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Income Inequality, Capitalism and Ethno-Linguistic Fractionalization

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Abstract

We examine the relationship between capitalism and income inequality for a large sample of countries using an adjusted economic freedom index as proxy for capitalism and Gini coefficients based on gross-income as proxy for income inequality. Our results suggest that there is no robust relationship between economic freedom and income inequality. In addition, we analyze the relationship between income redistribution (measured by the ratio of the income distribution resulting from market processes and the income distribution after redistribution) and ethno-linguistic fractionalization. We find that the impact of ethno-linguistic fractionalization on income redistribution is conditional on the level of economic freedom: countries that have a high degree of fractionalization have less income redistribution, while capitalist countries that have a low degree of fractionalization have more income distribution.

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1. Introduction

Income inequality has increased in many countries over the past two decades, while it varies substantially across countries. The social and economic impact of rising income inequality has been examined in several studies. Rising disparities in income may lead to investment-reducing social unrest, political instability and may make property rights less secure (Keefer and Knack, 2002). To the extent that economies are periodically subject to economic shocks that limit growth in the short term, greater income inequality makes a larger proportion of the population vulnerable to poverty (Jaumotte et al., 2013). 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).[1]

However, there is less of a consensus on the root causes of inequality. Some blame policies. For instance, in discussing inequality in the US, Stiglitz (2014) argues that "Every aspect of our economic, legal, and social frameworks helps shape our inequality: from our education system and how we finance it, to our health system, to our tax laws, to our laws governing bankruptcy, corporate governance, the functioning of our financial system, to our anti-trust laws. In virtually every domain, we have made decisions that help enrich the top at the expense of the rest." Others pose that inequality is inherent in a market-based economic system. For instance, according to Muller (2013), inequality "is an inevitable product of capitalist activity, and expanding equality of opportunity only increases it -- because some individuals and communities are simply better able than others to exploit the opportunities for development and advancement that capitalism affords." However, also countries having a similar market-based economic system exhibit differences in income inequality after redistribution. Recent research suggests that ethno-linguistic fractionalization explains these cross-country differences in income redistribution (cf. Desmet et al., 2012).

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[1] Still, some earlier studies report evidence for a positive relationship between inequality and growth. See, for instance, Forbes (2000) and Scully (2002). Another strand of the literature has looked at the reverse relationship between economic growth (or the level of income) and inequality; see, for instance Dollar et al. (2014).

This paper makes the following contributions. First, we examine the relationship between capitalism and income inequality for a large sample of countries using an adjusted economic freedom (EF) index as proxy for capitalism and Gini coefficients as proxy for income inequality. Previous research on this relationship yields conflicting findings and suffers from several shortcomings.[2] Most importantly, these studies did not adjust the EF index and thereby included redistribution policies in their proxy for capitalism. We only include components of the index that relate to legal structure and security of property rights, freedom to trade internationally, and regulation of credit, labor, and business. Furthermore, previous studies frequently use income inequality after redistribution as dependent variable to examine the relationship between capitalism and income distribution. To properly test the view put forward by Muller (2013), we employ income inequality before redistribution as dependent variable. Our results suggest that there is no robust relationship between Economic Freedom and income inequality.

Second, we analyze the relationship between income redistribution and fractionalization. According to Becker (1957), individuals have stronger feelings of empathy toward their own group and this implies that countries where there is strong fractionalization exhibit lower levels of redistribution. Some recent papers provide cross-country evidence for this (e.g. Desmet et al. 2009; 2012). However, these studies measure redistribution by the share of transfers and subsidies to GDP and this is highly problematic as most of the redistribution occurs through the tax system. We therefore use the ratio of the income distribution resulting from market processes and the income distribution after redistribution as our proxy for income redistribution. Our results suggest that the impact of ethno-linguistic fractionalization is conditional on the level of economic freedom: countries that have a high degree of fractionalization

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[2] Berggren (1999) and Scully (2002) argue that economic freedom reduces income inequality. Carter (2007) finds a positive but relatively inelastic relationship, while Bergh and Nilsson (2010) conclude that an increase in economic freedom increases inequality mainly in rich countries. Several studies examine the relationship between EF and income inequality for the US. The results of these studies are also mixed. For instance, Bennett and Vedder (2013) report evidence that EF reduces inequality, but Compton et al. (2014) find that while increases in economic freedom positively contribute to income growth, the strength of this effect is generally insignificant for those in the lowest income quintile.

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have less income redistribution, while capitalist countries that have a low degree of fractionalization have more income distribution.

The paper is structured as follows. Section 2 presents our results for the relationship between economic freedom and income inequality. Section 3 shows our findings for income redistribution, while section 4 contains several robustness checks. The final section offers our conclusions.

2. Economic freedom and income inequality

Although De Soto (2000) argues that economic freedom opens economic opportunities to less privileged and lower income individuals, thereby decreasing inequality, the prevalent view is that that more freedom may promote growth at the expense of increased income inequality within countries (Bergh and Nilsson, 2010). We examine the relationship between capitalism and income inequality using some parts of the Fraser Institute's economic freedom (EF) index as a proxy for capitalism.[3]

The EF index is a composite index combining five dimensions of economic freedom, which, in turn, are based on several indicators. The first dimension is size of government, which is based on indicators such as public consumption and transfers relative to GDP. It also includes top marginal tax rates and state-owned enterprises. This sub-index is coded so that bigger government means lower economic freedom. The second dimension of the EF index (legal structure and security of property rights) quantifies the quality and integrity of the legal system and the protection of property rights. This sub-index is coded so that a better legal system and more secure property rights means higher economic freedom. The third dimension (sound money) captures the effect of large and unpredictable changes in inflation and money supply. This sub-index is coded so that greater unpredicted inflation means lower economic freedom. The fourth dimension (freedom to trade internationally) combines measures of trade taxes, tariff rates and trade barriers, and capital market controls. This sub-index is coded so that higher freedom to trade means higher economic freedom. The final dimension (regulation of credit, labor, and business) captures government regulation

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[3] See http://www.freetheworld.com/reports.html for the most recent edition of the index.

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of the economy. This sub-index is coded so that less regulation of credit markets, labor markets, and business in general means higher economic freedom.

Most previous studies on the relationship between economic freedom and income inequality employ the aggregate EF index. This leads to biased estimates as the aggregate index includes income redistribution via the government sector and inflation.[4] The EF index is available for a large group of countries for 5-years intervals. As dependent variable we use Gini coefficients based on households' income from Solt's (2009) recently developed Standardized World Income Inequality Database (SWIID). We construct averages of the Gini coefficients across 5 years to align these with the frequency of the EF index. To be precise, the EF index reflects the time period t-3, when the five-year average of the Gini coefficients is centered at period t. This time lag is to avoid endogeneity issues. Gini coefficients can be calculated for gross income (i.e. before taxes and transfers) and net income (i.e. after taxes and transfers). In this part of the analysis we use gross income Gini coefficients, as we are interested in the income distribution resulting from market processes.

The control variables have been selected based on previous studies. We include the log of real GDP per capita to correct for any distributional effects driven by income levels (cf. Barro, 2000). In line with the Kuznets hypothesis, we expect inequality to decrease with higher levels of development and thus a positive coefficient of GDP per capita.

The (lag of) the 5-year average KOF economic globalization index is included, as several authors have argued that economic globalization has led to more within-country income inequality (see, for instance, Feenstra and Hanson, 1996). The KOF economic globalization index consists of two parts. Whereas the first part is based on actual across border flow data (trade, foreign direct investment, portfolio investment and income payments), the second part looks into trade restrictions like the existence of hidden import barriers, tariff rates, taxes on trade and capital account restrictions. As this latter part is in essence also included in the EF index, we only take the economic globalization part that relates to actual flows. Furthermore, since Jaumotte

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[4] Indeed, the papers discussed in the next section examining the relationship between redistribution and fractionalization draw their measure of redistribution from the EF index.

et al. (2013) find that trade openness is associated with lower income inequality, while increased financial openness is associated with higher income inequality, we test whether splitting up the KOF globalization index further and using the underlying (lagged) 5-year average trade to GDP ratio (%) and the (lagged) 5-year average stock of FDI (as % of GDP) leads to different results.

Education has been argued to affect income inequality as well (cf. Barro, 2000). Therefore, we include the share of the population that has completed secondary education. Finally, we include the share of labor force employed in the agricultural sector to control for the structure of the economy (cf. Jaumotte et al., 2013). Table A1 in the Appendix provides the sources of the data used and presents summary statistics.

Table 1 shows our estimation results for an unbalanced panel of 108 countries over the period 1971-2010 (split up in 8 five-year intervals). For each specification, the table shows two outcomes. The first column of each specification shows the results without time fixed effects, while the second column includes time fixed effects. All estimations include country fixed effects. In the first columns only our adjusted measure of economic freedom is included, while in columns (3) and (4) GDP per capita is added. This variable is highly significant and we retain it therefore in the other specifications. In the remaining columns the other control variables are added one at a time to check for the robustness of the relationship between economic freedom and income inequality. The results suggest that globalization is significant. It seems that notably financial globalization drives this finding, as trade openness is not significant. The variables capturing education and the structure of the economy are not significant. As to our main variable of interest: in most regressions the coefficient of our economic freedom index is negative, but it is often not significantly different from zero. We therefore conclude that economic freedom is not robustly related to within country income inequality. This conclusion is reinforced by our sensitivity analysis presented in Section 4.

[Insert Table 1 here]

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3. Redistribution and ethnic fractionalization

If Becker's (1957) view is correct that individuals have stronger feelings of empathy toward their own group, it is not surprising that the U.S., where there is a strong racial component to the income distribution, exhibits lower levels of redistribution than Western European countries (Desmet et al., 2009). Several papers report evidence that ethno-linguistic fractionalization is negatively related to income distribution. While several studies examine this relationship at the micro level (see Desmet et al. (2012) for a further discussion), others present evidence at the macro level. Barro (2000) does not find any significant relationship between Gini coefficients and ethno-linguistic and religious fractionalization measures, but La Porta et al. (1999) report that ethno linguistic fractionalization, measured by an average of five existing indices of fractionalization, generally has a negative impact on several measures of public goods, such as literacy rates, infant mortality, and school attainment that may be related to income inequality. Other studies relate income distribution to fractionalization. While Alesina et al. (2003) report that the effect of ethno-linguistic fractionalization on redistribution appears sensitive to the inclusion of several control variables, Desmet et al. (2009; 2012) find more robust evidence for a negative association. Desmet et al. (2009) find that linguistic fractionalization is negatively associated with redistribution. However, this result does not hold when measures of fractionalization do not account for the degree of linguistic distance between groups, suggesting that the depth of linguistic cleavages matters. Likewise, Desmet et al. (2012) find that linguistic diversity negatively affects redistribution at high levels of aggregation of ethno-linguistic fractionalization, but the effect declines in magnitude as the level of aggregation falls and becomes insignificant at lower levels of aggregation. They therefore conclude that "solidarity travels without trouble across groups that are separated by shallow gullies, but not across those separated by deep canyons." (p. 332).

Insightful as may be, the latter three studies measure redistribution by the share of transfers and subsidies to GDP. This is highly problematic as most of the redistribution within countries occurs through the tax system. Furthermore, a substantial part of transfers and subsidies is not aimed at redistribution. That is why we use the ratio between the income distribution resulting from market processes and

the income distribution after redistribution. Both distributions are proxied by Gini coefficients.

The studies discussed differ in their use of fractionalization measures. Most are based on language, but as Alesina et al. (2003) point out this may not always capture fractionalization. For instance, in Latin America several countries are relatively homogeneous in terms of language spoken, frequently the one of former colonizers, but much less so in terms of skin color or racial origin. That is why Alesina et al. develop measures for fractionalization measures of ethnicity, language and religion. Kolo (2012) also develops fractionalization measures of ethnicity, language and religion, using a different method and a different source. Desmet et al. (2009) develop two indexes. One index measures the probability of two randomly chosen individuals being from different ethno-linguistic groups and does not take into account the distances between the different groups, while the other one takes distances between different groups taken into account, which they label after Greenberg (1956). Desmet et al. (2012) construct an ethno-linguistic fractionalization (ELF) at 15 different levels of aggregation based on language tree. But only at a high level of aggregation (i.e. ELF1), the relationship with income distribution is significant. That is why we only use this measure in our analysis. In total we have 9 fractionalization measures. As Table 2 shows, the correlation between these different fractionalization measures is often very low. That is why we use them all in our regressions.

[Insert Table 2 here]

Table 3 presents regression outcomes using the different fractionalization measures. As fractionalization is not time-varying, we estimate simple OLS cross-country regressions for the period around the year 2003 as this yields the biggest sample.[5] Given that all fractionalization measures are basically available for the same set of countries, the results are not driven by changes in the sample. In all regressions we

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[5] Note that the dependent variable is an average between 2001-2005, i.e. around 2003.

include the interaction between our fractionalization measure and our adjusted economic freedom measure.

As Table 3 shows, both the coefficients of the ethnic fractionalization and of the interaction term of fractionalization and economic freedom are almost always individually significant and always as group. This suggests that the impact of ethnic fractionalization on income distribution is conditional on the level of economic freedom. To illustrate this conditionality, Figure 1 shows the predicted values of the redistribution ratio as a function of the level of fractionalization and conditional on three different levels of economic freedom. Each cell of this figure is based on the respective column of Table 3. Independent of the measure of fractionalization we use, it shows that, when countries are highly fractionalized then no significant redistribution takes place, i.e. the ratio between the market and the net Gini coefficients is not statistically different from one. The level of economic freedom does not matter in that case. However, at low levels of fractionalization, countries that have a high level of economic freedom do show significantly more redistribution than countries with lower levels of economic freedom. In fact, at the lowest 10 percentile level of economic freedom (which is at a level of approximately 5), no significant redistribution takes place at all.

[Insert Figure 1 here]

Overall, the results suggest that countries that have a high degree of fractionalization experience less to no income redistribution, while capitalist countries that have a low degree of fractionalization have a substantial degree of income redistribution.

[Insert Table 3 here]

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Table 4 presents regression outcomes using the ethnic fractionalization measure of Alesina et al. (2003). In the first column we repeat the result presented in column (6) of Table 3. Columns (2) and (3) change the sample. Whereas the second column focuses on the period surrounding 1998, in column (3) we employ a panel. Changing the sample period does not affect our conclusions.

Subsequently, several controls are added to the baseline model. These are based on previous studies and consist of regional dummies, initial gross income distribution, legal origin, share of several religious groups in the total population, latitude of the capital, log of real GDP per capita, and the dependency ratio. The initial income distribution is included as Meltzer and Richard (1981) argue that higher inequality will create pressures for redistribution. In their view, in democracies political power is more evenly distributed than economic power, so that a majority of voters will have the power and incentive to vote for redistribution. Milanovic (2000) presents evidence supportive of the Meltzer- Richard hypothesis: more unequal societies do engage in more redistribution.[6] The other control variables have been included following Desmet et al. (2012). Our main findings are not affected by the inclusion of additional controls.

[Insert Table 4 here]

4. Conclusions

We examine the relationship between capitalism and income inequality for a large sample of countries using an adjusted economic freedom index as proxy for capitalism and Gini coefficients based on gross-income as proxy for income inequality. Our adjusted economic freedom index excludes components related to

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[6] Still, as pointed out by Ostry et al. (2014), cause and effect are difficult to establish definitively with respect to the relationship between market inequality and redistribution. Although most of the literature on redistribution assumes that market inequality drives redistribution, redistribution can influence behavior in ways that may change labor supply and market wages and thus market inequality as well.

income distribution. Our results suggest that there is no robust relationship between economic freedom and income inequality. In other words, we do not find evidence in support of the view of Muller (2013) that income inequality is inherent in capitalism.

In addition, we analyze the relationship between income redistribution (measured by the ratio of the income distribution resulting from market processes and the income distribution after redistribution) and ethno-linguistic fractionalization. Our proxy for income distribution takes into consideration that most of the income distribution takes place via the tax system. We find that the impact of ethno-linguistic fractionalization on income redistribution is conditional on the level of economic freedom. In line with Becker's (1957) view, our results suggest that countries that have a high degree of fractionalization have less income redistribution. However, capitalist countries that have a low degree of fractionalization have more income distribution.

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Tables

Table 1. The relationship between capitalism and income inequality

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Economic Freedom	0.667***	0.112	-0.114	0.0134	-0.403	-0.0467	-0.246	-0.293	-0.239	0.124	-0.184	0.0555	0.119	0.164
	(2.825)	(0.299)	(-0.417)	(0.0367)	(-1.360)	(-0.128)	(-0.863)	(-0.768)	(-0.804)	(0.323)	(-0.615)	(0.151)	(0.345)	(0.395)
GDP per capita			4.041***	4.899***	3.500***	4.867***	4.490***	4.729***	2.855***	4.205***	5.010***	6.238***	3.980***	4.913***
			(5.319)	(5.373)	(4.007)	(5.238)	(5.068)	(4.869)	(2.865)	(4.002)	(5.457)	(5.992)	(3.883)	(4.437)
Globalization					0.0603**	0.143***								
					(2.434)	(4.818)								
Trade openness							-0.0118	-0.00555						
							(-0.876)	(-0.381)						
Stock of FDI									0.0171	0.0590***				
									(1.028)	(3.095)				
Education											-0.0249	0.0290		
											(-0.616)	(0.659)		
Agriculture													0.0895	0.0508
													(1.154)	(0.627)
Observations	545	545	538	538	507	507	506	506	418	418	523	523	462	462
R-squared	0.018	0.037	0.079	0.099	0.084	0.143	0.073	0.092	0.042	0.101	0.094	0.121	0.059	0.104
Number of countries	108	108	105	105	103	103	104	104	103	103	101	101	100	100

Notes: This table shows panel estimates for the relationship between 5-year averages of the market Gini coefficients and lagged economic freedom. Also the other explanatory variables are lagged. The first column of each specification shows the results without time fixed effects, while the second column does include time fixed effects. All estimations include country fixed effects. T-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2. Correlation matrix fractionalization indicators

correlation\#obs.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Frac-lang-ADEKW	102	100	101	100	100	102	100	102	100
(2) Frac-lang-Kolo	0.70	101	101	100	100	101	101	101	101
(3) Frac-ELF1-DOW	0.41	0.57	102	101	101	102	101	102	101
(4) Frac-ELF-DOW	0.84	0.76	0.53	101	101	101	100	101	100
(5) Frac-GI-DOW	0.49	0.64	0.99	0.61	101	101	100	101	100
(6) Frac-ethn-ADEKW	0.69	0.59	0.39	0.71	0.46	103	101	103	101
(7) Frac-ethn-Kolo	0.09	0.32	0.46	0.10	0.45	0.40	101	101	101
(8) Frac-reli-ADEKW	0.32	0.29	0.15	0.30	0.17	0.27	0.08	103	101
(9) Frac-reli-Kolo	0.43	0.53	0.32	0.56	0.37	0.42	-0.02	0.48	101

Notes: The upper-right part of the table reports the number of countries for which the correlation coefficient is calculated. The lower-left part of the table reports the correlation coefficients.

Table 3. Explaining income redistribution

VARIABLES	(1) Frac-lang-ADEKW	(2) Frac-lang-Kolo	(3) Frac-ELF1-DOW	(4) Frac-ELF-DOW	(5) Frac-GI-DOW	(6) Frac-ethn-ADEKW	(7) Frac-ethn-Kolo	(8) Frac-reli-ADEKW	(9) Frac-reli-Kolo
Economic freedom	0.154***	0.186***	0.120***	0.153***	0.127***	0.163***	0.147***	0.170***	0.138***
	(6.335)	(7.204)	(7.002)	(6.555)	(7.024)	(7.017)	(6.314)	(6.239)	(7.534)
Fractionalization	0.817**	1.132***	0.666	0.741**	1.055*	1.066***	0.681	0.758**	1.225**
	(2.339)	(3.189)	(1.104)	(2.452)	(1.793)	(3.260)	(1.281)	(2.149)	(2.325)
Economic freedom x Fractionalization	-0.143**	-0.202***	-0.135	-0.137***	-0.200**	-0.205***	-0.156*	-0.133**	-0.220**
	(-2.598)	(-3.580)	(-1.438)	(-2.883)	(-2.179)	(-4.113)	(-1.937)	(-2.521)	(-2.574)
Constant	0.208	0.0290	0.429***	0.232	0.386***	0.205	0.313**	0.126	0.306**
	(1.253)	(0.170)	(3.651)	(1.452)	(3.115)	(1.232)	(2.017)	(0.705)	(2.484)
Observations	102	101	102	101	101	103	101	103	101
R-squared	0.429	0.474	0.423	0.454	0.439	0.526	0.476	0.430	0.436

Notes: The dependent variable is the ratio between market and net Gini coefficients. The header of each column indicates which fractionalization measure is used. T-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1
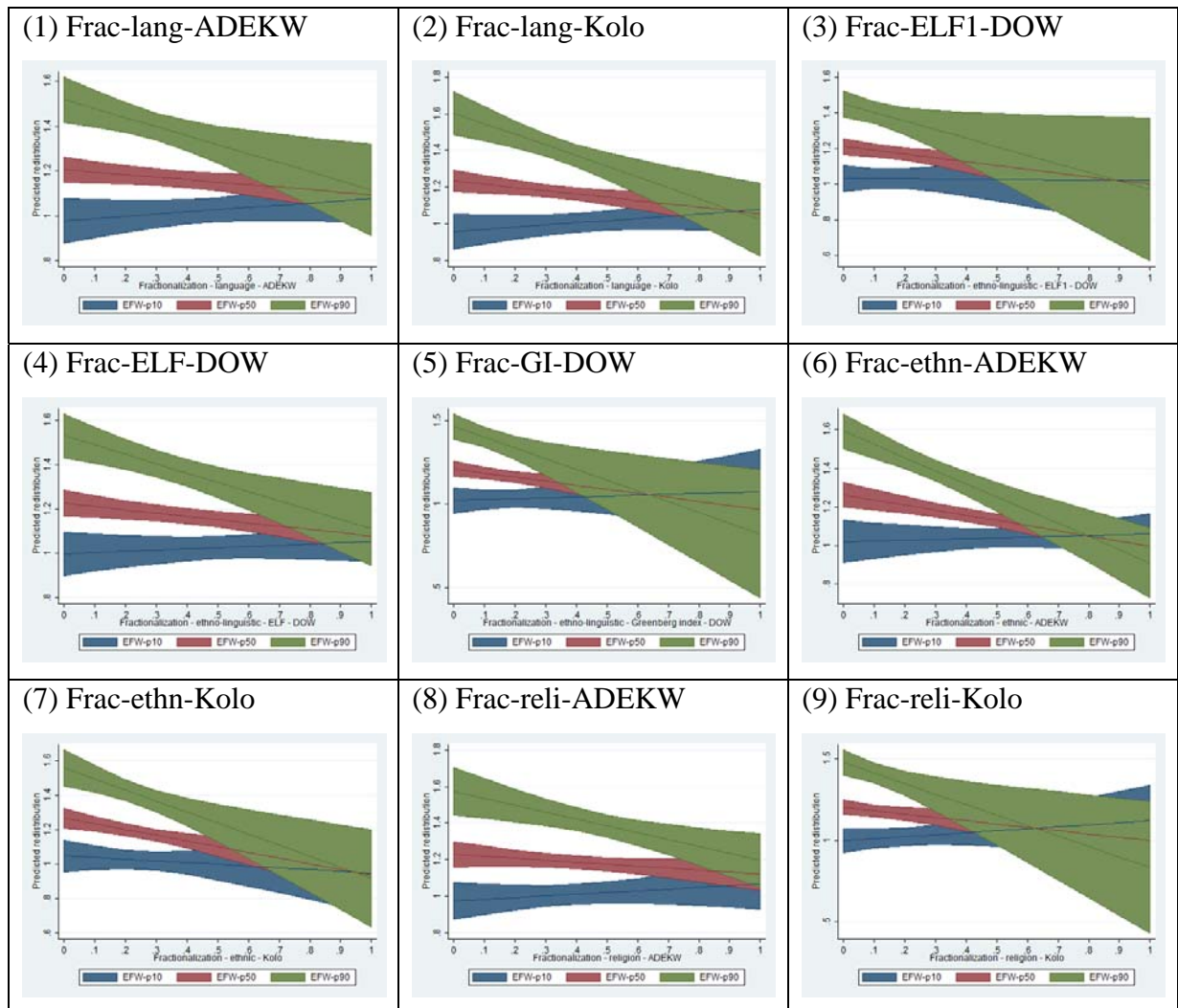
Table 4. Explaining redistribution - extended specifications

	(1) baseline	(2) year=1998	(3) panel	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Economic freedom	0.163***	0.133***	0.105***	0.163***	0.0942***	0.137***	0.162***	0.160***	0.126***	0.126***	0.132***	0.157***	0.103***
	(7.017)	(5.186)	(11.46)	(7.087)	(4.395)	(6.275)	(6.945)	(6.714)	(5.312)	(6.618)	(4.638)	(6.803)	(4.531)
Frac-lang-ADEKW	1.066***	0.733**	0.432***	1.121***	0.984***	0.882***	1.056***	1.071***	0.785**	1.327***	1.277***	1.054***	1.050***
	(3.260)	(2.141)	(3.492)	(3.447)	(3.496)	(3.041)	(3.175)	(3.261)	(2.509)	(5.050)	(3.784)	(3.259)	(3.680)
Economic freedom x Frac-lang-ADEKW	-0.205***	-0.162***	-0.123***	-0.208***	-0.182***	-0.153***	-0.203***	-0.206***	-0.164***	-0.218***	-0.224***	-0.204***	-0.180***
	(-4.113)	(-2.993)	(-6.088)	(-4.202)	(-4.314)	(-3.432)	(-4.018)	(-4.111)	(-3.461)	(-5.472)	(-4.471)	(-4.140)	(-4.118)
Baltic					0.361***								
					(5.001)								
CW Ind.States					0.184**								
					(2.148)								
East.Europe					0.272***								
					(5.734)								
Latin America					0.0164								
					(0.427)								
Near East					0.160**								
					(2.524)								
North.Africa					0.0420								
					(0.643)								
North.America					0.366***								
					(3.824)								
Oceania					0.0544								
					(0.855)								
Sub-Sah.Africa					0.0681								
					(1.559)								
West.Europe					0.357***								
					(7.683)								
Income inequality, market, lagged				-0.00335									
				(-1.646)									
French						0.0513							
						(1.639)							
German						0.114*							
						(1.871)							
Scandinavia						0.417***							
						(5.810)							
Socialist						0.213***							
						(4.946)							
Catholic							-8.18e-05						
							(-0.196)						
Muslim								-0.000266					
								(-0.459)					
Protestant									0.00265***				
									(3.798)				
Latitude										0.627***			
										(7.603)			
GDP per capita											0.0566**		
											(2.198)		
Population												-0.0180*	
												(-1.808)	
Dependency ratio													0.0163***
													(5.695)
Constant	0.205	0.436**	0.659***	0.337*	0.494***	0.235	0.210	0.225	0.419**	0.167	-0.131	0.289*	0.330**
	(1.232)	(2.446)	(10.76)	(1.817)	(3.294)	(1.496)	(1.242)	(1.304)	(2.543)	(1.262)	(-0.594)	(1.694)	(2.250)
Observations	103	99	545	102	103	103	103	103	102	103	100	103	102
R-squared	0.526	0.411	0.394	0.537	0.783	0.695	0.526	0.527	0.595	0.702	0.551	0.542	0.646

Notes: The dependent variable is the ratio between market and net Gini coefficients. The language fractionalization measure of Alesina et al. (2003) is used. T-statistics are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Figures

Figure 1: Impact of fractionalization on income redistribution conditional on the level of economic freedom

Notes: Each cell relates to the respective column in Table 3. The predicted values for the redistribution ratios are given for all levels of fractionalization and three different values of the level of economic freedom. EFW-p10 equals the value of economic freedom that represents its 10th percentile. Similarly, EFW-p50 and EFW-p90 represent the median and the 90th percentile of economic freedom. The predictions are shown together with their 95 percent confidence intervals.

Appendix

Table A 1: Variable definitions and data sources

Abbreviation	Variable description	Source
Economic freedom and income distribution		
Income inequality	Gini coefficient using (pre-tax, pre-transfer) household income	Solt (2009)
Economic freedom	Economic Freedom - non-weighted average of areas 2, 4 and 5	Fraser institute
GDP per capita	log real GDP per capita	Feenstra et al. (2013) (PWT)
Globalization	KOF Economic Globalisation Index (Flows)	KOF, Dreher (2006)
Trade openness	Export and import as percentage of GDP	KOF, Dreher (2006)
Stock of FDI	Stock of FDI as percentage of GDP	KOF, Dreher (2006)
Education	Percentage of population with secondary education completed	Barro and Lee (2011)
Agriculture	Value added of agriculture as percentage of GDP	World Bank (2014) (WDI)
Redistribution and fractionalization		
Redistribution	Ratio between market and net Gini coefficients	Solt (2009)
Frac-lan-ADEKW	Fractionalization - language - ADEKW	Alesina et al. (2003)
Frac-lan-Kolo	Fractionalization - language - Kolo	Kolo (2012)
Frac-lan1-DOW	Fractionalization - language (1) - DOW	Desmet et al. (2012)
Frac-GrInd-DOW	Fractionalization - Greenberg index - DOW	Desmet et al. (2009)
Frac-lan-DOW	Fractionalization - language - DOW	Desmet et al. (2009)
Frac-eth-ADEKW	Fractionalization - ethnic - ADEKW	Alesina et al. (2003)
Frac-eth-Kolo	Fractionalization - ethnic - Kolo	Kolo (2012)
Frac-rel-ADEKW	Fractionalization - religion - ADEKW	Alesina et al. (2003)
Frac-rel-Kolo	Fractionalization - religion - Kolo	Kolo (2012)
Asia	Asia	www.statvision.com
Baltic	Baltic states	www.statvision.com
CW Ind.States	C.W. of Ind. States	www.statvision.com
East.Europe	Eastern Europe	www.statvision.com
Latin America	Latin American and the Caribbean Islands	www.statvision.com
Near East	Near East	www.statvision.com
North.Africa	Northern Africa	www.statvision.com
North.America	Northern America	www.statvision.com
Oceania	Oceania	www.statvision.com
Sub-Sah.Africa	Sub-Saharan Africa	www.statvision.com
West.Europe	Western Europe	www.statvision.com
English	Legal origin English	La Porta et al. (1999)
French	Legal origin French	La Porta et al. (1999)
German	Legal origin German	La Porta et al. (1999)
Scandinavia	Legal origin Scandinavian	La Porta et al. (1999)
Socialist	Legal origin Socialist	La Porta et al. (1999)
Catholic	Share of catholics in population in 1980	La Porta et al. (1999)
Muslim	Share of muslims in population in 1980	La Porta et al. (1999)
Protestant	Share of protestants in population in 1980	La Porta et al. (1999)
Latitude	Absolute latitude of the capital	La Porta et al. (1999)
Population	Log population	United Nations (2013) & PWT
Dependency ratio	Dependency ratio population over 65	United Nations (2013)

Table A 2: Summary statistics

Abbreviation	Period	# Obs.	Mean	Std.dev.	Min.	Max.
Economic freedom and income distribution						
Income inequality	5-yrs MA around t	545	44.05	8.16	21.11	75.43
Economic freedom	t-3	545	6.16	1.52	2.03	9.02
GDP per capita	5-yrs MA around t-3	538	8.87	1.14	5.48	11.17
Globalization	5-yrs MA around t-3	514	54.17	20.31	9.03	99.96
Trade openness	5-yrs MA around t-3	513	74.85	53.90	11.31	414.02
Stock of FDI	5-yrs MA around t-3	425	16.44	21.03	0.00	178.54
Education	t-3	530	19.06	13.71	0.03	73.00
Agriculture	5-yrs MA around t-3	468	13.22	11.92	0.05	56.10
Redistribution and fractionalization						
Redistribution	5-yrs MA around t	545	1.20	0.23	0.77	2.02
Frac-lan-ADEKW	constant	540	0.34	0.28	0.00	0.92
Frac-lan-Kolo	constant	531	0.34	0.23	0.02	0.94
Frac-lan1-DOW	constant	538	0.14	0.17	0.00	0.65
Frac-GrInd-DOW	constant	530	0.16	0.17	0.00	0.65
Frac-lan-DOW	constant	530	0.41	0.30	0.00	0.99
Frac-eth-ADEKW	constant	545	0.39	0.26	0.00	0.93
Frac-eth-Kolo	constant	531	0.26	0.18	0.01	0.66
Frac-rel-ADEKW	constant	545	0.43	0.24	0.00	0.86
Frac-rel-Kolo	constant	531	0.14	0.17	0.00	0.65
Asia	constant	545	0.18	0.39	0.00	1.00
Baltic	constant	545	0.02	0.13	0.00	1.00
CW Ind.States	constant	545	0.01	0.10	0.00	1.00
East.Europe	constant	545	0.06	0.24	0.00	1.00
Latin America	constant	545	0.20	0.40	0.00	1.00
Near East	constant	545	0.04	0.20	0.00	1.00
North.Africa	constant	545	0.04	0.19	0.00	1.00
North.America	constant	545	0.03	0.17	0.00	1.00
Oceania	constant	545	0.04	0.19	0.00	1.00
Sub-Sah.Africa	constant	545	0.16	0.36	0.00	1.00
West.Europe	constant	545	0.23	0.42	0.00	1.00
English	constant	545	0.34	0.47	0.00	1.00
French	constant	545	0.43	0.50	0.00	1.00
German	constant	545	0.08	0.26	0.00	1.00
Scandinavia	constant	545	0.06	0.25	0.00	1.00
Socialist	constant	545	0.09	0.29	0.00	1.00
Catholic	constant	545	37.31	37.92	0.00	97.30
Muslim	constant	545	14.65	29.20	0.00	99.40
Protestant	constant	542	15.74	24.66	0.00	97.80
Latitude	constant	545	0.33	0.20	0.01	0.72
Population	5-yrs MA around t-3	545	2.64	1.54	-1.45	7.15
Dependency ratio	5-yrs MA around t-3	538	12.81	6.89	4.29	29.94