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INCOME DISTRIBUTION AND ECONOMIC CRISES

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Income Distribution and Economic Crises

Bilin Neyapti¹ and Derin Aksit

Abstract

This paper analyzes the relationship between income distribution and the severity of economic crises, where the severity is measured by the length and the depth of the recessions. Using an extensive panel dataset on income distribution and employing an event study framework, we find significant evidence that there is a negative association between the prevailing degree of income inequality and the severity of the recessions. In the case of high income countries that have bad income distribution, however, recessions are observed to be longer than the average. This observation is likely to result from the combination of the strong status-quo bias of the financially powerful income groups and the available means to redistribute towards the poor so as to help mitigate the pressures for reforms to improve income distribution via creative destruction. The longer period of recessions observed in developed countries than in less developed countries in the aftermath of the Great Recession is in support of this argument.

The findings also reveal that recessions tend to be longer during the decade of the 1990s than the rest of the period studied. The evidence regarding the corrective effect on the recessions of accommodative fiscal or monetary policy stance, measured by the size of the government and the inflation rate, is observed to be only barely significant on average.

With regard to the impact of recessions on income distribution, the evidence in the paper indicates that the post-crises income distribution worsens significantly with the length but improves with the depth of the preceding recession. We also note that, in addition to the persistence effect, the lack of monetary discipline worsens income distribution in the post-crises period significantly.

JEL Classifications: E25, E32, O11

Key Terms: Recession, Income Distribution

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1. Introduction

In view of the continuously increased role of technological advancement in economic growth since the industrial revolution, resource scarcity is no more held accountable as the main cause of the economic recessions or depressions as it was in the 18th century.² Economic crises of the 20th century have instead been argued to arise mainly from bad economic management and inefficient institutions, which are often rooted in the lack of benevolent governments that redistribute wealth while growing. As capital accumulation and growth increase the size of the pie, narrow interest groups emerge, forming their supportive institutions that reinforce the status-quo and dominate the political system, resulting in institutional sclerosis (Olson, 1982). When institutional changes do not adapt to the needs of encompassing interests, which may or may not be voiced effectively, growth eventually becomes unsustainable, and economic and/or political crises are bound to occur sooner or later.³ Hence, development may be stalled unless institutions adapt to changing circumstances and avoid extreme inequality.⁴ The level of development would play a role on how long the system may tolerate growing inequalities, either because developed countries have better access to resources to redistribute or have more inclusive institutions than others.

Fused by the periods of wide-ranging economic crises that resulted from the two world-wars and political transitions in the 20th century, the field of economics has witnessed a transition of emphasis back and forth between fiscal to monetary policies. In view of the continued market failures, the literature on institutional economics has initially sprung from the neoclassical tradition that dominated the macroeconomic policy prescriptions, notwithstanding the tremendous difficulties in replacing the prevailing inefficient institutions with those that are appropriate for individual country circumstances.

Regardless of the political regime type, prolonged rent-seeking activity is the main factor not only behind worsening income distribution but also the limitations of the growth potential by means of inefficient resource allocation and increased risk of social and political tension. While it is expected that distributive and allocative inefficiencies are large in the developing

² Malthus, 1798.

³ K.Marx and J. Schumpeter have viewed crises as inherent to the capitalist system.

⁴ Acemoglu (2012) explains this phenomenon by means of extractive versus inclusive institutions.

world, they may also be large in some industrialized countries.⁵ In that regard, the great recession has turned the attention towards redistribution and equality. The well-deserved attention to the trade-off between efficiency and equity hence concerns not only the countries that are stuck in either the middle-income or poverty trap but also the developed countries.

Piketty (2014) draws attention to the rising incomes of the top percentiles of the population particularly; he notes that the income shares of top 1 percent have exceeded the rest of the population in many countries during the past few decades. He also argues that this dramatic worsening in income distribution has been accompanied by an even more severe rise of inequality in capital accumulation. Heathcote et al. (2010), for example, point at the rising trend of wage inequality in the U.S. notwithstanding the role of redistributive fiscal policy and increased access to financial markets. Thompson and Smeeding (2013) explore the latest financial crisis in the U.S. and verify this trend with the exception of 2008 and 2009. During those years, the income share of top 1 percent in the U.S. dipped and thus the income distribution in the country seemed to have improved in net terms. This improvement has occurred with the help of tax and transfer policies, however; and despite the modest growth that followed, income distribution has been observed to worsen again.

The focus of the related recent empirical literature has mainly been on the causal relationship between income equality and financial crises. Following Rajan (2010), several empirical studies investigated this linkage, with a near consensus emerging that it is the credit expansion and not worsening income distribution that has significant association with financial crises, at least in the case of the great recession.⁶ Morelli and Atkinson (2015), however, argue that, even though their empirical analysis shows an insignificant relationship between banking crises and the level and growth in income inequality, the evidence is

⁵ Kuznet's hypothesis of the inverse U-shaped relationship between a country's income level and distribution has recently been refuted in several studies, which argue that income distribution in many developed countries are similar to those in less developed countries (Palma, 2011).

⁶ Van Treeck (2012) investigates the causes of the U.S. financial crisis in 2007 and argues that while the relative income hypothesis should be emphasized for the increasing credit demand, the crisis can be attributed to the credit expansion per se, and not to the worsening income distribution. Bordo (2012) employs 14 countries to test the interrelationships between income distribution, credit booms and financial crises, and argues that the latter two variables are significantly linked to each other, as has many other recent studies also reveal, whereas income distribution is not. Law et al. (2014) use 81 countries to show that financial development helps improve income distribution above a threshold level of institutional development.

inconclusive.⁷ The authors reach this conclusion by investigating the relationship of banking crises with both the level and the growth in income inequality.

Despite the rising importance of the subject matter especially in the aftermath of the great recession, no study has, to our best knowledge, yet explored formally the relationship between the severity of recessions and the level and the progression of income distribution using a large set of countries that include the developing world. This paper claims that, having controlled for the level of development, the extent and trend of income distribution is associated with the severity of recessions, measured by the length and the depth of economic downturns.⁸ We also hypothesize that the severity of recessions, in turn, helps predict the extent to which income distribution may improve following the recession.

The current study can be considered as a complement for Berg et al. (2012) that investigates the breaks in economic growth in 140 countries and demonstrate that growth spells are positively related with income equality, among other factors. They are complementary in that the main forces of growth may be fundamentally different from those that lead to recessions; while the main driving force for the former may be technological advancements, for the latter it may be institutional inefficiencies and policy mistakes, in addition to the negative production shocks that are not of the nature of technological retardation. In view of these, an empirical analysis of the interactions between income distribution and recessions calls for a different model. With respect to the approach taken, our paper is similar to Berg et al.'s in that it is also atheoretical. However, the current paper differs from the Berg et al. paper, not only in the variables to be explained, which are the recession severity and the changes in income distribution versus the growth spells, but also the number of countries, which is greater in the current study, and the method of estimation, which is an event analysis rather than the estimation of the proportional hazard rate.

Our empirical analysis is of an event study format and is comprised of 56 to 95 countries and 82 to 183 observations, depending on the empirical model specification. The results of the

⁷ Among the studies that investigated this question, some claim support for a significant relationship (see, for example, Belletini and Delbono, 2013 and Perugini et al., 2013), and some do not (see, for example, Atkinson and Morelli, 2010). Baziellier and H'ericourt (2014) present a survey of the related studies on the subject, arguing for the difficulties in disentangling the finance and income inequality relationship.

⁸ Some developing country case studies indicate that economic crises highly increase the depth and severity of poverty. See, for example, Datt (2003) and Lustig (1990).

empirical analysis support our main hypotheses. In a nutshell, we find significant evidence that indicate that recessions are less severe the worse is income distribution, although they tend to last longer in case of higher income countries with worse income distribution than on average. Prevailing recession length and inflation are also observed to have a significant worsening effect on income distribution. In what follows, Section 2 provides data descriptions. Section 3 reports the estimation results and Section 4 concludes.

2. Data

Our empirical analysis focuses on deciphering the relationship between economic downturns and income distribution. The size of our panel sample is mainly limited by the income distribution data, for which we use the following alternative measures: GINI coefficient, income shares of the top 1, 5 and 10 percentiles and their respective ratios to the bottom 1, 5 and 10. Because data availability on the top 1 and 5 percentile income shares are too limited, however, we report only the regressions that use the *GINI* coefficient and the income share of the top 10th percentile (denoted by *Top10*).⁹ Unless we employ the rate of change in the income distribution between the post- and pre-crises periods, we obtain 183 observations, covering 95 countries; the data is reduced to 107 observations over 70 countries in case we do. The data source is the World Bank Economic Indicators.

We summarize the characteristics of economic downturns, or recessions by using two indicators. First, the *length* of a recession is the number of consecutive years in which a contraction in economic activity, measured by GDP, occurs. Second, the *depth* of the recession is measured by the cumulative percentage drop in GDP. Having identified a recession as the first year of economic contraction, we measure income distribution and its direction of change for the pre- and post-crisis periods (denoted by the post scripts *_A* and *_B*, respectively), where available. We also obtain the average values of the control variables covering the five years prior to and after the crises, unless those periods are interrupted by another recession. In case a country faces several intermittent recessions within this period, we limit the post-crises period with the end of the next recession. The pre-recession period covers the previous five years for which data is available, however, regardless of whether

⁹ An increase in both measures indicates worsening income distribution.

there has been any former recession^s or not. In case the recession lasts more than one year, the post-crisis period starts with the end year.

In view of the discussion above with regard to the ability to avoid crises via redistributive policies, we also control for the log-level of GDP per capita in the pre-crises period (denoted by *lGDPpc*). This variable accounts for the level of both economic and institutional development, given the data limitations and vast empirical evidence that support their association. In order to account for the fiscal and monetary policy stance, we control for the share of the government spending (*G*) and the inflation rate (*inf*). We also introduce dummy variables for the decades of the 1980s and the 1990s, denoted by *D80* and *D90*, respectively. In addition, we control for a variable that states the percentage of time the country was in a recession during the period under investigation, denoted by *CRpercent*. We finally try controlling for the transition economies with a separate dummy. Because this variable is found insignificant throughout the regressions, however, the regressions reported below do not include it.

The panel dataset constructed thus covers up to 95 countries and the period between 1980 and 2014.¹⁰ Given the data descriptions provided above, the current analysis is of the nature of an event study, where the event is the recession.¹¹ The panel is unbalanced whose largest time-series is formed by the country that had the largest number of the recessions, which are Brazil, Croatia, Kyrgyzstan and Mauritania by five identified recessions periods, followed by Argentina, Bulgaria, Czech Republic, Honduras, Ireland, Moldova, Mexico, Seychelles, Turkey, Turkmenistan and Venezuela that had four recessionary periods during the period covered in this study.

Appendix 1 presents an overview of the dataset that reveals the following general points. First, interestingly, the average length of recessions is the same in both developed and developing country samples. Second, however, the severity of the recessions measured by the output loss is twice as much deeper in the set of developing countries than in the developed countries: 6.36% versus 3.0%, in the respective samples, average annual output

¹⁰ The sample is representative as it includes the recessionary periods of the following developed countries Australia, Austria, Canada, Denmark, Finland, France, Iceland, Italy, Netherlands, Norway, Spain, Switzerland, UK and the U.S.

¹¹ Given the conventional criteria of three subsequent quarters of downturn, we consider that yearly downturns match the definition.

decline during the recessionary periods. The percentage of total time spent under recession is also longer in the developing countries than in developed ones: 0.23 percent versus 0.16 percent of the sample period, respectively. In other words, 1.6 years per decade, on average, in spent under recession in developed countries, versus 2.6 years per decade, on average, in the developing countries. Third, interestingly, both measures of income distribution have on average been slightly worse in the aftermath of the recessions in both developed and developing country samples; the standard deviations are also larger in the latter set of countries than in the former. Appendix 2 shows the length and depth of recessions identified in the current sample (by country abbreviation of the World Bank).

3. Estimation Methodology and the Findings

Our main hypotheses are: i) bad and worsening cases of income distribution affect the severity of recessions and ii) improvements in income distribution in the aftermath of the recessions are related with the severity of the preceding recessions. Given the difficulties to investigate the causal relationship between income inequality and economic crises that is often addressed in the related literature¹², we resort to the event study format that enables us to measure income inequality before and after recessions.

We conduct our empirical analysis using the generalized least squares (GLS) method with random effects (RE) in the STATA software. The reason for using the RE model, rather than the fixed effects (FE) model is that the individual dimension of our panel data set, which is comprised of the number of events that are the recessions per country, is less than handful for most of the countries in the sample; therefore, the FE model reduces the degrees of freedom almost by half. In addition, the Hausman test fails to reject the null hypothesis that the differences in coefficients are not systematic; hence, the RE model is efficient.¹³ We also prefer the RE model because of the presence of a time-invariant control variable that would potentially be correlated with the fixed effects. We choose the GLS method over the OLS for

¹² see, for example, Morelli and Atkinson, 2015.

¹³ see, for example, Greene, 2008.

the purpose of efficiency gain in the estimation. In what follows, Sections 3.1 and 3.2 present the results of the regressions performed to test these two hypotheses.¹⁴

3.1 Explaining Recession Severity

In order to test our first hypothesis, we regress the two measures of recession severity: *length* and *depth*, on the two alternative indicators of income distribution: *GINI* and *Top10* observed in the pre-crises periods, and the control variables. The benchmark model is:

$$length_{it} (depth_{it}) = a + \beta_1 GINI_{it} (Top10_{it}) + \beta_2 Z_{it} + \beta_3 CRpercent_i + \beta_4 D80 + \beta_5 D90 + \varepsilon_i$$

where Z_{it} refers to country-time specific control variables: $\{lGDPpc ; G ; inf\}$ and the variables in parentheses indicate alternative versions of the model.

Table 1 reports the extensive model as well as the parsimonious model that drops the insignificant variables in addition to the growth rate in *GINI* and *Top10* that severely restricts the sample size. The regressions reported in Table 1 show that, using both measures of income distribution, the severity of recessions is positively related with the level of development. This can be explained by the reluctance to reform institutions in developed countries due to *institutional sclerosis* (a la Olson). *CRpercent* has the expected positive sign as well. In the estimation of *length*, the only other statistically significant (though only at 10%) variable in the extended model is *G*, which indicates that fiscal expansion has on average had slightly averting effect on recessions. In the estimation of *depth*, the additional significant variable is *D80*, which indicates that output loss during the recessions were less severe on average during the 1980s than the rest of the period.

We next explore the parsimonious models by dropping *GINIgr_B* and *Top10gr_B*, which restrict the sample size significantly (by more than 70 observations), and the remaining insignificant variables in the revised estimation model. The estimations of the parsimonious models reveal that, on average, the more unequal is the prevailing income distribution, the shorter is the length and the smaller is the depth of the recession. The negative association between the income distribution measures and recession severity is consistent with the observation of the more swift recovery, in general, in the developing countries than in the

¹⁴ Due to the event study nature of the study, which is also using an unbalanced data set, vector autoregression type of analysis is not appropriate to test the reverse causality,

developed countries after the great recession.¹⁵ This can be explained by the greater growth potential and weaker status-quo bias in developing countries than developed countries, particularly in the case that they face reform conditionality to receive international funds.¹⁶ The recessions are also observed to be longer, on average, during the 1990s as compared to the rest of the period.

Table 1: Does high and worsening income distribution affect the severity of recessions?
(Estimation Method: GLS with Random Effects; Robust Standard Errors)

	Dependent Variables: (Parsimonius Regressions)							
	<i>Length</i>	<i>Depth</i>	<i>Length</i>	<i>Depth</i>	<i>Length</i>	<i>Depth</i>	<i>Length</i>	<i>Depth</i>
RHS Variables:								
<i>log(GDPpc)</i>	0.3113 (3.59)***	0.8248 (1.65)*	0.3088 (3.53)***	0.8847 (1.81)*	-0.3774 (-1.59)	-0.4767 (-1.18)	-0.3156 (-1.3)	-0.4541 (-1.18)
<i>GINI_B</i>	0.0075 (0.7)	-0.0654 (-1.16)			-0.1376 (-2.6)***	-0.1555 (-2.1)**		
<i>Ginigr_B</i>	0.0103 (0.88)	0.0213 (0.4)						
<i>Top10_B</i>			0.0054 (0.43)	-0.0520 (-0.79)			-0.1508 (-2.18)**	-0.1552 (-1.58)
<i>Top10gr_B</i>			0.0053 (0.57)	0.0439 (1.17)				
<i>IntYdist1</i>					1.5028 (2.52)**			
<i>IntYdist2</i>							1.6614 (2.13)**	
<i>CRpercent</i>	4.0094 (3.09)***	12.7990 (1.95)*	3.9271 (3.1)***	12.8522 (1.94)*	4.6866 (4.68)***	20.9998 (2.24)**	4.2197 (3.72)***	18.7303 (1.93)*
<i>G</i>	-0.0333 (-1.81)*	-0.1969 (-1.59)	-0.0354 (-1.91)*	-0.1742 (-1.44)				
<i>Inf</i>	-0.0007 (-1.68)*	-0.0016 (-0.97)	-0.0007 (-1.58)	-0.0016 (-0.94)				
<i>D80</i>	0.0089 (0.07)	-2.4314 (-2.48)**	0.0087 (-0.07)	-2.5017 (-2.36)**				
<i>D90</i>	0.2917 (1.51)	-0.1452 (-0.15)	0.2919 (1.47)	-0.1674 (-0.17)	0.5746 (2.83)***		0.5136 (2.51)**	
<i>constant</i>	-1.7397 (-1.7)*	1.4624 (0.24)	0.9779 (-1.57)	-0.3555 (-0.06)	4.1813 (1.98)**	11.4829 (2.14)**	3.6437 (1.68)*	10.5725 (2.06)**
R-bar Square	0.20	0.11	0.19	0.10	0.23	0.11	0.20	0.08
Wald-test	39.13***	25.39***	40.77***	22.55***	29.16***	9.21**	20.49***	6.61*
Num. of Countries	70	70	70	70	95	95	95	95
Num. of Obs.	107	107	107	107	183	180	183	180

¹⁵ This is consistent with Altug et al.(2012), who present panel evidence on the business cycles effects of institutions.

¹⁶ Appendix 3 shows that both measures of income inequality are negatively associated with per capita income.

Notes: Figures in parentheses are the t-ratios. ***, ** and * indicate significance at 1 per cent; 5 per cent and 10 per cent levels, respectively.

In order to test the claim we posed earlier regarding the potential that developed countries, due to their redistributive capacity, avoid recessions despite high income inequality, we introduce an interactive term for the level of development and income distribution: *IntYdist1* and *IntYdist2* that stand for: *GINI*IGDPpc* and *Top10*IGDPpc*, respectively. Indeed, both of these interactive variables turn out to be positively significant in explaining *length*, combined now with the negatively significant effects of the components of the interactive term. We interpret this as follows: recessions are prolonged in developed countries with bad income distribution. We do not observe a significant effect of the interactive term for the *depth* of the recessions, however and, hence, we do not report those regressions for *depth*.

To summarize, the level of income and income inequality seem to be significantly negatively associated with the severity of the recessions; that is, the length of the recessions gets shorter and the depth gets smaller the more developed the country is or the more unequal the income is distributed. When a developed country also has bad income distribution, however, the length of the recession seem to get longer than average, possibly due to stronger status-quo bias of the rich in those countries.

3.2 Explaining the Impact of Recessions on Income Distribution

We next turn to investigate the effect of crises on income distribution. For this, we regress the post-crises measures of income distribution on the measures of prevailing crisis severity, also controlling for the level of income and decade dummies. Because *IGDPpc* is found insignificant in each alternative run, we exclude this variable from the initial model; we may thus argue that the progression in the income distribution in the post-crises period is not related significantly to the level of economic development. Hence, our benchmark model is:

$$GINI_{it} (Top10_{it}) = \rho + \theta_1 length_{it} (depth_{it}) + \theta_2 Z_{it} + \theta_3 CRpercent_i + \theta_4 D80 + \theta_5 D90 + \zeta_i$$

where the set of the control variables, Z_{it} , is the same as in the earlier model, and the parentheses indicate the variables used in the alternative versions of the model.

Table 2: Does the impact of preceding crises affect the income distribution?
(Estimation Method: GLS with Random Effects; Robust Standard Errors)

RHS Variables:	Dependent Variables: (Parsimonious Regressions)			
	<i>GINI_A</i>	<i>Top10_A</i>	<i>GINI_A</i>	<i>Top10_A</i>
<i>length</i>	1.51 (2.29)**	1.64 (3.13)**	1.90 (3.11)***	1.37 (3.18)***
<i>depth</i>	-0.21 (-1.9)*	-0.24 (-2.7)***	-0.14 (-1.7)*	-0.11 (-1.8)*
<i>Gini_B</i>	0.79 (12.8)***		0.74 (11.5)***	
<i>GINlgr_B</i>	0.20 (3.1)***			
<i>Top10_B</i>		0.71 (8.02)***		0.63 (5.43)***
<i>Top10gr_B</i>		0.08 (1.16)		
<i>G</i>	0.002 (0.1)	-0.06 (-0.6)		
<i>Inf</i>	0.007 (8.64)***	0.006 (6.33)***	0.005 (7.4)***	0.005 (7.47)***
<i>CRpercent</i>	-1.99 (-0.3)	-1.82 (-0.4)		
<i>D80</i>	-4.69 (-4.2)***	-4.19 (-3.3)***	-2.15 (-1.8)*	-1.74 (-1.5)
<i>D90</i>	-0.11 (-0.1)	-0.36 (-0.5)		
<i>constant</i>	5.60 (1.90)*	8.93 (3.01)***	8.37 (3.51)***	10.14 (2.96)***
R-bar Square	0.88	0.84	0.74	0.65
Wald-test	8064***	7699***	1951***	3329***
Num.of Countries	57	56	70	70
Num. of Obs.	83	82	115	115

Notes: Figures in parentheses are the t-ratios. ***, ** and * indicate significance at 1 per cent; 5 per cent and 10 per cent levels, respectively.

Table 2 shows that in the extensive model, while *length* has a positive significant effect on post-crises income distribution, *depth* has a negative significant effect. Hence, we note that the greater the aggregate income loss in the recession, the larger is the correction in income distribution in the period after the crises; but income distribution worsens the longer the recession lasts. Moreover, the pre-crises level and the rate of increase in income distribution measures point at a significant persistence effect. We also observe that the post-crises inflation rate has a worsening effect on income distribution, pointing at the importance of monetary discipline for equitable distribution. Because the rate of change of income distribution restricts our sample size, we try excluding that variable (increasing the sample to

70 countries and 115 observations) and obtain the parsimonious regressions. The main findings remain robust across both measures of income distribution utilized in our analysis.

We also constructed data on the rate of change in the post-crises income distribution.¹⁷ Using this variable as the dependent variable, we observe that while the *length* of recessions are associated with worsening income distribution, the *depth* of the preceding crises is positively associated with the improvements in income distribution in the aftermath (based on 107 observations).¹⁸ These results are consistent with those in Table 2, hence we do not report them in the interest of space.

4. Conclusions

This paper analyzes the relationship between the severity of economic downturns and income distribution. We hypothesize that the level and growth of income distribution may both have significant effects on the severity, measured by the length and the depth, of the recessions and are affected by them in turn. We test these hypotheses using a large yearly panel dataset on developed and developing countries, where the duration of each observed downturn defines an event in our empirical analysis.

Based on the evidence presented in the paper, we observe a significant negative association between the prevailing degree of income inequality, and the severity of recessions. This relationship is reversed, however, in case of high income countries that have bad prevailing income distribution; in those cases, we observe that recession is prolonged. This observation can be explained by the strong status-quo bias in developed countries, where powerful interest groups resist radical redistributive reforms that could have persistent corrective impact on income distribution. Rather, high income countries can mitigate the income losses of the poor, via transfers or other short-run self-corrective mechanisms during the down-

¹⁷ Measuring this variable turns out to be a challenging task because data on income distribution often does not exist in a regular time series format; we thus use our discretion in generating this measurement. More precisely, we take up to 5 years (as in the case of other control variables) before and after the crises to report the average growth in either *GINI* or *Top10*, when those values are available; otherwise, we calculate the rate of change wherever data is available in the vicinity of the crises. In case another crisis has taken place within the 5 years after the crisis and *GINI* data exists we take the *GINI* average as the minimum of the five years following the crisis or the year ending the next crisis. The constructed data is available upon request.

¹⁸ The results are available upon request.

turns, more successfully than developing countries. This usually comes at the cost of longer recessions, however, as has been noted in the aftermath of the Great Recession. Recessions also tend to be longer during the decade of the 1990s as compared to the rest of the periods considered. The evidence regarding the corrective effect on recessions of accommodative fiscal or monetary policy is observed to be only barely significant, on average.

In addition, the evidence presented in the paper indicates that the post-crises income distribution worsens significantly with the recession length but improves with the recession depth. We also observe that, besides the effect of persistence in income distribution, the lack of monetary discipline is associated significantly with the worsening income distribution in the post-crises period.

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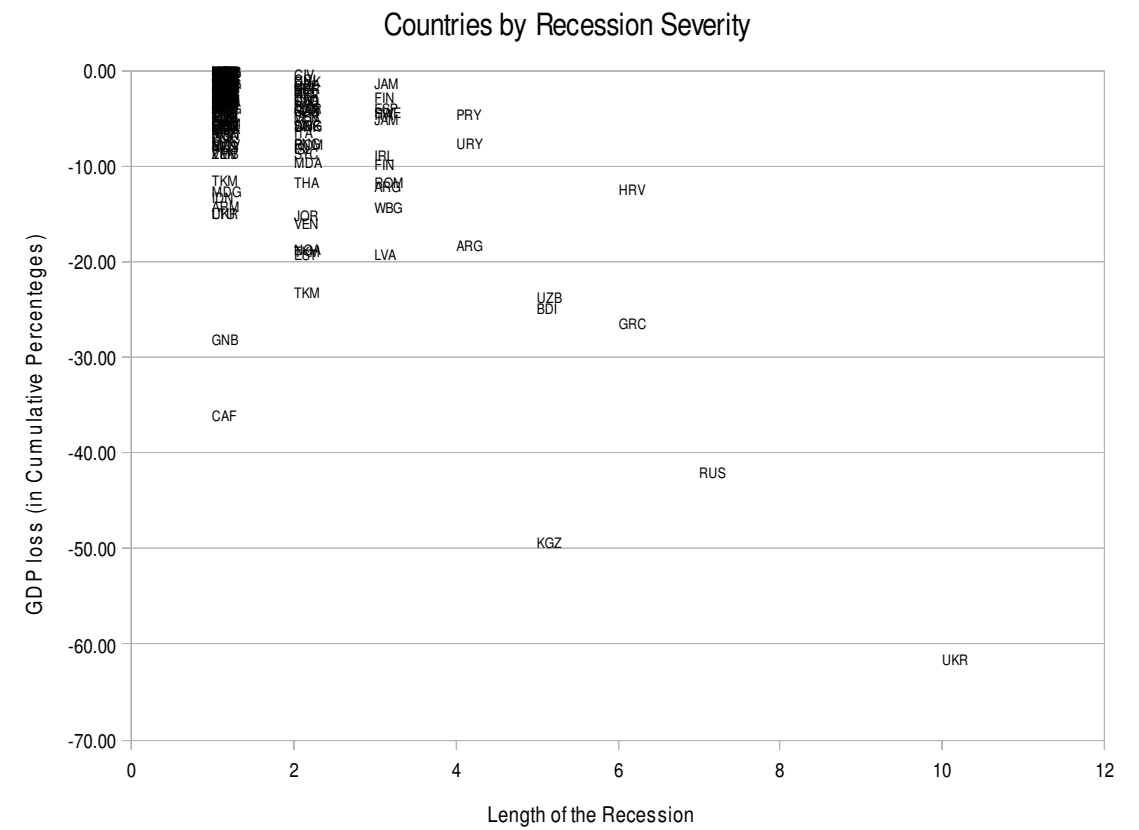
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Appendix 1: Descriptive Summary of the Dataset

		<i>length</i>	<i>depth</i>	<i>CRpercent</i>	<i>GINI_B</i>	<i>GINI_A</i>	<i>Top10_B</i>	<i>Top10_A</i>
Developed Countries								
	Mean	1.56	-3.03	0.16	30.46	31.48	24.01	24.40
	Standard Deviation	0.75	2.71	0.18	4.42	5.41	2.52	2.93
	Total no.of observations	39	39	39	39	26	39	26
Developing Countries								
	Mean	1.56	-6.36	0.23	40.96	41.70	32.26	32.90
	Standard Deviation	1.29	9.16	0.16	9.62	9.60	7.59	8.03
	Total no.of observations	149	149	149	149	100	145	99

Appendix 2: Severity of Recessions by Country



Appendix 3: Correlations

	<i>length</i>	<i>depth</i>	<i>GINI_B</i>	<i>GINI_A</i>	<i>Top10_B</i>	<i>Top10_A</i>	<i>Top10gr_B</i>	<i>Top10gr_A</i>	<i>logGDPpc_B</i>	<i>logGDPpc_A</i>
<i>length</i>	1.00									
<i>depth</i>	0.82	1.00								
<i>GINIB</i>	-0.14	-0.22	1.00							
<i>GINIA</i>	-0.03	-0.18	0.90	1.00						
<i>Top10B</i>	-0.15	-0.20	0.99	0.88	1.00					
<i>Top10A</i>	-0.04	-0.17	0.90	0.99	0.89	1.00				
<i>Top10grB</i>	0.05	0.04	-0.03	0.14	-0.01	0.14	1.00			
<i>Top10grA</i>	0.05	0.00	-0.11	0.09	-0.13	0.10	-0.14	1.00		
<i>logGDPpcB</i>	0.00	-0.04	-0.30	-0.27	-0.30	-0.30	-0.22	0.24	1.00	
<i>logGDPpcA</i>	-0.05	-0.09	-0.31	-0.27	-0.31	-0.29	-0.20	0.25	0.98	1.00