The Relationship between Economic Crises and Long-Run Wealth Inequality

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Abstract

The goal of this paper is to explore whether long-run wealth distributions are affected by economic crises. Using both correlative and causal analysis methods to analyze top 1, top 10, and bottom 50 wealth shares across 9 countries, the data show only one country with statistically significant declines in wealth inequality in the years following a major recession. This is critical for understanding how countries should use their policies to support the poor during a recession by redistributing from those who are financially safe from the impacts of an economic shock. [1]

1 Introduction

Wealth inequality has become a growing field of study in recent years, as academia begins to recognize the true impacts of a growing stratification

of wealth. As the Great Recession proved, the poor are often the most vulnerable to lose their wealth in times of economic hardship because they often hold their wealth in the form of homeownership and are susceptible to default on their mortgages when they lose their job in a recession.

The goal of this paper is to explore whether long-run wealth distributions are affected by economic crises. In order to understand how governments can best prevent mass loss of wealth during a recession, it is crucial to understand how wealth has historically moved after a recession occurs. If the wealth is already getting redistributed after a recession, that indicates that policy is making progressive steps to supporting wealth equality. However, if wealth is growing increasingly concentrated after a recession, that indicates that policymakers do not limit wealth collection among the rich and do not use money from the wealthy to finance services during crises. My hypothesis is that governments are implementing redistributive policies during recessions, so there should be lower levels of wealth inequality in the years following a recession, which would be indicated by lower shares of wealth in the top 1 and top 10 percentiles and/or higher wealth shares among the bottom 50 percent.

In order to answer this question effectively, I explore data from 9 different countries of differing development levels over the course of the 20th century. The data examined covers the wealth shares of the top 1, top 10, and bottom 50 percents, which enables a comparative analysis of changes between wealth groups. I use both a linear model and the differences-in-differences method to test if there is any correlative or causal change in the wealth distributions in each country in the five years after a recession ends. I apply the difference-in-differences model on all recession data and specify the most extreme recession years to understand if there are any distinctions in the wealth distribution outcomes during major recessions, which often prompt radical national reform.

In almost every country, for almost every wealth group, there is no statistical significance in the causal change of the group's wealth share in the years following a recession. While there are some statistically significant correlative changes in the wealth distributions in some countries, the coefficients

indicate that wealth may get more concentrated in the top 1 percent and top 10 percent, rather than redistributed throughout the bottom half. The one exception is France, which demonstrates a slight decrease in the wealth gap in the five years following a major recession.

Section 2 discusses the existing literature on income and wealth inequality changes throughout history and in the specific context of recessions. Section 3 describes the data. Section 4 explores the model specifications, variable construction, and the hypothesis. Section 5 identifies the empirical results of the models and limitations of the study, and section 6 concludes.

2   Literature Review

Research surrounding income distributions has dominated the literature surrounding inequality, as income data is generally more accessible and can show causal relationships more easily than wealth data. However, income inequality does not encompass the aspects of personal finance that can cause socio-economic mobility, such as savings for higher education or retirement funds that can become inheritances (McKernan et. al 2013). Additionally, wealth inequality tends to be much more disparate than income inequality, though both have been growing throughout the past 50 years (Piketty and Saez 2014). This is especially true for the United States (Saez and Zucman 2014), though other major countries have seen increases in wealth and income inequality since the 1980s (Zucman 2019). Studying wealth inequality can provide a more holistic understanding of inequality in an economy because it encompasses issues of economic mobility, intersectionality between socio-economic status and cultural identities, and the transmission of economic welfare between generations.

Taxes and transfers can compress the wealth distribution significantly, a tactic that benefited many developed countries throughout the 20th century (Piketty and Saez 2013). These policies are not always implemented directly as a response to an economic crisis; for example, tax policy in the U.S. and Europe changed dramatically with the offset of World War II and the boom in military spending. Still, if wealth inequality becomes a priority for

governments to tackle, it is critical to understand how government policy responses to business cycle shocks will affect wealth distributions. Raising taxes on the wealthy during an economic crisis will not intuitively help the economy recover quickly, but it can have important redistributive effects that can enable government spending to support the lower and middle classes. From a monetary perspective, lowering interest rates in the short run can both boost housing prices, which benefits the bottom 90 percent, and raise stock prices, which benefits the top 10 percent. These forces counterbalance on the wealth distribution in the short run, but more large-scale programs such as quantitative easing can have broader effects on wealth distributions (Bivens 2015).

The impact of these policy responses have been well documented for the Great Recession in the United States. During the Great Recession, the loss of wealth was extreme. Over half of American households lost at least a quarter of their wealth, with this drop disproportionately impacting low-income and low-wealth households (Pfeffer, Danzinger, and Schoeni 2013). This was caused by the particularly high leverage that middle-class households held leading into 2007 and homeownership representing a significant portion of these families' assets (Wolff 2017). Not only did the Great Recession cause the net worth of the middle class to shrink, it particularly caused the wealth of young households to decline sharply (Wolff 2012). This could impact future wealth distributions significantly, as high debts for younger households could reduce savings and, by extension, portfolios for these households in the next decades. This also has strong implications for racial equality, as wealth inequality has increasingly divided ethnic groups along socio-economic lines since the last recession (Kochhar and Fry 2014).

On the contrary, Germany experienced very little distributional change in wealth due to the Great Recession, even though it experienced one of the deepest real GDP declines in Europe at the time (Grabka 2015). Similarly, the distribution of wealth in Canada has remained roughly stable since 1999 (Brzozowski et. al), even as income inequality changed due to business cycles throughout the early 2000s. In the short run, these distinctions between countries can likely be explained by different relief programs implemented in

each country. These same countries tend to have lower levels of inequality than the U.S., so studying their economic structures and responses to crises could guide American policy regarding wealth inequality.

While there is strong literature around changes in inequality due to the Great Recession, there is little discussion about the long-run causes of wealth disparities, especially in examining policy changes out of economic crises. Roine, Vlachos, and Waldenström 2009 examine 16 countries over the entire 20th century to understand the long-run relationship between income inequality and economic development. A key finding from their work shows that capital shocks impact both current and future income levels of the top income bracket, which disproportionately gains income from capital stocks. Atkinson and Morelli 2011 conducts the most comprehensive study on inequality and crises, analyzing how 25 different countries experienced changes in income inequality due to crises since 1900. They are unable to conclusively define economic crises as causally linked to changes in inequality, but their analysis is limited to events before the Great Recession and focuses on income inequality. This paper will deepen their panel analysis across time to better understand the dynamics of wealth inequality in the light of banking and financial crises.

3 Data

The data used in this paper comes from the World Inequality Database. This database compiles data from national accounts, survey data, fiscal data, and wealth rankings for all countries with available data.

From the World Inequality Database, I compiled three wealth inequality indicators for all available countries from 1900 to 2017: the top 10 percent wealth share, the top 1 percent wealth share, and the bottom 50 percent wealth share. After selecting these indicators, there were 8 countries with available data: China, South Korea, the Russian Federation, India, South Africa, the United States, the United Kingdom, and France. Each of these countries has a varying level of data availability, as France and the UK have collected inequality data for centuries longer than newer countries, such as

China, South Africa, and South Korea. This paper will be limited in that none of the countries analyzed fall in Latin America and there are very few countries represented from the broader Global South, which often fall developmentally behind the countries of Europe and North America.

The recession data for each country was collected separately. In China, there have been 3 major periods of recession since its economic liberation in 1949: 1989 to 1991, 1997 to 1999, and 2007 to 2009 (Ghosh 2019). In Korea, the relevant recession dates span only between 2008 and 2009 (Chang 2009). Russia has experienced recessions many times over the last 20 years, including 1995 to 1996, 1998, 2008, and 2009 (Smirnov 2015). India's wealth share data is only collected once every decade, so there is only one year collected that correlates with a recession: 1981 (Kapoor 2020). Since the end of apartheid, South Africa has experienced two major recessions: 1993 (Country Studies) and 2009 (Statistics South Africa); some argue that South Africa has never fully recovered from the 2009 recession but given that GDP growth has been positive in South Africa since 2010, those will be the only two years considered as recessions. Recessions in the United States are shown in Figure 1 (FRED); recessions were noted if any quarter of that year experienced a recession.

The major recessions in this data set to highlight include the Great Depression (1929 to 1935), the East Asian crisis (1997 to 1999), and the Great Recession (2007 to 2009). In Russia, the financial crisis of 1998 is considered one of the worst crises of the country's history (RaboResearch 2013). In the United States, the OPEC crisis and its resulting stagflation caused multiple recessions throughout the 1970s and early 1980s that are considered extreme (Barufaldi and Chappelow 2020).

In the UK, there have been 6 distinct recessions since 1900, due to global wars, changes in economic composition, and globalization (Figure 2) (Elliot 2012). France has also experienced several years of recession since 1900 (Bergeaud, Cette, Lecat 2019); similar to the US, recessions were noted in France for any year that had negative GDP growth (Figure 3).

Figures 4, 5, and 6 depict the changes in wealth shares of the top 1 percent, top 10 percent, and bottom 50 percent, of all 8 countries.
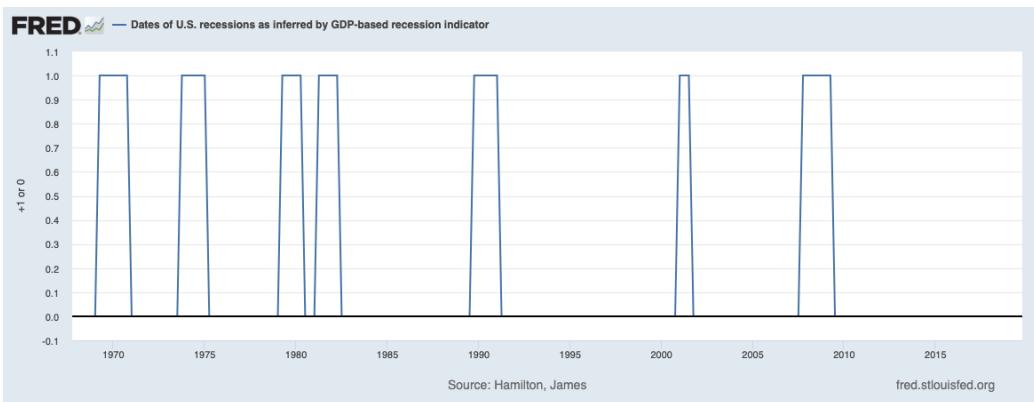
Figure 1: US Recession Data from 1968 onward

4 Methodology

I hypothesize that there will be a decline in the wealth share of the top 1 and top 10 percent in the years following a recession and a rise in the wealth share of the bottom 50 percent. During recessions, governments often provide welfare and immediate economic relief programs in a larger scale than non-recession times. This is a form of redistribution, as governments are using tax money, which is generally funded by the wealthy, and providing that money back to the poor.

To test this hypothesis, I first identify correlative relationships using a linear model for each country. This model regresses the wealth share on a dummy variable indicating whether or not a particular year was a recession year (*Recession Year*) and an incremental variable of the number of years since the most recent recession in that country (*Time since Recession*). There is an obvious correlation between the two independent variables, but because they are both indicators of time, there is no confounding effect on the relationship of wealth inequality. In the correlative model, Korea's recession year coefficient is not available for the linear model. This is because the only recession years available for Korea are 2008 and 2009, which do not have inequality data associated with them.

To establish a causal relationship, I use the difference-in-differences method of analysis. The parallel trends assumption holds on this data because the

countries in question have seen similar changes in wealth inequality by region. In the West, the United States, Canada, and Europe have seen similar levels of wealth inequality over the last century due to international conflicts, the rise of globalization, and the development of technology. Examining Figures 4 and 5, it is clear that the wealth held by the top 1 and 10 percent move in the same general pattern for advanced nations, indicating that these trends would be visible even without the occurrence of a recession in one particular country.

In South Africa and the Russian Federation, it is clear in Figures 7 and 8 that each recession period changes the trajectory of wealth inequality from its previous trend. This is a somewhat delayed reaction in the case of South Africa, but it is nevertheless evident.

Because the data on India is only available every 10 years, it is not feasible to prove the parallel trends assumption. Therefore, India will be excluded from all difference-in-differences analyses. Similarly, since Korea is missing wealth inequality data during its only recessions in the 2000s, Korea will be excluded from the causal analysis. The UK is excluded from both modeling methods for the bottom 50 percent wealth distribution because the data was unavailable for that subset of the UK's wealth distribution.

In using the difference-in-difference methodology, it is necessary to establish the time frame for "long-term" so there are periods that are considered non-treatment times. I define the long run as five (5) years in this paper, as that typically allows enough time for the economy to recover from the recession and return to pre-recession activity levels. This return to normal activity is important in determining if any policy changes during the recession impacted wealth distributions in normal economic times. In the models, the variable *LR Indicator* is used to identify whether the year in question is one of the five years following a recession.

After a general analysis with the difference-in-differences model, I specify the data further to examine only the most extreme recessions in each country. This data is analyzed with the same variable and methods as the general difference-in-differences modeling, but with fewer data points for the recession years. Removing smaller recessions allows for more non-treatment

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time in the data and may potentially show different policy solutions that are used in the wake of major recessions that aren't necessarily adopted after smaller financial events.

5   Results

The results of each methodology are summarized by 3 tables per methodology. The first column identifies the country in question. The second column lists the intercept found for the regression. The third lists the coefficient that applies to the variable rec_[country], which identifies whether a particular year was a recession year or not (logical variable). Finally, the fourth column lists the coefficient that applies to the variable t_[country], which counts the number of years since the country's last recession.

Linear Model

The following 3 tables summarize the linear modeling results for each wealth group in the countries studied. For the top 1 and top 10 percent wealth groups, almost every country had a statistically significant intercept, which validates the well-established fact that these wealth groups are holding a substantial amount of wealth. The bottom 50 percent also have statistically significant intercepts, but these intercepts are much closer to zero than those of the top wealth groups in most countries.

Among the top 1 percent (Table 1), there was only one statistically significant coefficient for the amount of time since the country's last recession. In France, each additional year since the last recession is associated with a 1.29 percent decrease in the wealth held by the top 1 percent. This finding from France is important because France has the most comprehensive wealth and recession data of all the countries in this study.

Among the top 10 percent (Table 2), there was statistical significance in the time since the last recession for India and France, as well as a statistical significance in the recession year variable for the Russian Federation. In India, there is a positive correlation between the number of years passed

Table 1: Linear models for wealth distribution of top 1 percent in each country

Country	Intercept	Recession Year	Time since Recession
China	0.190412***	0.015555	0.007400
	(0.036018)	(0.034783)	(0.007352)
Korea	0.240150*	NA	0.003050
	(0.029228)	(NA)	(0.007955)
Russian Federation	0.364649***	-0.064742'	0.003553
	(0.028070)	(0.032017)	(0.004891)
India	0.263079*	-0.136187	-0.001892
	(0.070911)	(0.105838)	(0.001555)
South Africa	0.533269***	-0.027522	-0.002447
	(0.015010)	(0.027294)	(0.001707)
USA	0.252650***	0.012601	0.007692
	(0.021964)	(0.023078)	(0.004271)
UK	0.413398***	-0.027037	0.002199
	(0.065533)	(0.076532)	(0.009534)
France	0.404677***	0.019460	-0.012932***
	(0.024385)	(0.032870)	(0.002812)

" ' " indicates significance at a 90 percent confidence level. "*" indicates 95% confidence. "**" indicates 99% confidence. "***" indicates 99.9% confidence.
Source: World Inequality Database

since the last recession and the wealth share of the top 10 percent, which would imply that wealth inequality grows as the country gets further from a recession time. However, this conclusion is not robust as this could easily be attributed to the lack of consistent wealth data from India and a lack of recession data that aligns with wealth data. This same coefficient is negative for France, similar to the case for the top 1 percent.

The coefficient on the recession year indicator for the Russian Federation is statistically significant, so this study finds that wealth share within the top 10 percent can be expected to fall by 5.9 percent during a recession year in Russia. That is a fairly large drop in share for one year, but could be explained by the period of perestroika (restructuring) in Russia during the late 20th century.

The coefficient on t_France is positive for the bottom 50 percent (Table 3), which is a sign that there could be some redistribution of wealth as the

Table 2: Linear models for wealth distribution of top 10 percent in each country

Country	Intercept	Recession Year	Time since Recession
China	0.48063	-0.01276	0.01084
	(0.06101)	(0.05892)	(0.01245)
Korea	0.64665**	NA	0.00220
	(0.04383)	(NA)	(0.01193)
Russian Federation	0.655474***	-0.059230*	0.001116
	(0.021563)	(0.024595)	(0.003757)
India	0.4372914*	0.0069051	0.0058035'
	(0.0172357)	(0.0198654)	(0.0007397)
South Africa	0.872353***	0.007493	-0.001746
	(0.011482)	(0.020879)	(0.001306)
USA	0.657565***	0.001408	0.001641
	(0.015575)	(0.016364)	(0.003029)
UK	0.71031***	0.01183	-0.01450
	(0.06582)	(0.06832)	(0.01064)
France	0.73223***	0.02158	-0.01161***
	(0.02437)	(0.03285)	(0.00281)

" ' " indicates significance at a 90 percent confidence level. "*" indicates 95% confidence. "**" indicates 99% confidence. "***" indicates 99.9% confidence.
Source: World Inequality Database

country moves further along from a recession. Given that both the top 1 and top 10 percent have expected declines in wealth as the number of years since the last recession increases, some of that wealth may be claimed by the bottom 50 percent. However, linear models only provide indications of correlative relationships, so the causality will be determined in the next section.

Korea also has a statistical significance in the coefficient on the number of years since the last recession. The wealth share of the bottom 50 percent can be expected to increase 0.18 percent on average each year beyond a recession year in Korea. This may indicate a slight tendency toward redistribution in Korea, but since we cannot conduct causal analyses of the Korean inequality data, that is the furthest conclusion that we can make.

Table 3: Linear models for wealth distribution of bottom 50 percent in each country

Country	Intercept	Recession Year	Time since Recession
China	0.129880***	0.012949	-0.002585
	(0.022299)	(0.021535)	(0.004552)
Korea	0.0098500*	NA	0.0018000'
	(0.0018771)	(NA)	(0.0005109)
Russian Federation	0.0497391	0.0167386	0.0002623
	(0.0080813)	(0.0092174)	(0.0014081)
India	0.1021204*	0.0081036	-0.0011240
	(0.0078954)	(0.0091000)	(0.0003388)
South Africa	-0.0463278***	0.0003854	0.0018924
	(0.0107934)	(0.0196260)	(0.0012273)
USA	1.117e-02*	-2.313e-04	9.858e-05
	(4.351e-03)	(4.572e-03)	(8.462e-04)
France	0.0331097***	-0.0030377	0.0026497***
	(0.0050736)	(0.0068391)	(0.0005851)

" ' " indicates significance at a 90 percent confidence level. "*" indicates 95% confidence.
"**" indicates 99% confidence. "***" indicates 99.9% confidence.
Source: World Inequality Database

Differences in Differences

The following three tables summarize the results of the difference-in-difference analyses of the 7 countries of study. Each table summarizes the coefficients associated with the intercept, the long-run indicator variable (LR Indicator), the number of years since the last recession (Years since Recession), and the interaction term between the long-run indicator and the number of years variable (Interaction Term). This interaction term is defined as the "treatment" variable for the model, where only the specific effect of the time since the recession for the 5 years following a recession is measured, which enables a causal relationship of the "treatment" of the time after a recession on the inequality levels in each country.

For the top 1 percent (Table 4), only those in the Russian Federation had a statistically significant coefficient for the interaction variable. Thus, with a 90 percent confidence level, there is an expected 3.2 percent increase in the wealth share amongst the top 1 percent for each year following a recession

Table 4: Difference in differences of wealth distribution of top 1 percent in each country

Country	Intercept	LR Indicator	Years since Recession	Interaction Term
China	0.08770 (0.20748)	0.12753 (0.20880)	0.02355 (0.03093)	-0.02421 (0.03200)
Russian Federation	0.49146*** (0.10232)	-0.19403' (0.10562)	-0.01238 (0.01329)	0.03233' (0.01608)
South Africa	0.531556*** (0.029896)	-0.019071 (0.039494)	-0.002292 (0.002832)	0.005017 (0.008281)
USA	0.280980** (0.092651)	-0.009523 (0.094285)	0.004541 (0.012545)	-0.003076 (0.013910)
UK	0.450534' (0.228944)	-0.055599 (0.235291)	-0.022294 (0.027299)	0.008016 (0.034335)
France	0.304844*** (0.063963)	0.140728' (0.070845)	-0.004877 (0.005425)	-0.020798 (0.013423)

" ' " indicates significance at a 90 percent confidence level. "*" indicates 95% confidence. "**" indicates 99% confidence. "***" indicates 99.9% confidence.
Source: World Inequality Database

in the Russian Federation.

The Russian Federation again has a statistically significant coefficient for the interaction term of the top 10 percent wealth share (Table 5). Each additional year after a recession is expected to cause the wealth share of the top 10 percent to increase by 3.1 percent on average. Given how similar this number is to the coefficient for the top 1 percent, it seems that the increased wealth share for the top 10 percent concentrates within the top 1 percent.

The Russian Federation, South Africa, and France all have some level of statistical significance on the long run indicating coefficient, indicating that there might be some pattern in the years succeeding a recession that change wealth distributions in each country. The directions of the changes are not consistent between countries, which indicates that there might be policy changes that each country adopts that affect their wealth distributions in unique ways.

It is not surprising that there were not significant coefficients for the bottom 50 percent (Table 6), as the bottom 50 percent have globally seen a

Table 5: Difference in differences of wealth distribution of top 10 percent in each country

Country	Intercept	LR Indicator	Years since Recession	Interaction Term
China	0.458250	0.012982	0.014760	-0.002744
	(0.357651)	(0.359931)	(0.053315)	(0.055168)
Russian Federation	0.761314***	-0.172542*	-0.012449	0.031157*
	(0.076636)	(0.079107)	(0.009953)	(0.012046)
South Africa	0.831018***	0.053872'	0.001845	-0.004675
	(0.019972)	(0.026384)	(0.001892)	(0.005532)
USA	0.652260***	0.010531	0.002688	-0.003187
	(0.065931)	(0.067094)	(0.008927)	(0.009898)
UK	0.766112***	-0.050431	-0.021289	0.007086
	(0.213546)	(0.219466)	(0.025463)	(0.032025)
France	0.638718***	0.134354'	-0.004075	-0.019998
	(0.064066)	(0.070960)	(0.005433)	(0.013444)

" ' " indicates significance at a 90 percent confidence level. "*" indicates 95% confidence. "**" indicates 99% confidence. "***" indicates 99.9% confidence.
Source: World Inequality Database

Table 6: Difference in differences of wealth distribution of bottom 50 percent in each country

Country	Intercept	LR Indicator	Years since Recession	Interaction Term
China	0.123250	0.019318	-0.001820	-0.003524
	(0.131460)	(0.132298)	(0.019597)	(0.020278)
Russian Federation	0.026585	0.042116	0.003260	-0.008101'
	(0.029450)	(0.030400)	(0.003825)	(0.004629)
South Africa	-0.0089737	-0.0380713	-0.0013231	0.0009881
	(0.0189410)	(0.0250220)	(0.0017946)	(0.0052464)
USA	0.0121800	-0.0014710	-0.0000535	0.0003112
	(0.0184756)	(0.0188014)	(0.0025016)	(0.0027738)
France	0.053187***	-0.026580'	0.001038	0.003509
	(0.013353)	(0.014789)	(0.001132)	(0.002802)

" ' " indicates significance at a 90 percent confidence level. "*" indicates 95% confidence. "**" indicates 99% confidence. "***" indicates 99.9% confidence.
Source: World Inequality Database

lot of stagnation in wealth levels over the past century. There is very little wealth mobility or redistribution, especially in the United States, that could

cause some form of movement. The Russian Federation interaction term coefficient has statistical significance, indicating that in the years following a recession, the bottom 50 percent tend to lose 0.8 percent of their wealth share each year. Recessions, especially like the real estate bubble burst of 2008, often tend to leave the bottom 50 percent with debt, bankruptcy, and home foreclosure, which causes many households in that wealth group to lose their only assets: their property.

Most Extreme Recessions

The above analyses examined all the recessions that each country had faced in the past 120 years. However, the severity of the recession may have different impacts on the wealth distributions of each country.

Table 7: Difference in differences of wealth distribution of top 1 percent in each country for the worst recessions in each country

Country	Intercept	LR Indicator	Years since Recession	Interaction Term
China	0.201980***	0.029780	0.001531	-0.005091
	(0.052701)	(0.060539)	(0.004864)	(0.011517)
Russian Federation	0.449688***	-0.175488*	-0.005910	0.029604*
	(0.059618)	(0.064681)	(0.006859)	(0.010699)
South Africa	0.531556***	-0.019071	-0.002292	0.005017
	(0.029896)	(0.039494)	(0.002832)	(0.008281)
USA	0.338305***	-0.031229	-0.001634	0.006384
	(0.038254)	(0.044308)	(0.003590)	(0.008618)
UK	0.61958*	-0.22727	-0.03707	0.02687
	(0.25585)	(0.26802)	(0.02954)	(0.04242)
France	0.3678184***	0.1089373***	-0.0023645**	-0.014841**
	(0.0115461)	(0.0164604)	(0.0006749)	(0.0045205)

" ' " indicates significance at a 90 percent confidence level. "*" indicates 95% confidence. "**" indicates 99% confidence. "***" indicates 99.9% confidence.
Source: World Inequality Database

When the recession data is summarized in terms of only the worst recessions, there is a slightly different story in some countries from the difference-in-differences analyses in the previous subsection. As seen in Table 7, there is evidence that the worst recessions in the Russian Federation and France

have caused statistically significant changes to the wealth shares of the top 1 percent in each country. It is interesting that the directionality of the changes are different in each country.

In Russia, in the five years following an extreme recession, we expect the wealth share of the top 1 percent to increase by 2.96 percent each year. However, in France, in those same five years following a bad recession, the top 1 percent can expect a decline of their wealth share of 1.48 percent each year.

Table 8: Difference in differences of wealth distribution of top 10 percent in each country for the worst recessions in each country

Country	Intercept	LR Indicator	Years since Recession	Interaction Term
China	0.538835***	-0.058151	-0.002596	0.016185
	(0.090714)	(0.104204)	(0.008373)	(0.019825)
Russian Federation	0.722922***	-0.144112*	-0.006928	0.026974**
	(0.050937)	(0.055263)	(0.005860)	(0.009141)
South Africa	0.831018***	0.053872'	0.001845	-0.004675
	(0.019972)	(0.026384)	(0.001892)	(0.005532)
USA	0.696903***	-0.028472	-0.001845	0.006774
	(0.033303)	(0.038573)	(0.003125)	(0.007502)
UK	0.92573**	-0.22505	-0.03515	0.02728
	(0.25885)	(0.27116)	(0.02989)	(0.04292)
France	0.7482679***	0.0452347**	-0.0019352**	-0.0073059'
	(0.0098394)	(0.0140272)	(0.0005751)	(0.0038522)

" ' " indicates significance at a 90 percent confidence level. "*" indicates 95% confidence. "**" indicates 99% confidence. "***" indicates 99.9% confidence.
Source: World Inequality Database

The evidence for the top 10 percent is similar, as evidenced in Table 8, though statistically significant at a lower confidence level in France. In Russia, the top 10 percent can still expect to see almost a 2.7 percent increase in their wealth share each year in the five years following an extreme recession recession.

In France, the decline in the wealth share is only expected to be 0.7 percent for the top 10 percent each year of the the five years following a major recession. This indicates that some of the decline that the top 1

percent experiences may be absorbed by the next 9 percent.

Table 9: Difference in differences of wealth distribution of bottom 50 percent in each country for the worst recessions in each country

Country	Intercept	LR Indicator	Years since Recession	Interaction Term
China	0.108336**	0.031878	0.001833	-0.008565
	(0.032740)	(0.037609)	(0.003022)	(0.007155)
Russian Federation	0.037534'	0.030311	0.001858	-0.006290
	(0.020697)	(0.022455)	(0.002381)	(0.003714)
South Africa	-0.0089737	-0.0380713	-0.0013231	0.0009881
	(0.0189410)	(0.0250220)	(0.0017946)	(0.0052464)
USA	0.0061941	0.0014836	0.0003689	-0.0009921
	(0.0106832)	(0.0123739)	(0.0010025)	(0.0024067)
France	0.0241803***	-0.0044006	0.0005569***	0.0016722*
	(0.0018507)	(0.0026384)	(0.0001082)	(0.0007246)

" ' " indicates significance at a 90 percent confidence level. "*" indicates 95% confidence. "**" indicates 99% confidence. "***" indicates 99.9% confidence.
Source: World Inequality Database

It is interesting to see that in France, the interaction term for the bottom 50 percent has statistical significance when examining the most extreme recessions (Table 9). In France, in the five years after an extreme recession, the bottom 50 percent can expect to see a 0.16 percent increase in their wealth share each year. This is interesting because, given that the top 1 percent experiences some losses in their wealth share that are not completely absorbed by the next 9 percent, some of the lost wealth may actually be captured by the bottom 50 percent.

Limitations

This study does not examine the socio-political changes that occurred in each of the countries, which could have caused important changes in the wealth distribution. For example, the initiation of a socialist or communist leader over any one of these countries would have inherently changed the composition of privately-owned wealth. Similarly, a country that began liberalizing their economy may not have experienced a recession but definitely changed

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the amount of wealth available to private citizens.

Additionally, there is no evident robust way to define what the "long run" means in this context. It is possible that, with a shorter time frame defined as the "long run" (i.e. 3 years instead of 5), there may be different results. This would have been a viable definition, as the long term in economics is usually defined as anything beyond 1 year in the future.

6   Conclusion

The goal of this paper was to determine if the occurrence of a recession had any lasting impacts on the wealth distributions in a country. Analyzing advanced countries and countries in the Global South, this study was an expansion on previous literature of wealth inequality studies in the specific context of long-run changes to shorter-term economic shocks.

My hypothesis was that countries may adjust their wealth distribution policies, through tax or welfare policy changes, to alleviate the impact of the recession in ways that could benefit the bottom half of the wealth distribution. This is a solution supported by economic theory, as the bottom is usually disproportionately hurt by economic turmoil and the top can afford to continue paying taxes to support government services to the poor. I tested this hypothesis with both a correlative study and a causal analysis of the data.

This hypothesis was supported in the correlative study in some countries, but rejected in the causal analysis of all countries except France. In countries with a statistically significant coefficient for the interaction term of the long run indicator variable and the time since the last recession, the direction of the coefficient contradicts my initial hypothesis. The wealthy tended to get wealthier during the time after a recession, which could be explained by the fact that governments often do not redistribute wealth in recession times, so the wealthy can afford to buy up assets in a time when many of the poorest have to declare bankruptcy.

The exception that France introduces is interesting, especially given that France has the most comprehensive wealth data available. After extreme

recessions, there is statistically significant evidence that the wealth share of the wealthiest declines and there is a slight rise in the wealth share of the poor. This is strong evidence that the wealth distribution does not have to become more stratified in times of economic crisis, but rather can become more equitable with the right policies. Further study into the policy decisions that France has implemented after a recession could provide useful insight to policymakers around the world.

There were many limitations to this study, primarily that the wealth data available is very sparse, especially for countries in the Global South. Beyond the wealth data constraint, there was also many external factors that were not included in this study that could have caused changes in the wealth distributions of these countries, which could lead to omitted variable bias. There may also be different interpretations of the definition of "long run," which impacts how the causal analysis works.

In most parts of the world, wealth is only growing increasingly concentrated. It will take active policy decisions to reverse this trend in order for the bottom half to see their wealth grow. Especially after a recession, it is fundamental that countries make a concerted effort to ensure that their wealthy are not taking advantage of the economic hardships of the country, but rather share the burden in rebuilding their shared economy. Stricter redistributive tax policies, corporate finance laws, and campaign finance ethics will all be necessary to create a more equitable world before, during, and after a crisis.

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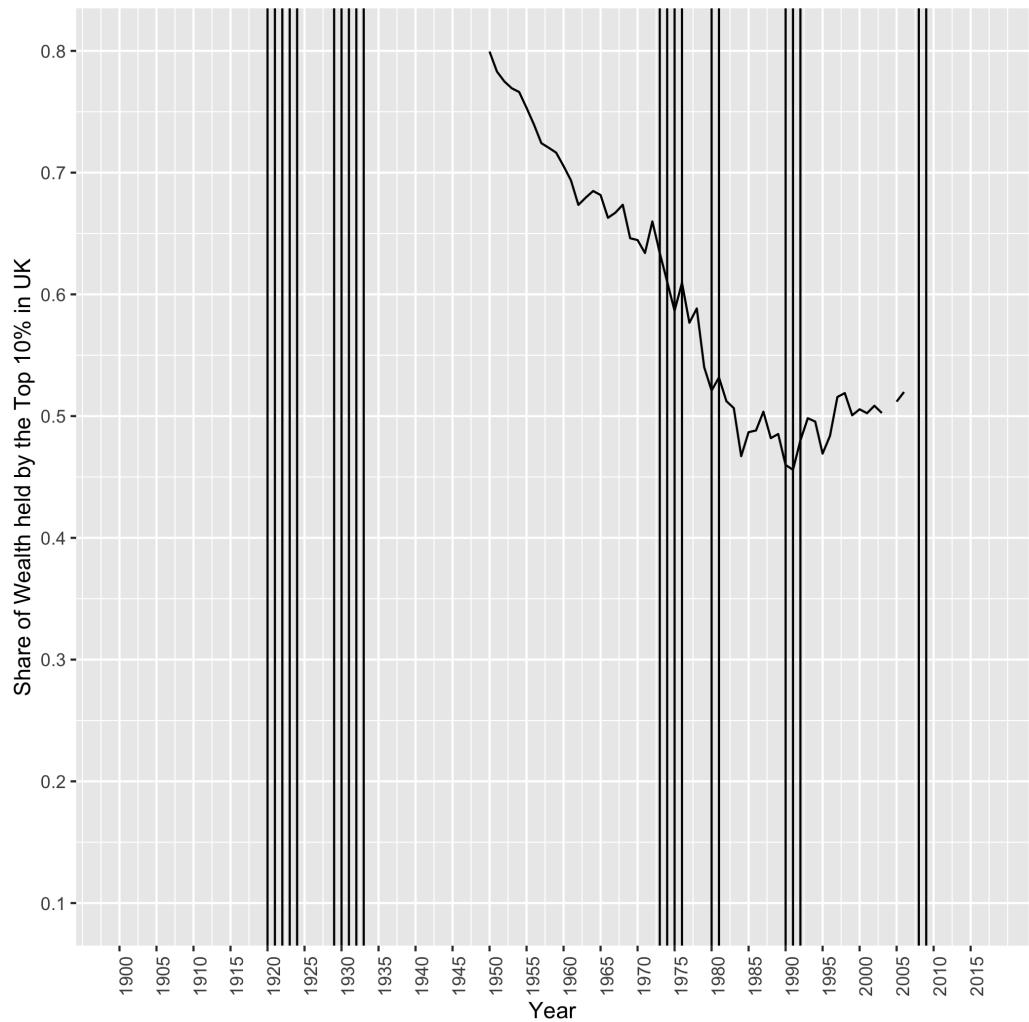
Figure 2: Share of Wealth held by the Top 1 Percent in UK, Recessions Marked
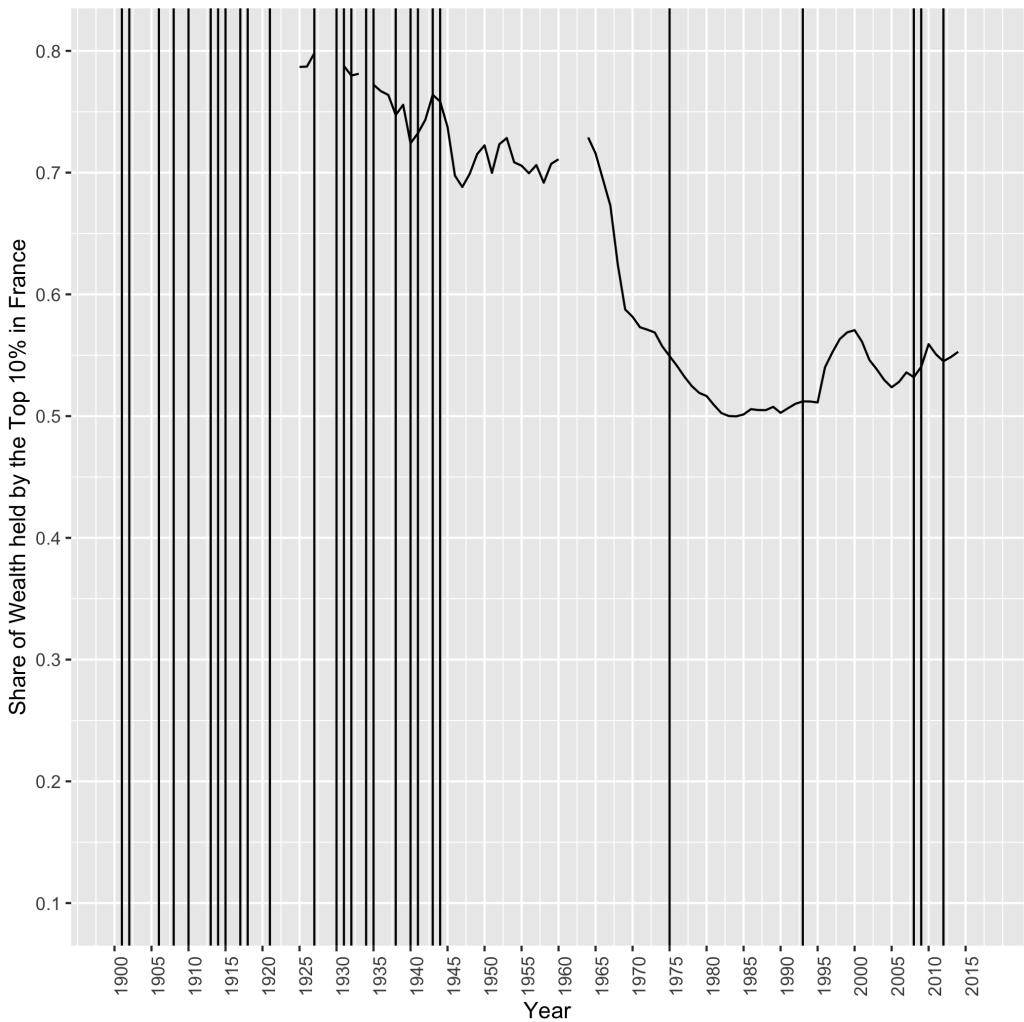
Figure 3: Share of Wealth held by the Top 1 Percent in France, Recessions Marked
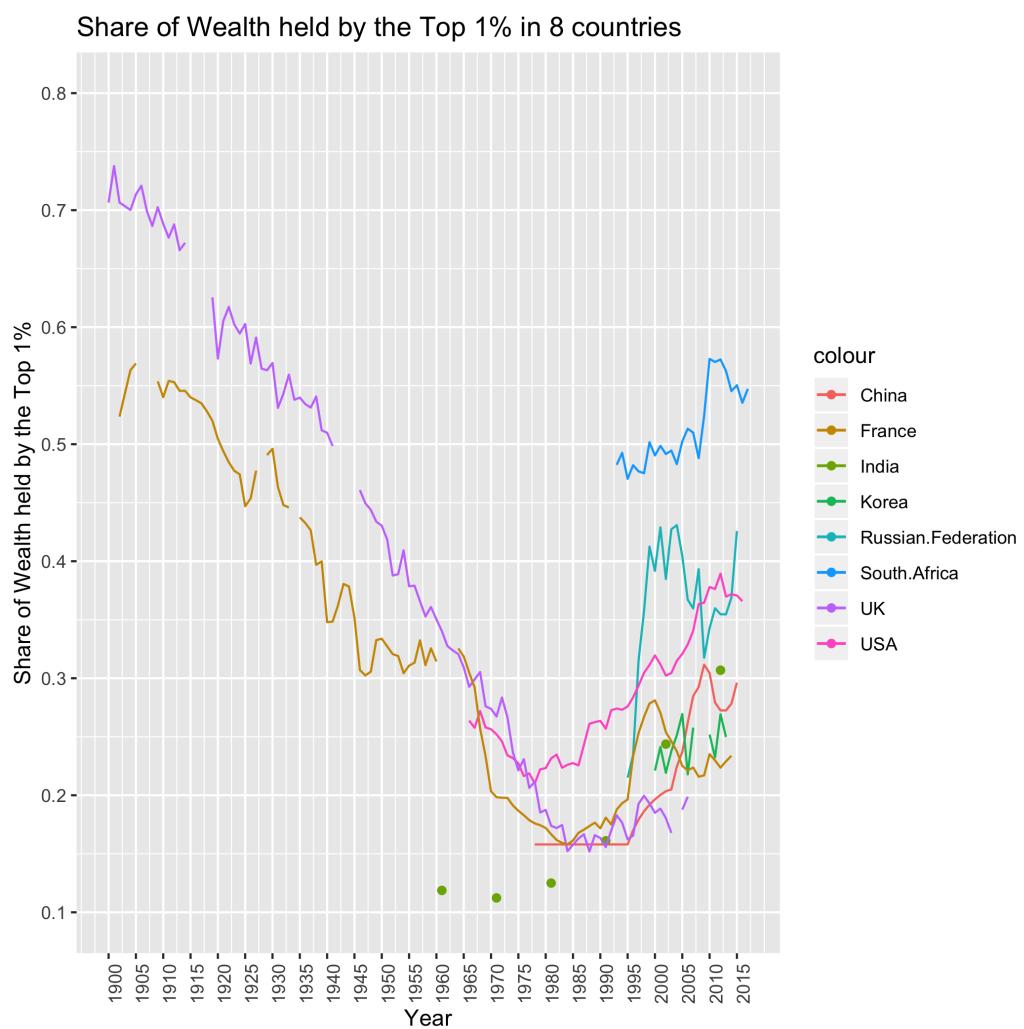
Figure 4: Share of Wealth held by the Top 1 Percent in Each Country

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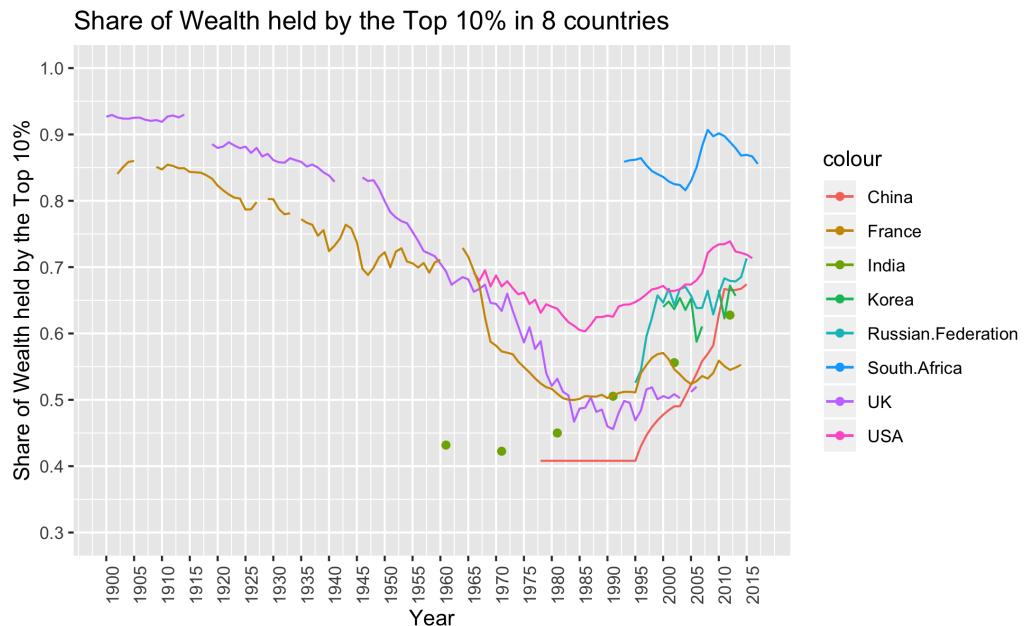
Figure 5: Share of Wealth held by the Top 10 Percent in Each Country
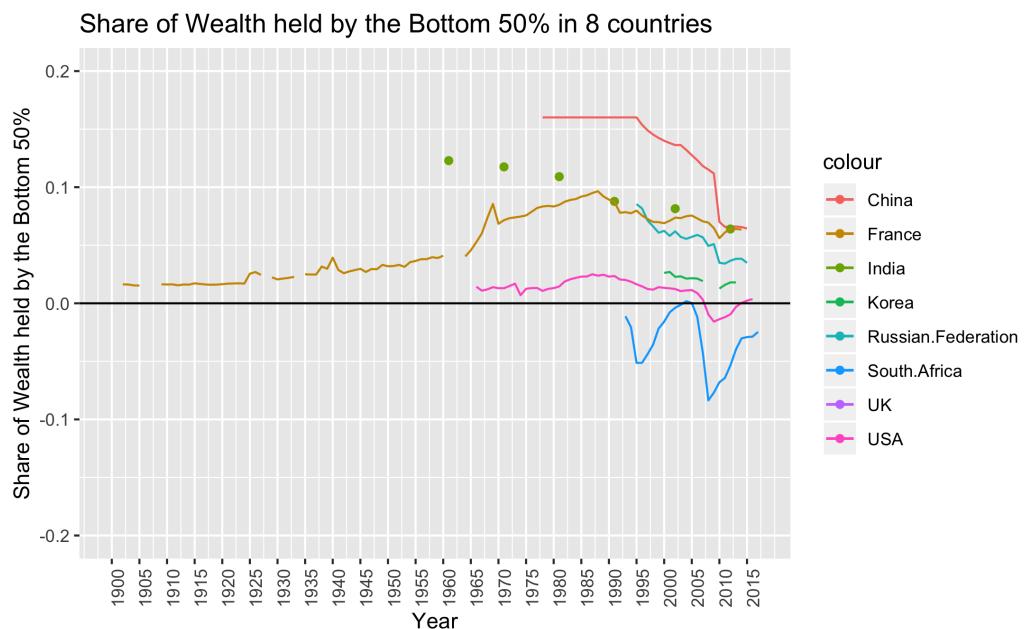
Figure 6: Share of Wealth held by the Bottom 50 Percent in Each Country
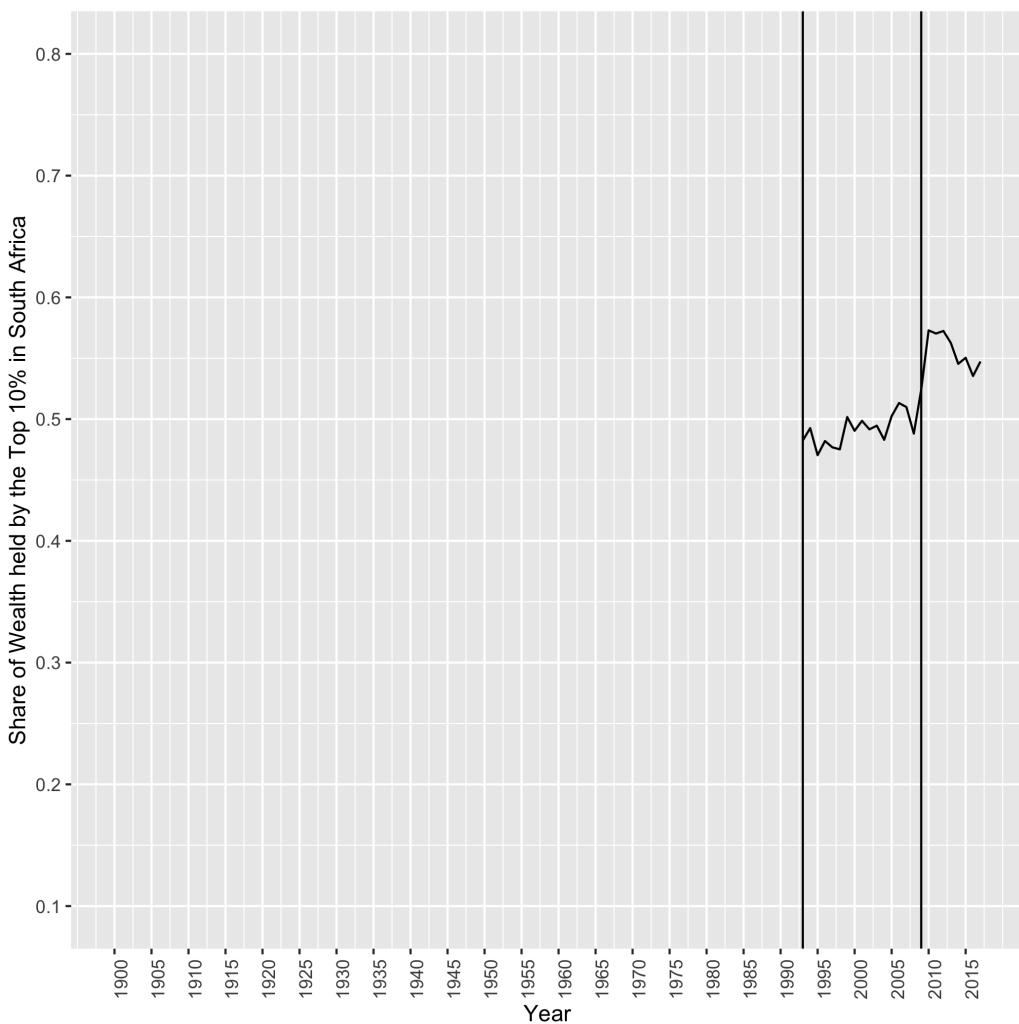
Figure 7: South Africa Wealth Inequality and Recession data
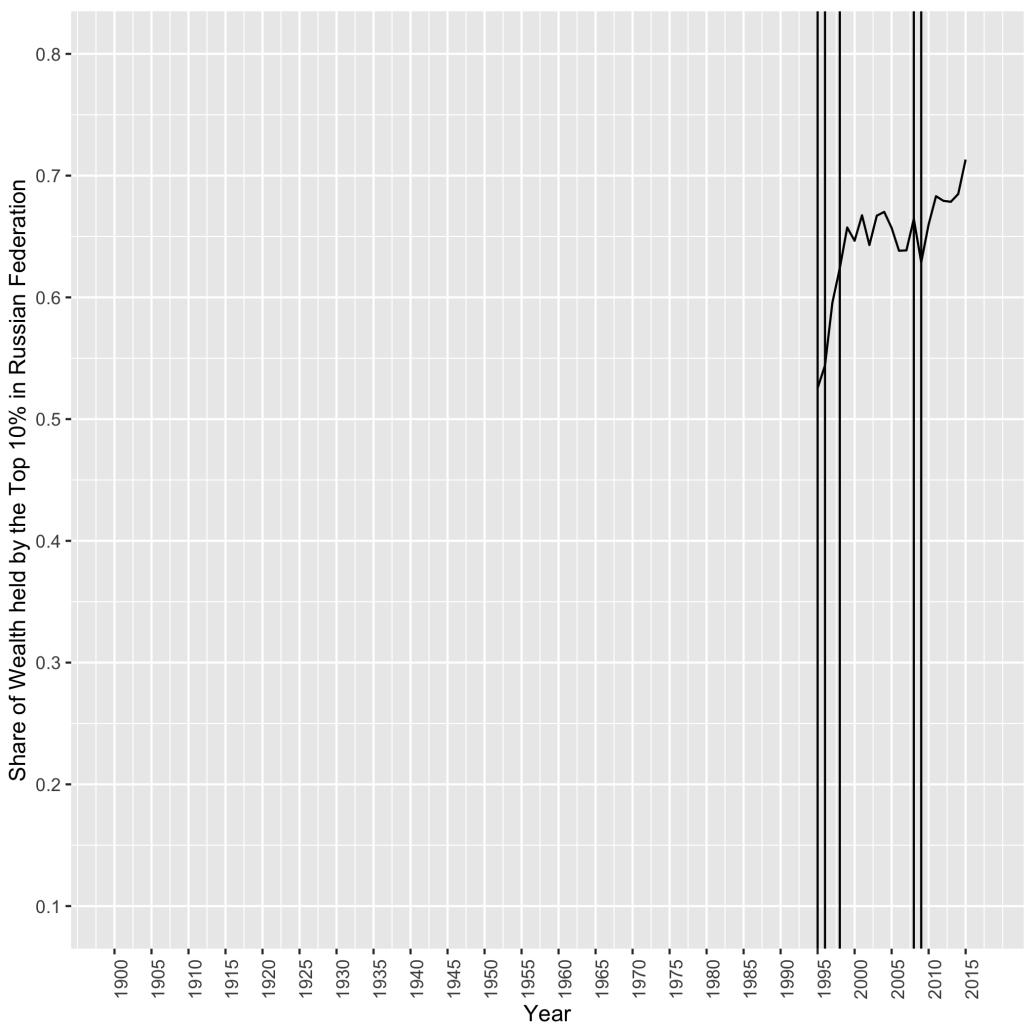
Figure 8: Russian Federation Wealth Inequality and Recession data
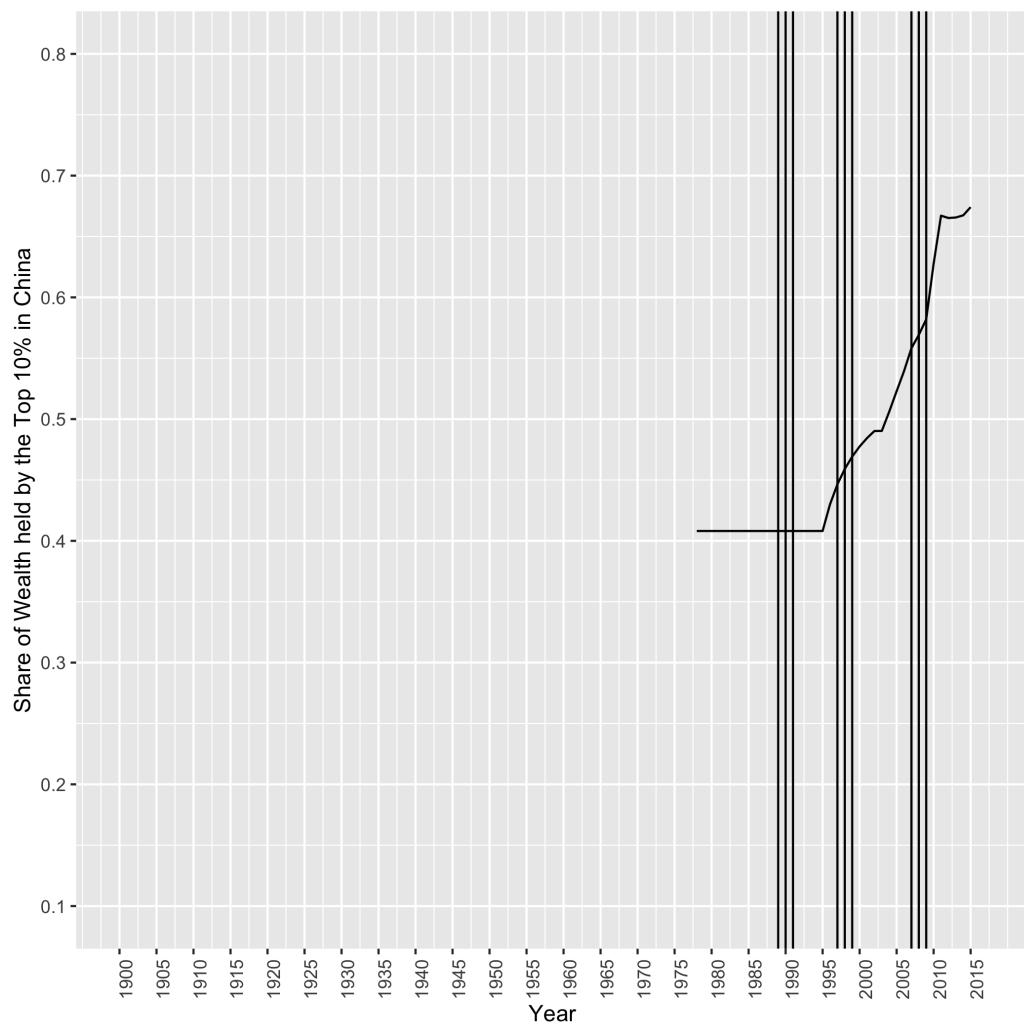
Figure 9: China Wealth Inequality and Recession data
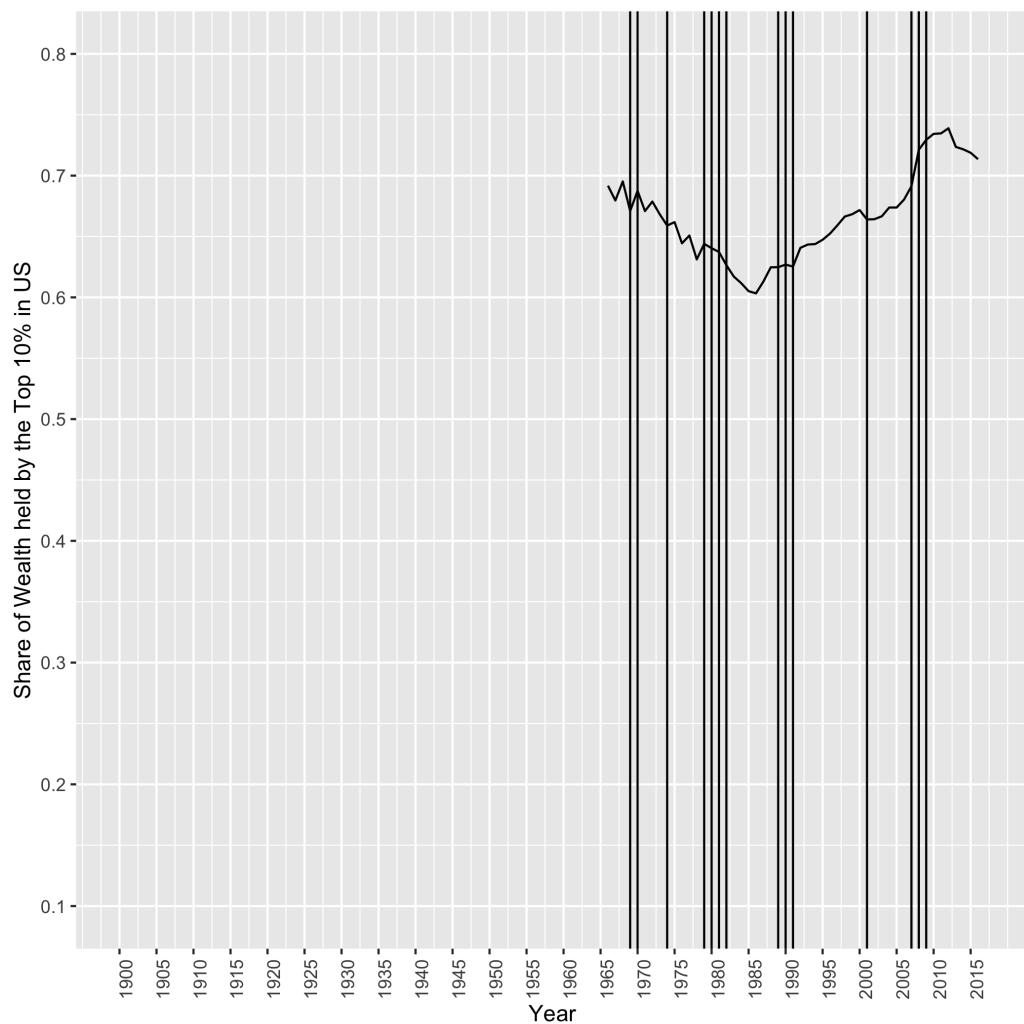
Figure 10: USA Wealth Inequality and Recession data