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Jesus Crespo Cuaresma
Jozef Kubala
Kristina Petrikova

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Does income inequality affect aggregate consumption? Revisiting the evidence*

Jesus Crespo Cuaresma[1,2,3,4], Jozef Kubala[5], and Kristina Petrikova[5]

[1]Vienna University of Economics and Business
[2]Wittgenstein Center for Demography and Global Human Capital (IIASA,VID/OEAW,WU)
[3]International Institute of Applied Systems Analysis (IIASA)
[4]Austrian Institute of Economic Research (WIFO)
[5]University of Economics in Bratislava

Abstract

The standard Keynesian view predicts that equalization of the income distribution leads to an increase in aggregate consumption. We revisit the analysis carried out by the seminal empirical contributions which test such a hypothesis using modern econometric methods and the most comprehensive dataset existing on income distribution measures. Our results indicate that there is no substantive empirical evidence of an effect of income inequality on aggregate consumption.

Keywords: Inequality, aggregate consumption, average propensity to consume

JEL Classification: E22, D31

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1 Introduction

The role played by inequality dynamics as a determinant of the recent economic crisis has been intensely debated in the academic literature over the last years. Rajan (2012), notably, emphasizes that rising inequality in the US was linked to the credit boom that eventually ended in the financial crisis. Recently, the results in Bordo and Meissner (2012) challenge the conclusions in Rajan (2012) using empirical evidence for 14 countries. In the post-Keynesian literature, the relationship between rising inequality and aggregate demand has been in the center of the discussion of the causes of the financial crisis (see for example Stockhammer, 2015, and references therein for an overview). The argument put forward relies on the difference in rates of consumption across households at different parts of the income distribution. To the extent that households with lower levels of income have a higher propensity to consume, increases in inequality would act as a factor that contributes to the stagnation of aggregate demand. Such an argument is used to explain the macroeconomic effects of high income inequality by Brown (2004) or Fitoussi and Saraceno (2010), for instance.

The empirical literature assessing the relationship between aggregate levels of consumption and the personal distribution of income is surprisingly limited.[1] Blinder (1975) presents empirical evidence for the US based on an optimal life-cycle consumption model which point towards a rejection of the Keynesian postulate and indicate that increase in income inequality may result in increases in aggregate consumption. Building up in the seminal contribution by Blinder (1975), Della Valle and Oguchi (1976) exploited the variation of consumption propensities and income inequality across countries to obtain estimates of the effect of income distribution changes on aggregate consumption. Della Valle and Oguchi (1976) conclude that, in accordance with the theoretical results in Blinder (1975), increases in income inequality may result in increased aggregate consumption. Musgrove (1980) extends the scope of data used as well as methodology applied by allowing for heterogeneity in consumption functions. The analysis of the relationship between the average propensity to consume (aggregated over individual functions) and income concentration supports the view that there is no statistically significant effect of income distribution on aggregate consumption.

In this contribution we reassess the evidence presented in Della Valle and Oguchi (1976) using data and methods that were not available when this empirical contribution was carried out. In particular, we use the most comprehensive dataset of Gini indices existing (Milanovic, 2014) as well as panel data methods which are now standard but were not known in the time when the studies were carried out. In this respect, our contribution is at the same time a replication and an improvement over the empirical modelling framework provided by Blinder (1975) and Della Valle and Oguchi (1976). Our results indicate that rising inequalities are not significantly related to changes in aggregate consumption and cast serious doubts on arguments based on such a mechanism which are often found in the literature (and in particular in studies in the post-Keynesian tradition).

This note is organized as follows. Section two presents the empirical analysis, which relies on the modelling framework used by Della Valle and Oguchi (1976). Section three concludes.

[1] In contrast, a large literature which relies on microeconometric evidence is available (see for instance Dynan et al., 2004, for a relevant modern reference).

2 Consumption and income distribution: the econometric framework

Following the empirical implementation of Blinder (1975)'s model proposed by Della Valle and Oguchi (1976), we start by setting up panel regressions where the average propensity to consume (APC) is assumed to be affected by the average level of income per capita and the distribution of income. The APC is constructed for all available countries using data from the Penn World Table 8.1 (Feenstra et al., 2015), which is also our source for income per capita data. The Gini index based on gross household income, which is used as our measure of inequality, is sourced from Milanovic (2014).

Figure 1 presents the scatter plot relating the APC to the Gini index for the whole available sample, which is composed by 243 country-year observations. The results of standard bivariate regressions with and without country fixed effects confirm that the overall positive relationship between the APC and income inequality depicted in Figure 1 is driven by the variation across countries but is not existing when just considering variability within countries. The results of such bivariate regressions are presented in Table 1. The positive link between inequality and the APC is not affected by the inclusion of year fixed effects but disappears when persistent specificities at the country level are accounted for making use of country fixed effects.

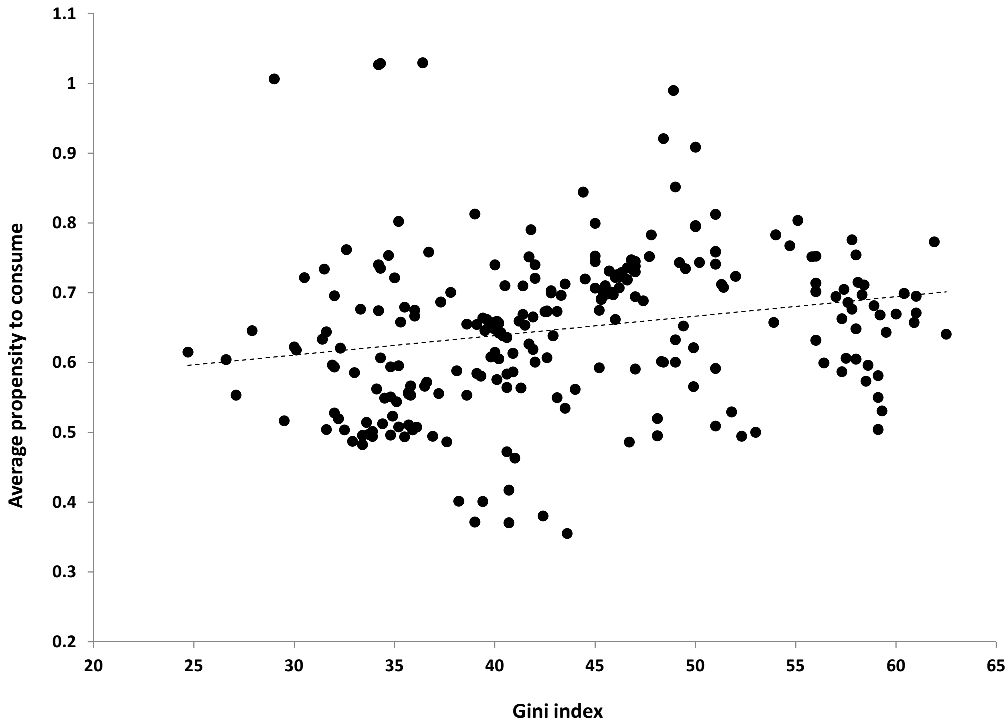

Figure 1: Gini index versus average propensity to consume: Global sample

Following the theoretical framework set up by Blinder (1975), Della Valle and Oguchi (1976) proceed to entertain specifications which include income per capita and its square as additional regressors in the model for the APC. The estimation results for models including income as an additional regressor are presented in Table 2. On average, GDP per capita increases tend to be related to increases in the APC, but the inclusion of this variable in the model does not affect our conclusion concerning the lack of statistical significance of the inequality variable. The results of the specification with a quadratic term of income reveal a convex relationship between the APC and GDP per capita, which is driven by the observations corresponding to

Table 1: Regression estimates: Bivariate regressions

	(1)	(2)	(3)
Gini Index	0.00279***	0.00294***	-0.00191
	(3.54)	(3.81)	(-0.64)
Observations	243	243	243
Country fixed effects	No	No	Yes
Year fixed effects	No	Yes	Yes
R^2	0.046	0.269	0.400
Adjusted R^2	0.042	0.043	0.215

Dependent variable is the APC, robust t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

the US. If the model is reestimated without the US observations, the significance of the squared term of GDP per capita disappears, leaving the other parameter estimates qualitatively unchanged.

Table 2: Regression estimates: Income and its interaction with inequality

	(1)	(2)	(3)
Gini Index	-0.00192	-0.00375	-0.00518
	(-0.98)	(-1.76)	(-1.83)
GDP p.c.	0.0125***	0.00107	-0.00748
	(4.59)	(0.18)	(-0.96)
GDP p.c. squared		0.000202*	
		(2.51)	
Gini Index × GDP p.c.			0.000435*
			(2.47)
Observations	243	243	243
R^2	0.574	0.605	0.603
Adjusted R^2	0.440	0.478	0.475

Dependent variable is the APC, robust t statistics in parentheses. Country and year fixed effects.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In order to assess heterogeneity in the potential effects of inequality on consumption by level of income, we also estimated a specification where the interaction between the Gini index and GDP per capita is included as an additional regressor (see column 3 in Table 2). The significance of the interaction term points towards a positive effect of inequality on the APC at higher levels of income per capita. Figure 2 presents the effect implied by the estimates of the model by country-year, together with a confidence interval of two standard deviations. Significant effects of inequality on the APC are again only present for the US and indicate that increases in income inequality tend to be related to increases in the APC, a result which is in contradiction to the empirical evidence in Della Valle and Oguchi (1976).

Finally, following the empirical specifications entertained in Della Valle and Oguchi (1976) in the spirit of the theoretical framework put forward by Blinder (1975), we expand our model to a dynamic specification.

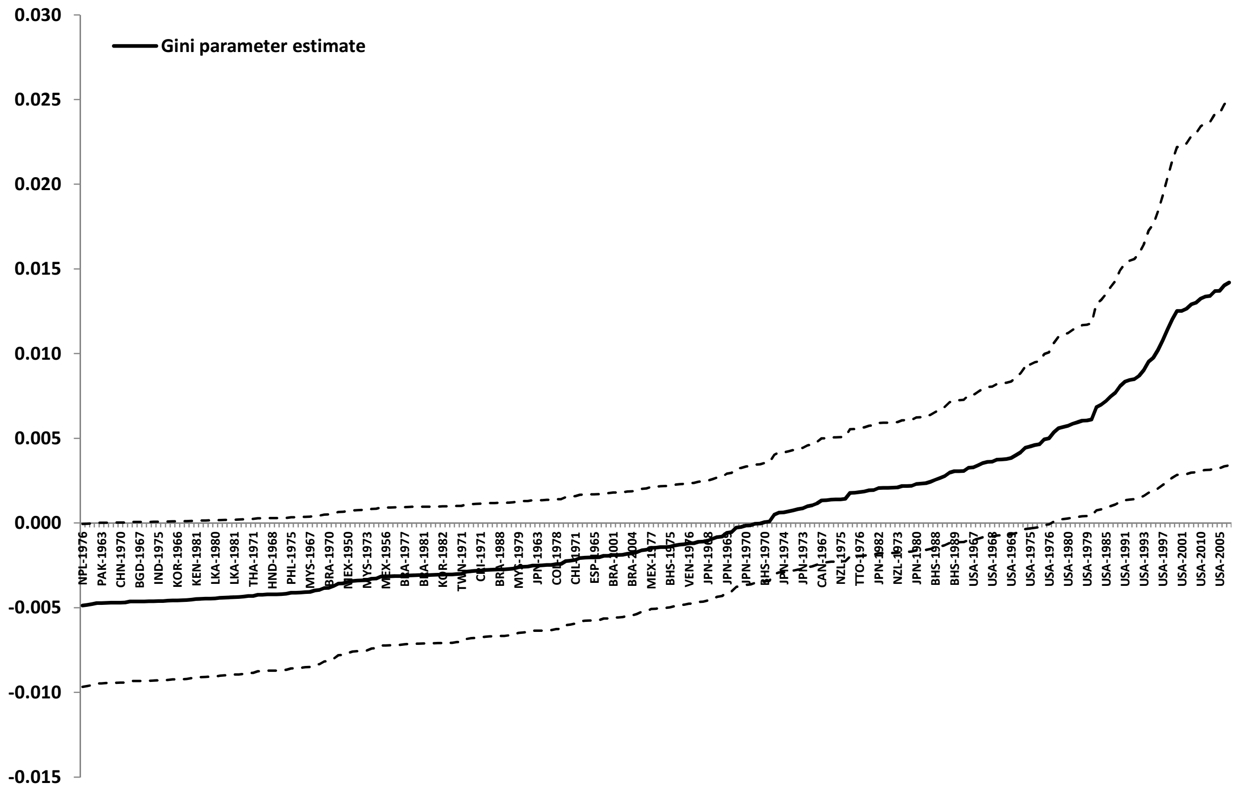

Figure 2: Interaction model: Parameter estimates associated to different country-year observations

Table 3 presents the estimation results of specifications including a lag of the APC as an additional regressor. Such dynamic panel models need to be estimated using generalized method of moments (GMM) methods, since the usual assumption of zero correlation between the regressors and the error term is not fulfilled by construction, due to the presence of cross-sectional fixed effects. Given the persistent nature of the dependent variable in our regression model, the system-GMM estimator proposed by Blundell and Bond (1998) appears as the most adequate technique to estimate the model under consideration. The first column of Table 3 shows the estimates obtained using standard least square dummy variable estimation, while the second and third column present the estimates of two different specifications (with and without interaction term) using the system-GMM method. The results in Table 3 indicate that the results concerning the lack of influence of changes in income inequality on the APC found in the static specifications are robust to the inclusion of a lag of the dependent variable as an additional regressor. This is the case in spite of the fact that the APC presents strong persistence over time,as reflected in the estimates of the autoregressive parameter of the models estimated using system-GMM.

3 Conclusions

Using the most comprehensive dataset of comparable income inequality measures existing, we reassess the evidence concerning the link between aggregate consumption and income distribution changes. Our estimation results, based on a global sample and the empirical implementation put forward originally by Della Valle and Oguchi (1976), indicate that there is no significant relationship between aggregate inequality changes and changes in the average propensity to consume.

Table 3: Regression estimates: Dynamic specifications

	(1)	(2)	(3)
Lagged APC	0.688***	0.945***	0.929***
	(8.44)	(26.56)	(26.15)
Gini Index	-0.00134	0.000192	-0.000739
	(-0.80)	(0.44)	(-1.18)
GDP p.c.	0.00464**	0.000358	-0.00472
	(2.80)	(1.35)	(-1.34)
Gini Index × GDP p.c.			0.000117
			(1.44)
Observations	241	241	241
R^2	0.791		
Adjusted R^2	0.725		
AR(1), AR(2) tests		-1.75, 0.71	-1.77, 0.95
Hansen test		6.12	6.44

Dependent variable is the APC, robust t statistics in parentheses.

Dummy variable LS estimates in column (1), system-GMM estimates in columns (2) and (3).

Year dummies and second and third lag of the level and first difference of APC used as instruments.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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