using the values of de facto trade globalisation of all other countries while weighing them by GDP-weighted distances to Switzerland.

Columns (1) to (6) in Table 3 show the estimation results for the same model as in Table 2 (columns (4)-(9)) using these instrumental variables. In each column, we evaluate the effect of a specific type of globalisation, denoted in the top row, by using the respective instrument of the globalisation type. For instance, the effect of de jure financial globalisation in column (5) is estimated by using the GDP- and distance-weighted lagged de jure financial globalisation values of all other countries. In addition, we also instrument for the other globalisation variables that act as controls. Hence, each estimation in each column uses one external instrument for each globalisation variable. This yields a just-identified model, in which the number of endogenous variables is equal to the number of instruments. To evaluate the IV regressions, we add two test statistics. The first test statistic, namely Wooldridge's (1995) robust score test, indicates whether globalisation can statistically be considered endogenous in the original fixed effects model (presented in Table 2). Given the large p-values across all estimations, the null hypothesis suggesting exogeneity cannot be rejected. However, we still provide the IV regression to show that even if there are some endogeneity concerns, our previous results can be confirmed. Furthermore, the F-statistic on excluded instruments is presented. This F-statistic indicates whether the respective globalisation variable is correlated with its corresponding instrument (first-stage). The high values of these F-statistics reveal a strong correlation and, as a result, a high relevance of the instruments for all globalisation and instrument pairs.¹⁸ Since we only use one external instrument, we cannot provide Sargan or

¹⁸ First-stage regression results are provided in Table A.4.

Hansen statistics that test overidentifying restrictions. Hence, we can only argue verbally for the adequacy of our instrument(s). For this reason, we also provide results using the system generalized method-of-moments estimator (GMM), which was introduced by Arellano and Bond (1991) and Arellano and Bover (1995).¹⁹ Next to the GMM results, we provide various test statistics. AR(1) and AR(2) report the p-values for first and second order autocorrelated disturbances in the first differences equations, where the null denotes no correlation. The first order serial correlation (AR (1)) is expected since we are including lags as instruments. However, a correlation at higher orders than 1 would lead to an inconsistent estimator. Hence, the null should not be rejected for AR(2). The Hansen J statistic tests the overidentifying restrictions, where the null states that the restrictions are valid. In addition, we provide the number of instruments used in the estimation. The number of instruments should not be higher than the number of groups, which is why we do not provide the results with all types of globalisation included as controls for which the number of instruments exceed the number of groups by large.

In line with the results presented in Table 2, only the interaction of de jure financial globalisation and ethnic fractionalisation has a significant negative effect on redistribution. Furthermore, an F-test confirms the overall significance of the globalisation variable in columns (5), (6) and (7). Thus, the effect of de jure financial globalisation is conditional on ethnic fractionalisation.

Figure 2 presents the average marginal effects based on the IV regressions. It confirms the previous result that the effect of de jure financial globalisation on redistribution is negative and significant for highly fractionalised countries. We neither find significant effects for the de facto measures, nor de jure trade globalisation. Also these results suggest that the disciplining argument is dominant in case of de jure financial globalisation. A government is less inclined to redistribute when facing globalisation and a highly fractionalised population. The system GMM estimation further confirms our results by suggesting a significantly positive effect of de jure financial globalisation on redistribution for countries with no ethnic fractionalisation.

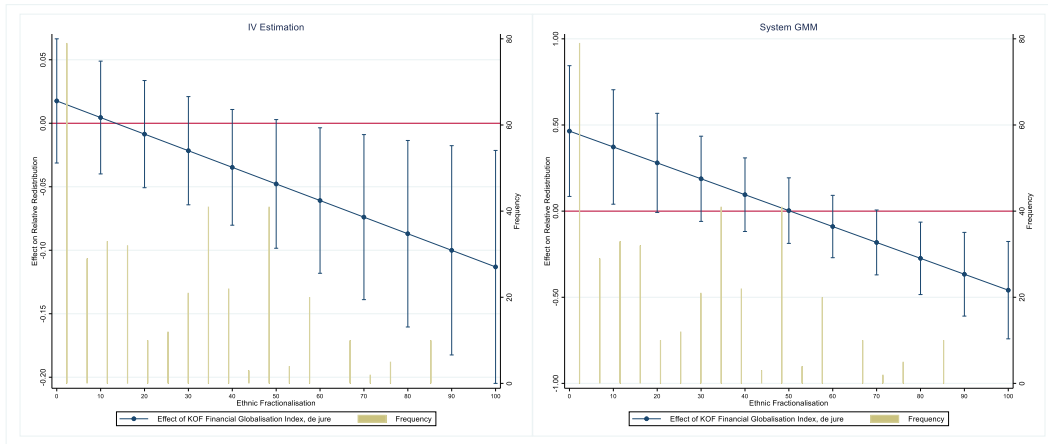
¹⁹ Another reason to provide the system GMM estimation is the potential Nickell bias that is caused by the lagged inequality measure.

Table 3: Effect of globalisation on redistribution depending on ethnic fractionalisation (IV and system GMM)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	IV	IV	IV	IV	IV	IV	GMM
Dependent variable: Redistribution	Interaction	Interaction	Interaction	Interaction	Interaction	Interaction	Interaction
	Overall	De facto	De jure	De facto	De jure	De jure	De jure
	Economic	Trade	Trade	Financial	Financial	Financial	Financial
	Globalisation	Globalisation	Globalisation	Globalisation	Globalisation	Globalisation	Globalisation
Market-based Gini (lagged)	-0.094 (-1.246)	-0.114 (-1.469)	-0.114 (-1.481)	-0.114 (-1.463)	-0.114 (-1.489)	-0.094 (-1.222)	-0.124 (-0.784)
log GDP per capita	-1.303* (-1.970)	-0.746 (-1.049)	-0.792 (-1.153)	-0.766 (-1.088)	-0.911 (-1.386)	-1.175* (-1.696)	12.702*** (6.862)
Inflation rate	-0.027 (-1.526)	-0.029 (-1.641)	-0.028 (-1.567)	-0.028 (-1.520)	-0.023 (-1.287)	-0.025 (-1.402)	0.069 (0.784)
Ethnic Fractionalisation	0.011 (0.192)	-0.031 (-0.745)	-0.003 (-0.075)	-0.014 (-0.336)	0.042 (1.420)	0.042 (1.352)	0.480*** (2.701)
Overall economic globalisation	0.018 (0.490)						
De facto trade globalisation		0.013 (0.402)	0.022 (0.953)	0.022 (0.947)	0.013 (0.556)		
De jure trade globalisation		-0.010 (-0.622)	-0.003 (-0.135)	-0.008 (-0.487)	-0.013 (-0.785)		
De facto financial globalisation		0.020 (1.034)	0.018 (0.935)	0.020 (0.877)	0.015 (0.839)		
De jure financial globalisation		-0.019 (-0.753)	-0.020 (-0.821)	-0.020 (-0.808)	0.018 (0.706)	0.019 (0.837)	0.465** (2.427)
Interaction (Glob x EF) (see column header for Glob measure)	-0.001 (-0.623)	0.000 (0.469)	-0.000 (-0.358)	-0.000 (-0.049)	-0.001** (-2.408)	-0.001** (-2.564)	-0.009*** (-3.325)
R-squared	0.234	0.256	0.255	0.255	0.274	0.263	
Number of observations	374	374	374	374	374	374	374
Number of countries	62	62	62	62	62	62	62
Number of periods	8	8	8	8	8	8	8
F-test period-fixed effects (p-value)	0.000942	0.0224	0.0242	0.0285	0.00304	0.00110	0.00252
F-test Ethnic Fractionalisation (p-value)	0.559	0.725	0.730	0.786	0.0520	0.0305	0.00124
F-test KOF Globalisation Index (p-value)	0.793	0.477	0.857	0.615	0.0529	0.0403	0.00396
Endogeneity of Globalisation (p-value)	0.403	0.802	0.887	0.880	0.929	0.680	
F-test of excluded instruments	6462	1142	448.5	1091	518.1	2788	
AR(1) (p-value)							0.00413
AR(2) (p-value)							0.813
Hansen J (p-value)							0.681
Number of instruments							48

Notes: Table shows the effects of globalisation and ethnic fractionalisation on redistribution using IV and system GMM regressions, where the original globalisation variable is substituted by the corresponding instrument. The respective interacted globalisation variable is depicted in the top row. Standard errors are clustered at the country level. *** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics are shown in parentheses. Country- and period-fixed effects are not shown. All F-statistics are transformed to p-values, except the F-test of excluded instruments. F-test on period-fixed effects examines whether time fixed-effects are correctly included in the estimation (H0=no effect). F-tests on globalisation and ethnic fractionalisation denote the joint significance of the interaction term and globalisation or ethnic fractionalisation, respectively (H0=no effect). The test statistics on the endogeneity of globalisation demonstrates whether globalisation is endogenous and, thus, in need of an instrument. The null hypothesis signifies exogeneity of globalisation. The F-test of excluded instruments tests the relevance condition of the respective instrument, where the null hypothesis implies no relevance. AR(1) and AR(2) test for first- and second-order autocorrelations, where the null hypothesis suggest no correlation. Hansen J tests the overidentifying restrictions.

Figure 2: Average Marginal Effects of IV and system GMM estimation



Notes: Figure shows the average marginal effects of de jure financial globalisation on relative redistribution (left y-axis) for different levels of ethnic fractionalisation (x-axis) estimated by IV (left) and system GMM (right) estimation. Each dot denotes the total effect (including the interaction term) of globalisation (see legend) on redistribution. Whiskers show 95% confidence intervals. The right y-axis denotes the frequencies of respective ethnic fractionalisation levels.

6. Further robustness checks

The main result of the above analysis is that de jure financial globalisation has an effect on redistribution that depends on the level of ethnic fractionalisation. In this part, we conduct various robustness checks to show that this result is robust against changes in the specification or the sample. The first two robustness checks use different samples, whereas the others account for changes in the model specification.

First, we focus on high-income countries, as their data are of the highest quality, thereby eliminating the possibility that low data quality are driving the results.²⁰ The results are shown in column (1) of Table 4. The results show that the interaction of de jure financial globalisation and ethnic fractionalisation has a significant negative impact on redistribution, thereby confirming our previous estimates. Compared to the full sample (see Table 2), the effect is larger for the high-income group. In addition, the F-statistic for joint significance of the globalisation variable and the interaction reveals joint significance at the 1%-level. The larger effect implies that the effect ought to be smaller in the rest of the sample. Table A.5 shows results for the effect in non-high income countries. Interestingly, the effect is not present in non-high income countries. In addition, we also

²⁰ Countries included in this sample are depicted with a star in Table A.3.

test whether the high-income sample yields statistically different results by introducing a dummy variable that is equal to one for high-income countries. In particular, we interact the dummy with every globalisation variable. In the last row of Table A.5, we provide an F-test that tests the joint significance of being in the high-income sample. In column (6), we find that being in the high-income sample makes a statistically significant difference.

Table 4: Robustness checks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable: Redistribution	High-Income	Excluding	Persistence	Persistence	Persistence	Including	Time
	Sample	2010-2014	$\rho=0.25$	$\rho=0.5$	$\rho=0.75$	ICT Share	Trends
Market-based Gini (lagged)	-0.032 (-0.250)	-0.110 (-1.447)	-0.101 (-1.344)	-0.099 (-1.661)	-0.097* (-1.923)	-0.123 (-1.469)	-0.126* (-1.740)
log GDP per capita	-0.316 (-0.190)	-1.125 (-1.563)	0.118 (0.184)	0.413 (0.768)	0.707 (1.393)	-1.035 (-1.610)	-1.238* (-1.992)
Inflation rate	-0.093** (-2.203)	-0.017 (-1.012)	-0.004 (-0.242)	-0.002 (-0.166)	-0.001 (-0.075)	-0.018 (-0.988)	-0.027 (-1.659)
Ethnic Fractionalisation	0.123** (2.072)	0.042* (1.696)	0.052 (1.653)	0.061* (1.734)	0.070 (1.597)	0.077*** (2.931)	0.043 (1.397)
ICT capital stock share						-15.436 (-1.510)	
De facto trade globalisation	0.047 (0.913)	0.007 (0.281)	-0.006 (-0.282)	-0.007 (-0.438)	-0.009 (-0.614)	0.002 (0.096)	-0.003 (-0.136)
De jure trade globalisation	-0.013 (-0.327)	-0.012 (-0.645)	-0.011 (-0.914)	-0.007 (-0.714)	-0.003 (-0.312)	-0.011 (-0.677)	-0.016 (-1.096)
De facto financial globalisation	-0.005 (-0.193)	0.015 (0.959)	0.017 (1.077)	0.012 (0.899)	0.007 (0.572)	0.024 (1.300)	0.020 (1.168)
De jure financial globalisation	0.027 (0.611)	0.022 (0.740)	0.032* (1.944)	0.032** (2.133)	0.032* (1.944)	0.021 (0.917)	0.022 (0.922)
Interaction (Glob x EF)	-0.002*** (-3.076)	-0.001** (-2.126)	-0.002*** (-3.457)	-0.001*** (-3.276)	-0.001*** (-2.735)	-0.001*** (-3.040)	-0.001** (-2.467)
R-squared	0.262	0.261	0.233	0.181	0.123	0.235	0.258
Number of observations	222	312	329	329	329	359	374
Number of countries	33	62	62	62	62	61	62
Number of periods	8	7	7	7	7	7	8
F-test period-fixed effects (p-value)	0.0130	0.0609	0.0455	0.130	0.203	0.00121	0.00190
F-test Ethnic Fractionalisation (p-value)	0.0151	0.112	0.00250	0.00713	0.0232	0.00829	0.0365
F-test KOF Globalisation Index (p-value)	0.00737	0.0876	0.00399	0.00707	0.0293	0.0114	0.0495

Notes: Table displays various robustness checks. Column (1) shows the results using only high-income countries in the estimation sample. Column (2) only uses pre-crisis data. Results including a lagged dependent variable with assigned values, denoted by ρ , are provided in columns (3)-(5). Column (6) presents the results adding ICT capital stock shares to the list of control variables. The last column depicts the results when time trends instead of time fixed effects are included. Standard errors are clustered at the country level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust t-statistics in parentheses. Country- and period-fixed effects not shown. All F-test results are transformed to p-values. F-test on period-fixed effects examines whether time fixed-effects are correctly included in the estimation (H_0 =no effect). F-tests on globalisation and ethnic fractionalisation denote the joint significance of the interaction term and globalisation or ethnic fractionalisation, respectively (H_0 =no effect).

The second robustness check excludes post-crisis data, i.e. the period covering 2010-2014. The main argument for this check is that the financial crisis has had a major impact on the countries'

economies and the subsequent implementation of redistribution and globalisation policies.²¹ The results are shown in Column (2) of Table 4. Again, the effect of de jure financial globalisation in combination with ethnic fractionalisation on redistribution is confirmed.²²

The following robustness checks adjust the specification of the empirical model. First, a lagged dependent variable on redistribution is included in the model. This allows us to distinguish between the immediate and the long-run impact of our key variables. Second, we test whether the effects change when we add a proxy for technological change to the model. Third, we estimate the same model as in Table 2 but with time trends instead of time fixed effects. The main argument to include a lagged dependent variable is the slow-changing, or persistent, evolution of the redistribution variable. Changes in taxes and benefit systems are usually modest and occur at a low frequency. As a consequence, the previous level of redistribution might be a good indicator for the current level.²³ However, our view is that including a lagged dependent variable is only meaningful if we are interested in the dynamic evolution of redistribution. As our main variable of interest is the interaction term consisting of globalisation and ethnic fractionalisation, we did not include a lagged dependent variable in our main model heretofore. In addition, estimating the lagged dependent variable directly would potentially create a Nickell bias. Therefore, we follow Acemoglu et al. (2015) and include a lagged dependent variable by assigning various values to its coefficient. Hence, we extend our empirical model to:

$$\text{Redist}_{i,t} = \rho \text{Redist}_{i,t-5} + \alpha_1 \text{Ineq}_{i,t-5} + \alpha_2 \text{Glob}_{i,t} + \alpha_3 \text{EF}_{i,t} + \alpha_4 \text{Glob}_{i,t} * \text{EF}_{i,t} + \alpha_3 X_{i,t} + \alpha_i + \alpha_t + e_{i,t},$$

where $\text{Redist}_{i,t-5}$ denotes the lagged dependent variable of redistribution. So far, we have assumed $\rho = 0$. However, if $\rho > 0$, then the estimates may be biased and not correctly reflect the true effect of globalisation and fractionalisation on redistribution. We use $\rho = 0.25$, $\rho = 0.5$ and $\rho = 0.75$ in Table 4. As a consequence, we estimate the long-run impact of globalisation and ethnic fractionalisation on redistribution. The value of ρ denotes the weight that we place on previous

²¹ Even though, the crisis started before 2010, we do not exclude the average for 2005-2009 for two reasons. First, the crisis hit the economies only in the final part of this five-year period. Second, the relevant policies and their effect on redistribution and de jure globalisation were only implemented or effective with a considerable lag. Nevertheless, the qualitative results are not affected by this.

²² The results for other globalisation variables are provided in Table A.6 in the appendix.

²³ This argument is very common in the related inequality literature, such as Dreher and Gaston (2008) and Bergh and Nilsson (2010).

redistribution levels. The smaller the weight, the smaller the long-run impact. The effect of the interaction term is robustly significant across all values of ρ . In addition, all F-tests of joint significance of the globalisation variable and the interaction term suggest a statistically significant effect at a 5%-level. Thus, including a dynamic structure to redistribution does not affect our previous results.²⁴

In our last robustness check, we include a variable reflecting technological change into the model. Apart from globalisation, technological progress is often considered to be responsible for increased levels of inequality. Hence, technological progress has potentially important ramifications on redistribution. In particular, our concern is that the interaction effect is actually driven by technological progress. We follow Jaumotte et al. (2013) and measure technological development as the share of information and communications technology (ICT) capital in the total capital stock.²⁵ The results are depicted in Column (6) of Table 4 and confirm our previous results. In addition, the F-test for joint significance indicates high significance of the total effect of de jure financial globalisation on redistribution. The ICT share variable itself is not statistically significant.²⁶

The last robustness check incorporates time trends instead of time fixed effects. Column (7) in Table 4 indicates that the total effect of de jure financial globalisation is statistically significant at a 5% level (p-value of the F-test equals 0.018). Hence, also this alteration does not affect our conclusions. In addition, we provide results for all our globalisation indices in Table A.8. In line with previous results, only de jure financial globalisation is significant.

7. Conclusion

Although there are numerous studies suggesting an increasing effect of (in particular financial) globalisation on income inequality, the literature is unclear about the effects on redistribution. This paper provides evidence on this while concentrating on whether the effect of globalisation on redistribution depends on the level of ethnic fractionalisation in society. The recently revised KOF Economic Globalisation Index allows us to not only distinguish between de facto and de jure

²⁴ Quantitatively, the estimates in Table 4 need to be adjusted to get the long-run result. Following Acemoglu et al. (2015), the effect of globalisation is $\frac{\alpha}{1-\rho}$, where α denotes the total effect (the direct effect and the interaction term).

²⁵ We thank Florence Jaumotte for kindly providing us with this data.

²⁶ In Column (6) of Table A.7, we also provide the results when technological change interacts with ethnic fractionalisation. This does not change our conclusion. In addition, the overall effect of technological progress does not have a significant impact on our measure of redistribution.

measures of economic globalisation, but also to differentiate between trade and financial globalisation. Our panel regression and instrumental variables results consistently indicate that de jure financial globalisation has a statistically significant negative effect on redistribution in case the level of ethnic fractionalisation is high. More fractionalised countries on average redistribute less as a reaction to de jure financial globalisation. This confirms the initially stated dominance of the “disciplining” argument for redistribution in countries with high levels of ethnic fractionalisation. According to the disciplining argument, governments engage among others in tax competition and, as a consequence, are forced to reduce the level of redistribution. In contrast, there is no effect of de jure financial globalisation on redistribution in countries with hardly any ethnic fractionalisation, which indicates that the disciplining effect of globalisation is abrogated by the compensating effect. In fractionalised societies, there is a general unwillingness for the compensation effects to materialise and, hence, for redistribution to occur, which explains the strong dominance of the disciplining effect in these countries.

We do not find evidence that governments’ decision to redistribute are influenced by actual flows, i.e. de facto measures of globalisation, or trade globalisation. Whereas de jure globalisation is under direct control of the government and, therefore, part of negotiation processes that might simultaneously lead to changes in redistribution policies, de facto globalisation might be more difficult to identify and bargain against. Also, the results do not confirm that there is a link between initial market-based inequality levels and subsequent redistribution. Hence, we do not find evidence in favour of the Meltzer-Richard hypothesis within our framework.

As a next step in this line of research, one could analyse how different ethnic groups align with different income groups. In that way the low levels of redistribution in highly fractionalised countries might be explained by richer ethnic groups’ reluctance to redistribute income to poorer ethnic groups. If income and ethnic groups do not align, then there might be a more general reluctance to redistribute. Bhattacharya et al. (2016) and Kosec (2014) argue that wealthy groups often choose to provide public goods themselves in order to improve their quality and make them more exclusive. This line of thinking could also imply that strong bonds within ethnic groups lead to the creation of public goods, such as schools. These are exclusive to their own ethnic group and thereby foster redistribution within these groups. In sum, redistribution might still occur but only within ethnic groups and potentially in other forms than official tax policies.

Whereas our results confirm the disciplining hypothesis for ethnically fractionalised countries, we cannot conclusively disentangle it from actual ethnic discrimination. Maybe globalisation in a more

fractionalised country offers fertile ground for right-wing populist and extremist policies that consequentially leads to less redistribution. Hence, it might not necessarily be the high pressure to remain competitive that triggers the observed reduction in de jure financial globalisation.

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Appendix

Figure A.1: Histograms of income redistribution, economic globalisation and ethnic fractionalisation

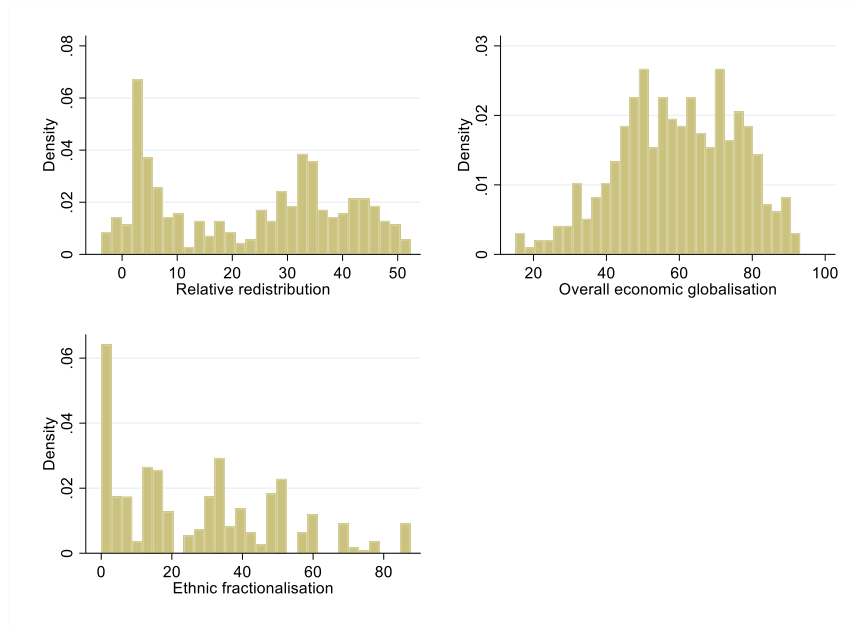
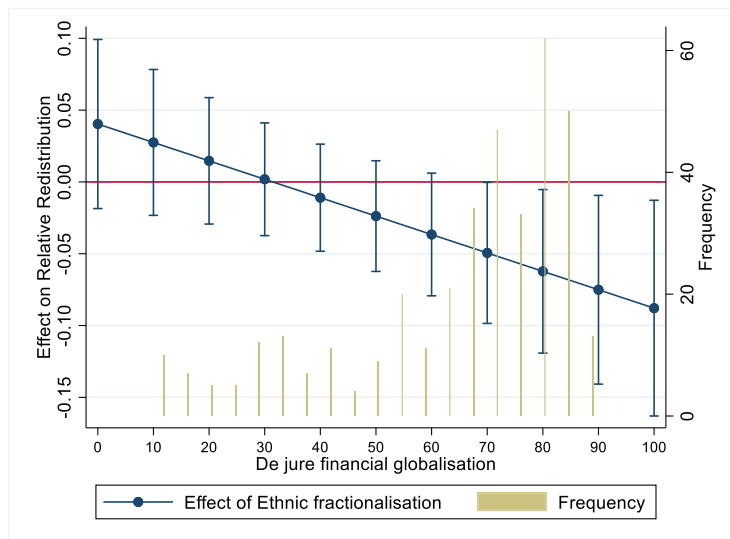


Figure A.2: The effect of ethnic fractionalisation on redistribution dependent on de jure financial globalisation.



Notes: Figure shows the average marginal effects of ethnic fractionalisation (column (8) in Table 2) on relative redistribution (left y-axis) for different levels of de jure financial globalisation (x-axis). Each dot denotes the total effect (including the interaction term) of ethnic fractionalisation (see legend) on redistribution. Whiskers show 95% confidence intervals. The right y-axis denotes the frequency of de jure financial globalisation levels.

Table A.1: Summary statistics of additional control variables.

Variable	N	Mean	SD	Min	Max	Source
Total unemployment (% of total labor force)	303	8.16	4.70	1.95	31.33	World Development Indicators (WDI)
Human capital index	369	2.76	0.56	1.35	3.72	PWT 9.0 (Feenstra et al. 2015)
Total natural resources rents (% of GDP)	374	4.18	6.72	0.00	47.14	World Development Indicators (WDI)
Agriculture, value added (% of GDP)	314	7.76	7.07	0.04	47.54	World Development Indicators (WDI)
Democracy	374	7.68	3.90	-7.00	10.00	Polity IV dataset (2016)
Chief executive is left-wing	366	0.34	0.41	0.00	1.00	DPI (2015)
Economic Freedom index	363	6.61	1.17	2.49	9.05	Economic Freedom of the World (2017)
Size of government index, EFW	363	5.60	1.82	0.64	10.00	Economic Freedom of the World (2017)
Legal Sytem & Property Rights index, EFW	364	5.93	1.67	0.99	8.97	Economic Freedom of the World (2017)
Real GDP growth	374	2.84	3.29	-26.38	11.00	PWT 9.0 (Feenstra et al. 2015)
Age dependency ratio (% of working-age population)	374	55.00	11.15	35.66	95.38	World Development Indicators (WDI)
ICT capital stock share	359	0.04	0.04	0.00	0.20	Jaumotte et al. (2013)

Note: At most 62 countries are covered in eight 5-year periods from 1975 to 2014.

Table A.2: Checking additional controls for the baseline model explaining redistribution.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Baseline	Kuznet	GDP lag	Unemp.	HC	TNR	Agricul.	Demo.	Left	EFW	Gov size	Property	Growth	Age	ICT
Market-based Gini (lagged)	-0.0903 (-1.164)	-0.0927 (-1.211)	-0.0825 (-1.044)	-0.0856 (-0.931)	-0.0856 (-1.081)	-0.0834 (-1.074)	-0.0213 (-0.227)	-0.0886 (-1.140)	-0.0793 (-1.046)	-0.0757 (-0.964)	-0.0799 (-1.036)	-0.0866 (-1.082)	-0.0844 (-1.076)	-0.105 (-1.271)	-0.0901 (-1.085)
log GDP per capita	-1.194* (-1.795)	-4.549 (-0.979)		-0.485 (-0.617)	-1.219 (-1.670)	-1.314* (-1.941)	-1.770*** (-2.936)	-1.212* (-1.832)	-1.051 (-1.620)	-0.758 (-0.891)	-1.086 (-1.557)	-0.882 (-1.197)	-1.236* (-1.815)	-0.869 (-1.078)	-1.274* (-1.838)
Inflation rate	-0.0306* (-1.798)	-0.0271* (-1.692)	-0.0508*** (-3.054)	-0.0109 (-0.561)	-0.0331* (-1.923)	-0.0373** (-2.253)	-0.0151 (-0.919)	-0.0313* (-1.823)	-0.0281 (-1.652)	-0.0429** (-2.468)	-0.0404** (-2.237)	-0.0414** (-2.392)	-0.0266 (-1.564)	-0.0238 (-1.322)	-0.0290 (-1.653)
log GDP per capita (squared)		0.191 (0.706)													
log GDP per capita (lagged)			-0.831 (-1.281)												
Total unemployment (% of total labor force)				0.0850 (1.306)											
Human capital index					-0.137 (-0.0875)										
Total natural resources rents (% of GDP)						0.0513 (1.630)									
Agriculture, value added (% of GDP)							0.0521 (1.125)								
Democracy								0.0266 (0.457)							
Chief executive is left-wing									-0.0418 (-0.142)						
Economic Freedom index										-0.210 (-0.718)					
Size of government index, EFW											-0.0692 (-0.450)				
Legal Sytem & Property Rights index, EFW												-0.0164 (-0.106)			
Real GDP growth													-0.0231 (-0.469)		
Age dependency ratio (% of working-age population)														0.0275 (0.835)	
ICT capital stock share															-13.17 (-1.303)
R-squared	0.229	0.231	0.252	0.092	0.233	0.234	0.192	0.229	0.220	0.257	0.259	0.250	0.230	0.232	0.177
Number of observations	374	374	365	303	369	374	314	374	366	363	363	364	374	374	359
Number of countries	62	62	62	62	61	62	61	62	60	62	62	62	62	62	61
Number of periods	8	8	8	5	8	8	8	8	8	8	8	8	8	8	7
F-test period-fixed effects (p-value)	0.00140	0.0119	0.00538	0.180	0.0181	0.000991	0.00254	0.00149	0.00227	0.00141	0.00204	0.00237	0.00205	0.00176	0.00159
F-test Kuznets theory (p-value)		0.114													

Notes: Table shows the baseline model and the inclusion of additional control variables. Standard errors are clustered at the country level. *** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics in parentheses. Country- and period-fixed effects not shown. All F-test results are transformed to p-values. F-test on period-fixed effects examines whether time fixed-effects are correctly included in the estimation (H0=no effect). The last row tests the Kuznets theory, namely whether there is a nonlinear relationship of log GDP per capita and redistribution. The F-test suggests that the relationship does not exist.

Table A.3: Country list.

Country	Freq.	HI	Country	Freq.	HI	Country	Freq.	HI
Argentina	6		France	8	*	Peru	6	
Armenia	5		Georgia	5		Poland	5	*
Australia	7	*	Germany	8	*	Portugal	8	*
Austria	6	*	Greece	8	*	Romania	5	
Belgium	7	*	Guatemala	6		Russia	5	
Bolivia	4		Honduras	5		Singapore	6	*
Brazil	6		Hungary	5	*	Slovak Republic	5	*
Bulgaria	5		India	6		Slovenia	5	*
Canada	8	*	Iran	6		South Africa	6	
Chile	6	*	Ireland	8	*	South Korea	6	*
China	6		Israel	7	*	Spain	8	*
Colombia	6		Italy	8	*	Sweden	8	*
Costa Rica	6		Japan	6	*	Switzerland	6	*
Czech Republic	5	*	Lithuania	5	*	Turkey	5	
Denmark	7	*	Mexico	6		Ukraine	5	
Dominican Rep.	5		Netherlands	7	*	United Kingdom	8	*
Ecuador	5		New Zealand	6	*	United States	8	*
Egypt	6		Nicaragua	4		Uruguay	6	*
El Salvador	4		Norway	8	*	Venezuela	6	
Estonia	5	*	Panama	6		Yugoslavia	2	
Finland	8	*	Paraguay	4		Observations	374	222

Notes: All countries included in the original estimations. The second column shows the frequency of their occurrence. For instance, Argentina contributes six (out of eight) 5-year averages to the sample. In contrast, Finland is included throughout the estimations from 1975-2014 (all 5-year averages). 62 countries constitute 374 observations in total. The third column denotes countries included in the high-income sample (first robustness check) with a star.

Table A.4: First-Stage Results (IV)

	(1)	(2)	(3)	(4)	(5)	(6)
	First Stage	First Stage	First Stage	First Stage	First Stage	First Stage
	Interaction	Interaction	Interaction	Interaction	Interaction	Interaction
Dependent variable: KOF Globalisation	Overall	De facto	De jure	De facto	De jure	De jure
	Economic	Trade	Trade	Financial	Financial	Financial
	Globalisation	Globalisation	Globalisation	Globalisation	Globalisation	Globalisation
Market-based Gini (lagged)	0.009 (0.419)	0.002 (0.051)	0.076** (2.174)	-0.042 (-1.051)	0.025 (0.748)	0.032 (0.887)
log GDP per capita	-0.606* (-1.945)	-1.071* (-1.777)	-0.260 (-0.447)	-0.974 (-1.648)	-0.068 (-0.110)	-0.144 (-0.235)
Inflation rate	-0.034** (-2.416)	-0.147*** (-6.675)	0.011 (0.607)	-0.077*** (-3.147)	0.056* (1.837)	0.057* (1.863)
Ethnic Fractionalisation	-0.037* (-1.947)	-0.081*** (-4.134)	-0.061 (-1.223)	-0.035 (-1.555)	-0.057** (-2.234)	-0.057** (-2.187)
IV Overall economic globalisation	0.992*** (80.274)					
IV De facto trade globalisation		0.968*** (58.443)	0.020 (1.003)	0.018 (1.503)	0.004 (0.266)	
IV De jure trade globalisation		-0.024** (-2.142)	0.948*** (35.991)	0.009 (0.952)	-0.005 (-0.263)	
IV De facto financial globalisation		-0.009 (-0.909)	-0.005 (-0.416)	0.947*** (93.367)	0.004 (0.318)	
IV De jure financial globalisation		0.011 (1.114)	0.038*** (3.222)	0.017* (1.746)	0.977*** (51.609)	0.977*** (52.725)
Interaction (Glob x EF) (see column header for Glob measure)	0.001*** (2.706)	0.002*** (4.055)	0.001* (1.702)	0.001*** (3.918)	0.001** (2.113)	0.001** (2.072)
R-squared	0.990	0.984	0.984	0.991	0.970	0.970
Number of observations	374	374	374	374	374	374
Number of countries	62	62	62	62	62	62
Number of periods	8	8	8	8	8	8
F-test period-fixed effects (p-value)	7.03e-09	1.50e-05	4.28e-08	1.26e-06	0.0485	0.0134
F-test Ethnic Fractionalisation (p-value)	0.0263	0.000428	0.212	0.000468	0.0906	0.0999
F-test KOF Globalisation Index (p-value)	0.000	0.000	0.000	0.000	0.000	0.000

Notes: Table shows the first-stage results of the IV regression, namely the effect of globalisation instruments on their respective globalisation variable. The respective globalisation variable is depicted in the top row. Standard errors are clustered at the country level. *** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics are shown in parentheses. Country- and period-fixed effects are not shown. All F-statistics are transformed to p-values. F-test on period-fixed effects examines whether time fixed-effects are correctly included in the estimation (H0=no effect). F-tests on globalisation and ethnic fractionalisation denote the joint significance of the interaction term and globalisation or ethnic fractionalisation, respectively (H0=no effect). The results show that each instrument is relevant for its respective globalisation variable. For example, column (2) shows that the IV for de facto trade globalisation has a statistically significant effect on de facto trade globalisation.

Table A.5: Income Samples.

	(1)	(2)	(3)	(4)	(5)	(6)
	Interaction	Interaction	Interaction	Interaction	Interaction	Interaction
Dependent variable: Redistribution	Overall	De jure	Overall	De jure	Overall	De jure
	Economic	Financial	Economic	Financial	Economic	Financial
	Globalisation	Globalisation	Globalisation	Globalisation	Globalisation	Globalisation
Market-based Gini (lagged)	-0.059 (-0.433)	-0.032 (-0.250)	-0.072 (-1.338)	-0.132*** (-2.891)	-0.078 (-1.037)	-0.096 (-1.278)
log GDP per capita	-0.914 (-0.587)	-0.316 (-0.190)	-1.925** (-2.688)	-1.888*** (-2.839)	-1.410** (-2.179)	-1.104 (-1.624)
Inflation rate	-0.083** (-2.069)	-0.093** (-2.203)	-0.009 (-0.494)	-0.006 (-0.322)	-0.028* (-1.788)	-0.025 (-1.486)
Ethnic Fractionalisation	-0.003 (-0.020)	0.123** (2.072)	-0.068 (-1.611)	-0.024 (-0.921)	-0.004 (-0.183)	0.009 (0.481)
Overall economic globalisation	0.010 (0.147)		-0.033 (-1.170)		-0.005 (-0.133)	
De facto trade globalisation		0.047 (0.913)		-0.008 (-0.573)		-0.006 (-0.379)
De jure trade globalisation		-0.013 (-0.327)		-0.003 (-0.174)		-0.006 (-0.370)
De facto financial globalisation		-0.005 (-0.193)		0.036 (1.346)		0.029 (1.088)
De jure financial globalisation		0.027 (0.611)		-0.031 (-1.075)		-0.015 (-1.033)
Interaction (Glob x EF (x Sample)) (see column header for Glob measure)	-0.002 (-0.818)	-0.002*** (-3.076)	0.001* (2.002)	0.001 (1.090)	-0.002 (-1.265)	-0.002*** (-3.651)
R-squared	0.262	0.320	0.323	0.344	0.250	0.298
Income Sample	High	High	Non-High	Non-High	Interacted with all glob variables	Interacted with all glob variables
Number of observations	222	222	152	152	374	374
Number of countries	33	33	29	29	62	62
Number of periods	8	8	6	6	8	8
F-test period-fixed effects (p-value)	0.0130	0.0106	0.0509	0.0126	0.00277	0.00229
F-test Ethnic Fractionalisation (p-value)	0.0185	0.0151	0.145	0.550	0.231	0.00240
F-test KOF Globalisation Index (p-value)	0.717	0.00737	0.146	0.544	0.598	0.00294
F-test Income Sample (p-value)					0.409	0.00403

Notes: Table shows the effects of different globalisation variables on redistribution using different country samples, namely high and non-high income countries. The income sample is specified in the row “Income Sample”. The first two columns show the results for high-income countries. Column (3) and (4) provide the results for non-high income countries. The last two columns show the results when each globalisation variable and the interaction term is interacted with a dummy variable on whether a country is in the high-income group. We do not show the results for the interactions between globalisation variables and the sample dummy. The last estimation strives to test whether the high-income sample yields significantly different results. The respective interacted globalisation variable is depicted in the top row. The interaction term combines the respective globalisation and the ethnic fractionalisation variable (as well as the income sample dummy in column (5) and (6)). For instance, column (4) shows the results of the effect of de jure financial globalisation on relative distribution depending on ethnic fractionalisation (captured by the interaction term between de jure financial globalisation and fractionalisation) for non-high income countries. Standard errors are clustered at the country level. *** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics in parentheses. Country- and period-fixed effects not shown. All F-test results are transformed to p-values. F-test on period-fixed effects examines whether time fixed-effects are correctly included in the estimation (H0=no effect). F-tests on globalisation and ethnic fractionalisation denote the joint significance of the interaction term and globalisation or ethnic fractionalisation, respectively (H0=no effect). The results suggest that the effect of de jure financial globalisation on redistribution is dependent on ethnic fractionalisation. In addition, the effect of de jure financial globalisation is stronger when using only high-income countries. Whereas, there is no statistically significant effect in non-high income countries. Thus, the results using only high-income countries confirm the robustness of the findings in Table 2. This result is further confirmed by the statistically significant effect of the income sample on redistribution, see F-test Income Sample in Column (6).

Table A.6: Excluding post-crisis data.

Dependent variable: Redistribution	(1)	(2)	(3)	(4)	(5)
	Interaction	Interaction	Interaction	Interaction	Interaction
	Overall	De facto	De jure	De facto	De jure
	Economic	Trade	Trade	Financial	Financial
	Globalisation	Globalisation	Globalisation	Globalisation	Globalisation
Market-based Gini (lagged)	-0.096 (-1.243)	-0.114 (-1.468)	-0.114 (-1.470)	-0.112 (-1.428)	-0.110 (-1.447)
log GDP per capita	-1.422** (-2.087)	-0.949 (-1.349)	-0.988 (-1.387)	-1.008 (-1.418)	-1.125 (-1.563)
Inflation rate	-0.017 (-1.011)	-0.021 (-1.243)	-0.020 (-1.208)	-0.018 (-1.025)	-0.017 (-1.012)
Ethnic Fractionalisation	0.022 (0.423)	-0.019 (-0.512)	-0.005 (-0.132)	0.002 (0.048)	0.042* (1.696)
Overall economic globalisation	0.023 (0.629)				
De facto trade globalisation		0.007 (0.229)	0.012 (0.517)	0.012 (0.506)	0.007 (0.281)
De jure trade globalisation		-0.008 (-0.436)	-0.005 (-0.227)	-0.006 (-0.327)	-0.012 (-0.645)
De facto financial globalisation		0.019 (1.274)	0.018 (1.159)	0.024 (1.278)	0.015 (0.959)
De jure financial globalisation		-0.013 (-0.488)	-0.013 (-0.505)	-0.013 (-0.520)	0.022 (0.740)
Interaction (Glob x EF) (see column header for Glob measure)	-0.001 (-0.741)	0.000 (0.256)	-0.000 (-0.181)	-0.000 (-0.382)	-0.001** (-2.126)
R-squared	0.233	0.244	0.244	0.245	0.261
Number of observations	312	312	312	312	312
Number of countries	62	62	62	62	62
Number of periods	7	7	7	7	7
F-test period-fixed effects (p-value)	0.0216	0.111	0.108	0.104	0.0609
F-test Ethnic Fractionalisation (p-value)	0.607	0.831	0.845	0.806	0.112
F-test KOF Globalisation Index (p-value)	0.702	0.816	0.924	0.416	0.0876

Notes: Table shows the effects of different globalisation variables on redistribution excluding data after the financial crisis in 2009. The respective interacted globalisation variable is depicted in the top row. The interaction term combines the respective globalisation and the ethnic fractionalisation variable. For instance, column (7) shows the results of the effect of de jure financial globalisation on relative distribution depending on ethnic fractionalisation (captured by the interaction term between de jure financial globalisation and fractionalisation). Standard errors are clustered at the country level. *** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics in parentheses. Country- and period-fixed effects not shown. All F-test results are transformed to p-values. F-test on period-fixed effects examines whether time fixed-effects are correctly included in the estimation (H0=no effect). F-tests on globalisation and ethnic fractionalisation denote the joint significance of the interaction term and globalisation or ethnic fractionalisation, respectively (H0=no effect). The results suggest that the effect of de jure financial globalisation on redistribution is dependent on ethnic fractionalisation. Thus, excluding post-crisis data confirms the robustness of the results in Table 2.

Table A.7: Including technical change into the model.

	(1)	(2)	(3)	(4)	(5)	(6)
	Interaction	Interaction	Interaction	Interaction	Interaction	Interaction
Dependent variable: Redistribution	Overall	De facto	De jure	De facto	De jure	De jure
	Economic	Trade	Trade	Financial	Financial	Financial
	Globalisation	Globalisation	Globalisation	Globalisation	Globalisation	Globalisation
Market-based Gini (lagged)	-0.093 (-1.142)	-0.123 (-1.437)	-0.125 (-1.460)	-0.124 (-1.450)	-0.123 (-1.469)	-0.123 (-1.467)
log GDP per capita	-1.311* (-1.902)	-0.846 (-1.173)	-0.878 (-1.270)	-0.856 (-1.204)	-1.035 (-1.610)	-1.036 (-1.644)
Inflation rate	-0.025 (-1.394)	-0.026 (-1.393)	-0.024 (-1.287)	-0.025 (-1.301)	-0.018 (-0.988)	-0.018 (-0.999)
Ethnic Fractionalisation	0.031 (0.562)	-0.014 (-0.374)	0.019 (0.488)	0.005 (0.147)	0.077*** (2.931)	0.077** (2.347)
ICT capital stock share	-12.562 (-1.180)	-13.848 (-1.364)	-13.375 (-1.266)	-13.830 (-1.296)	-15.436 (-1.510)	-15.242 (-1.045)
Overall economic globalisation	0.016 (0.436)					
De facto trade globalisation		-0.001 (-0.034)	0.013 (0.562)	0.012 (0.549)	0.002 (0.096)	0.002 (0.097)
De jure trade globalisation		-0.008 (-0.468)	-0.000 (-0.009)	-0.005 (-0.309)	-0.011 (-0.677)	-0.011 (-0.718)
De facto financial globalisation		0.029 (1.575)	0.027 (1.453)	0.027 (1.218)	0.024 (1.300)	0.024 (1.261)
De jure financial globalisation		-0.021 (-0.855)	-0.022 (-0.958)	-0.022 (-0.930)	0.021 (0.917)	0.021 (0.929)
Interaction (Glob x EF) (see column header for Glob measure)	-0.001 (-0.582)	0.000 (0.741)	-0.000 (-0.307)	0.000 (0.094)	-0.001*** (-3.040)	-0.001*** (-3.127)
Interaction (ICTxEF)						-0.005 (-0.026)
R-squared	0.180	0.210	0.207	0.207	0.235	0.235
Number of observations	359	359	359	359	359	359
Number of countries	61	61	61	61	61	61
Number of periods	7	7	7	7	7	7
F-test period-fixed effects (p-value)	0.00268	0.0163	0.0153	0.0267	0.00121	0.00144
F-test Ethnic Fractionalisation (p-value)	0.843	0.676	0.870	0.924	0.00829	0.0191
F-test KOF Globalisation Index (p-value)	0.822	0.605	0.928	0.330	0.0114	0.00938
F-test ICT (p-value)						0.281

Notes: Table shows the effects of different globalisation variables on redistribution including ICT capital stock shares as an additional control variable. The respective interacted globalisation variable is depicted in the top row. The interaction term combines the respective globalisation and the ethnic fractionalisation variable. Column (6) shows additional results when ICT capital stock shares are interacted with ethnic fractionalisation. Standard errors are clustered at the country level. *** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics in parentheses. Country- and period-fixed effects not shown. All F-test results are transformed to p-values. F-test on period-fixed effects examines whether time fixed-effects are correctly included in the estimation (H0=no effect). F-tests on globalisation, ethnic fractionalisation and ICT denote the joint significance of the interaction term and globalisation, ethnic fractionalisation or ICT, respectively (H0=no effect). The results suggest that the effect of de jure financial globalisation on redistribution is dependent on ethnic fractionalisation. Thus, the results in Table 2 are confirmed. The result is robust even when the interaction term on ICT and ethnic fractionalisation is included.

Table A.8: Including Time Trends.

	(1)	(2)	(3)	(4)	(5)
Dependent variable: Redistribution	Interaction	Interaction	Interaction	Interaction	Interaction
	Overall	De facto	De jure	De facto	De jure
	Economic	Trade	Trade	Financial	Financial
	Globalisation	Globalisation	Globalisation	Globalisation	Globalisation
Market-based Gini (lagged)	-0.106 (-1.487)	-0.130* (-1.750)	-0.130* (-1.764)	-0.128* (-1.729)	-0.126* (-1.740)
log GDP per capita	-1.550** (-2.404)	-1.108 (-1.631)	-1.144* (-1.743)	-1.118 (-1.662)	-1.238* (-1.992)
Inflation rate	-0.030* (-1.818)	-0.034** (-2.135)	-0.032** (-2.055)	-0.030* (-1.880)	-0.027 (-1.659)
Ethnic Fractionalisation	0.017 (0.273)	-0.035 (-0.812)	-0.004 (-0.095)	-0.009 (-0.221)	0.043 (1.397)
Overall economic globalisation	0.014 (0.426)				
De facto trade globalisation		-0.005 (-0.152)	0.005 (0.253)	0.004 (0.210)	-0.003 (-0.136)
De jure trade globalisation		-0.013 (-0.946)	-0.005 (-0.260)	-0.011 (-0.745)	-0.016 (-1.096)
De facto financial globalisation		0.025 (1.428)	0.023 (1.282)	0.027 (1.332)	0.020 (1.168)
De jure financial globalisation		-0.017 (-0.703)	-0.018 (-0.780)	-0.018 (-0.780)	0.022 (0.922)
Interaction (Glob x EF) (see column header for Glob measure)	-0.001 (-0.772)	0.000 (0.444)	-0.000 (-0.431)	-0.000 (-0.275)	-0.001** (-2.467)
R-squared	0.218	0.236	0.235	0.235	0.258
Number of observations	374	374	374	374	374
Number of countries	62	62	62	62	62
Number of periods	8	8	8	8	8
F-test time trend (p-value)	0.000129	0.0149	0.0115	0.0154	0.00190
F-test Ethnic Fractionalisation (p-value)	0.391	0.646	0.615	0.665	0.0365
F-test KOF Globalisation Index (p-value)	0.743	0.868	0.706	0.373	0.0495

Notes: Table shows the effects of different globalisation variables on redistribution with time trends instead of time fixed effects. The respective interacted globalisation variable is depicted in the top row. The interaction term combines the respective globalisation and the ethnic fractionalisation variable. Standard errors are clustered at the country level. *** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics in parentheses. Country- and period-fixed effects not shown. All F-test results are transformed to p-values. F-test on period-fixed effects examines whether time fixed-effects are correctly included in the estimation (H0=no effect). F-tests on globalisation and ethnic fractionalisation denote the joint significance of the interaction term and globalisation or ethnic fractionalisation, respectively (H0=no effect). The results suggest that the effect of de jure financial globalisation on redistribution are dependent on ethnic fractionalisation. Thus, the results in Table 2 are confirmed.