Global Economy Journal

Volume 12, *Issue* 3 2012 *Article* 7

Impact of Globalization on Income Distribution Inequality in 60 Countries: Comments

Pan-Long Tsai* Chao-Hsi Huang†

Chih-Yuan Yang‡

*National Tsing Hua University, Taiwan, PLTSAI@MX.NTHU.EDU.TW

†National Tsinghua University, Taiwan, ghuang@mx.nthu.edu.tw

‡National Tsing Hua University, Taiwan, chikyang@gmail.com

DOI: 10.1515/1524-5861.1845

Copyright ©2012 De Gruyter. All rights reserved.

Unauthenticated | 114.33.180.74
Download Date | 11/6/12 3:43 PM

Impact of Globalization on Income Distribution Inequality in 60 Countries: Comments*

Pan-Long Tsai, Chao-Hsi Huang, and Chih-Yuan Yang

Abstract

In a recent article in the Global Economy Journal, Lei Zhou, Basudeb Biswas, Tyler Bowles and Peter J. Saunders (2011) have shown that globalization does not contribute to income inequality in a sample of 60 countries. In this comments we have demonstrated that their conclusion is misleading for improperly pooling countries with extremely different economic systems in their regression analyses. Specifically, only countries with sufficiently high level of development could expect to benefit from globalization as far as income distribution is concerned.

KEYWORDS: globalization, income inequality

*We are most grateful to Professor Jannett Highfill for very constructive comments and suggestions.

Unauthenticated | 114.33.180.74
Download Date | 11/6/12 3:43 PM

1. Introduction

In a recent article in the *Global Economy Journal*, Lei Zhou, Basudeb Biswas, Tyler Bowles and Peter J. Saunders (2011), ZBBS henceforth, take up the timely and hotly debated issue of the impact of globalization on within-country income inequality. Drawing upon Kearney's Globalization data, ZBBS endeavor to define two measures for the elusive concept of globalization. Specifically, the Kearney Index is a rescaling of the original Kearney Globalization Index to maintain the relative magnitude of each nation's observation, whereas the PC Index is created by applying the principal component analysis to avoid the drawbacks of arbitrarily assigning equal weights to each determinant and component variable implied in the Kearney Index. With some modifications on the Gini coefficients from the UNU/WIDER-UNDP World Income Inequality Database (WIID), they run regressions of the Gini coefficients on each of the two globalization indices for 60 countries in the year 2000, with and without controlling levels of education and urbanization. The main conclusion of their empirical results is:

> Contrary to most empirical research reported to date, the present study finds no evidence in support of the view that globalization contributes to income inequality. This conclusion is robust in the sense that it is consistent across globalization indices, and that it does not depend on the inclusion of variables that account for a country's average level of educational attainment and urbanization. (p.9)

The efforts ZBBS devoted to the painstaking task of creating more sensible, reliable measures of globalization and inequality certainly deserve applauding. Unfortunately, while the conclusion is indeed striking, it could also be quite misleading. In this comment, instead of going to a full specification of the inequality regression, we will modify ZBBS's own empirical models to the least degree to highlight the problem involved in their empirical exercises.[1]

[1] It is well-known that no empirical works in the social science can be immune from potential misspecifications, therefore we do not wish to take a purist position on the issue and decide to follow their framework. This has the merit of not to confuse our main argument with other problems related to model specification.

Unauthenticated | 114.33.180.74
Download Date | 11/6/12 3:43 PM

2. The problem

The sample of ZBBS is composed of 60 developed, transitional, and developing countries (DCs, TEs, and LDCs in the following discussion, respectively). Due to the paucity of the data on globalization and inequality, it is absolutely natural and reasonable to include as many countries as possible in this kind of empirical study. However, pooling countries with different attributes in a regression analysis runs the risk of arriving at a false conclusion. Unfortunately, we believe that this is exactly what has happened in ZBBS's empirical results.

The easiest way to see this is to examine visually the scatter diagrams of various groups of countries in the globalization - Gini coefficient space as shown in Figure 1.[2] Since ZBBS do not provide the definitions of DCs, TEs and LDCs, we adopt the World Bank's criterion in the year 2000 for country classification. As a result, for the 60 countries in the sample, there are 36 LDCs, 24 DCs, and 9 TEs, of which only Slovenia belongs to the DCs (See the Appendix table). Figure 1(a) apparently suggests that there is a negative relationship between the Kearney Index and the Gini coefficient for the full sample, which corroborates the main result of ZBBS's paper. However, when turning to each of the three groups of countries, we find something different. For the DCs (excluding Slovenia) shown in Figure 1(b), no clear-cut relationship seems to exist between the globalization index and the Gini coefficient. On the contrary, for the group of LDCs with TEs excluded Figures 1(c) clearly shows a positive relationship between the Kearney Index and the Gini coefficient, implying a result just opposite to ZBBS's finding. Although the diagram in Figure 1(d) for the TEs does seem to give rise to a negative relationship between the Kearney Index and the Gini coefficient, two salient features of this figure deserve attention. First of all, with average Gini coefficient 31.39, the degree of inequality of the TEs is not only much lower than that of LDCs but also lower than that of DCs. Excluding the TEs, the average value of the Gini coefficient is 43.17 for the LDCs and 32.48 for the DCs. Second, the negative relationship in Figure 1(d) looks simply caused by the dubious "outlier", Czech. That is, the negative relationship between inequality and globalization in the TEs is expected to be greatly weakened, or even reversed, if Czech were taken out of Figure 1(d).

That the LDCs generally have higher income inequality than the DCs has been recognized for a long time as the celebrated Kuznets' inverted U hypothesis

[2] In what follows we will report only the results using the Kearney Index as the measure of globalization since the results from using the PC Index are virtually of no difference from those based on the Kearney Index. This is not surprising as the correlation coefficient between these two indices reaches 0.96. However, the results based on the PC Index are available upon request from the authors.

Unauthenticated | 114.33.180.74
Download Date | 11/6/12 3:43 PM

has suggested (Girling, 1973; Tsai, 1995). At the same time, owing to their socialist-oriented political ideology, on average income distribution in the TEs has been historically much more equal than those in the DCs and LDCs (Flemming and Micklewright, 1999). In other words, the difference in the degree of income inequality has existed long before the current wave of globalization starting in the mid-1980s. These observations, along with the fact that globalization is more a phenomenon prevailing among the DCs than in the LDCs,[3] imply that the "robust" negative relationship between globalization and inequality obtained in their regression analyses is more likely to capture the relationship inherent in these three groups of countries than "the impact of globalization on within-country income inequality" as claimed by ZBBS.

3. Modified regression results

To verify our proposition, we will now repeat ZBBS's regression analyses, but taking the difference between the three groups of countries into explicit consideration by adding appropriate dummy variables. The empirical model specified by ZBBS is:*4*

(1) $$Gini_i = \beta_0 + \beta_1\, Kearney\ index_i + \beta_2\, Education_i + \beta_3\, Urbanization_i + \varepsilon_i$$

We modify Model (1) to arrive at the following two models:

(2) $$Gini_i = \beta_0 + \beta_1\, TEs + \beta_2\, Kearney\ index_i + \beta_3\, Kearney\ index_i * DCs_i + \beta_4\, Education_i + \beta_5\, Urbanization_i + \varepsilon_i,$$

(3) $$Gini_i = \beta_0 + \beta_1\, TEs + \beta_2\, Kearney\ index_i + \beta_3\, Kearney\ index_i * PCGDP_i + \beta_4\, Education_i + \beta_5\, Urbanization_i + \varepsilon_i,$$

where DCs and TEs are dummy variables. $DCs = 1$ if the country is a high income country, and $DCs = 0$ otherwise; $TEs = 1$ if the country is a transitional economy, and $TEs = 0$ otherwise. PCGDP stands for the logarithm of per capita GDP in US dollars in the year 2000, which is from the World Economic Outlook Database of the International Monetary Fund. With the exception of PCGDP and the two dummy variables, all variables and data are from Table A.1 of ZBBS.

[3] The average values of Kearney Index are 4.26, 2.79 and 2.23 for DCs, TEs and LDCs, respectively.
[4] This is Model (2) in ZBBS's paper.

Unauthenticated | 114.33.180.74
Download Date | 11/6/12 3:43 PM

We have included the dummy variable TEs as affecting the intercept in both Model (2) and Model (3). This is due to the fact that, with socialist-oriented ideology, we could not expect the change in inequality within such countries to be the same as that in the market or capitalist economies (Frazer, 2006). Model (2) is intended to distinguish the impact of globalization on inequality between the DCs and the LDCs. Instead, Model (3) attempts to explore whether the impact of globalization on inequality is conditional on the level of development *a la* Kuznets hypothesis as well as the high correlation between PCGDP and globalization.[5]

Table 1 presents our regression results. To make sure that we are doing things correctly, we first duplicate ZBBS's models. Models 1A and 1B in the first two columns give ZBBS's original results of Model A3 and Model A4, whereas those in columns 3 and 4 are our duplication. It is easy to see that there is no practical difference between these two sets of results, assuring the legitimacy of our analyses below. Columns 5 and 6 are the regression results of Model (2). As expected, the TEs as a group have significantly much lower inequality than other countries in the sample. In sharp contrast to those of ZBBS, the coefficients of the Kearney Index are now both positively signed and reach 5% level of significance, substantiating what we argued in last section that globalization is detrimental to income distribution in the LDCs. The coefficients of the interaction term of the Kearney Index and DCs are significantly negative at 1% level of significance in Models 2A and 2B. But, it is worth noting that in both cases the absolute value of the coefficient of the interaction term is so close to that of the Kearney Index that the inequality impact of globalization is rather weak even if it indeed reduces inequality within the DCs. This lends strong support to our observation in Figure 1(b); namely, no clear-cut relationship seems to exist between the globalization index and the Gini coefficient in the DCs. Finally, with adjusted $\overline{R}^2$ reaches 0.54 and 0.53 for Model 2A and Model 2B, respectively, our results unambiguously trump ZBBS's in explaining the variation of inequality.[6]

Models 3A and 3B again vindicate the unique attribute of the TEs. More importantly, all the estimated coefficients of Kearney Index and its interaction with PCGDP are correctly signed and statistically significant at 1% level of significance. Not only do these results support the finding of Model (2) that globalization negatively affect income distribution in the LDCs, but they further

[5] The correlation coefficient between PCGDP and Kearney Index is 0.69, which is exactly the same as that between PCGDP and PC Index.

[6] ZBBS only report R^2s. We get the $\overline{R}^2$s by the relation $\overline{R}^2 = 1-(1-R^2)(n-1/n-k)$, where n is the number of observations and k is the number of explanatory variables in the regression equation.

Unauthenticated | 114.33.180.74
Download Date | 11/6/12 3:43 PM

demonstrate that the impact of globalization on inequality is indeed conditional on the level of development. Based on the result of 3A (3B), it is readily to see that the turning point for positive impact and negative impact on income distribution is per capita GDP $9,803 ($10,795). Roughly speaking, only countries with per capita GDP reaching some $10,000 can reasonably expect to benefit from globalization as far as income distribution is concerned.

Aside from what reported in Table 1, we have performed some robust tests. Specifically, we have: (1) used PC Index as the measure of globalization, (2) treated China or Turkey as a transitional economies,[7] and (3) deleted Czech from the analyses. In all cases, our main conclusion that globalization generally aggravates income inequality in the LDCs stays intact.

4. Conclusion

ZBBS have done a great job in measuring inequality and globalization. However, improperly pooling countries with extremely different economic systems in their regression analyses leads to quite a misleading conclusion. Taking the difference between the three groups of countries into explicit consideration, we have modified ZBBS's model to the least extent and obtained totally different results. Based on all standard statistical criteria and the widespread anti-globalization campaign witnessed these days, we fully believe that our conclusions are much more appealing in understanding the globalization-inequality nexus than ZBBS's.

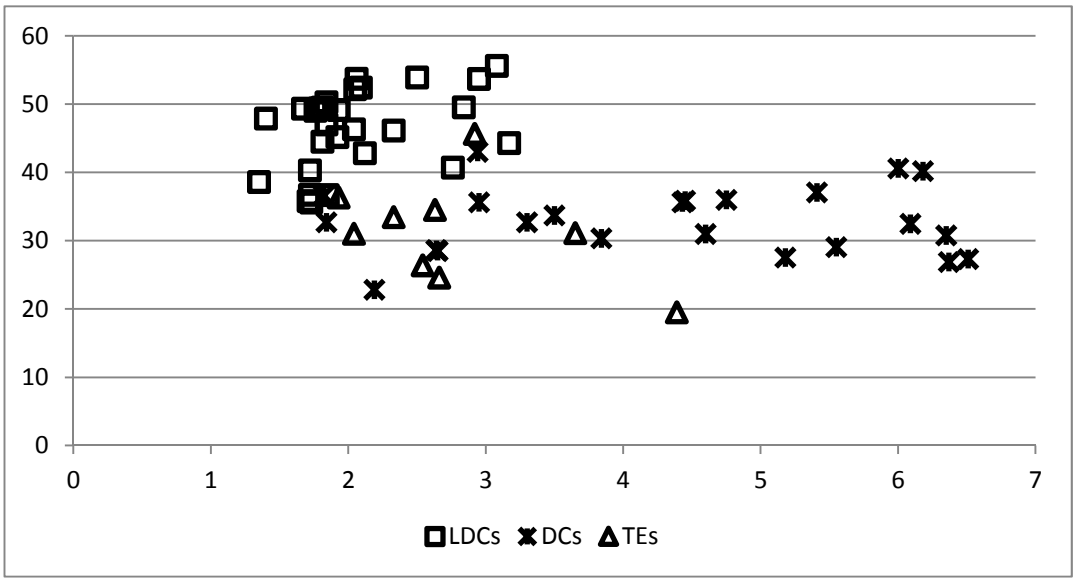
[7] We do this because some other institutions such as IMF classify China or Turkey as a transitional economy.

Unauthenticated | 114.33.180.74
Download Date | 11/6/12 3:43 PM

Figure 1: Scatter diagrams for various groups of countries

(a) Full sample

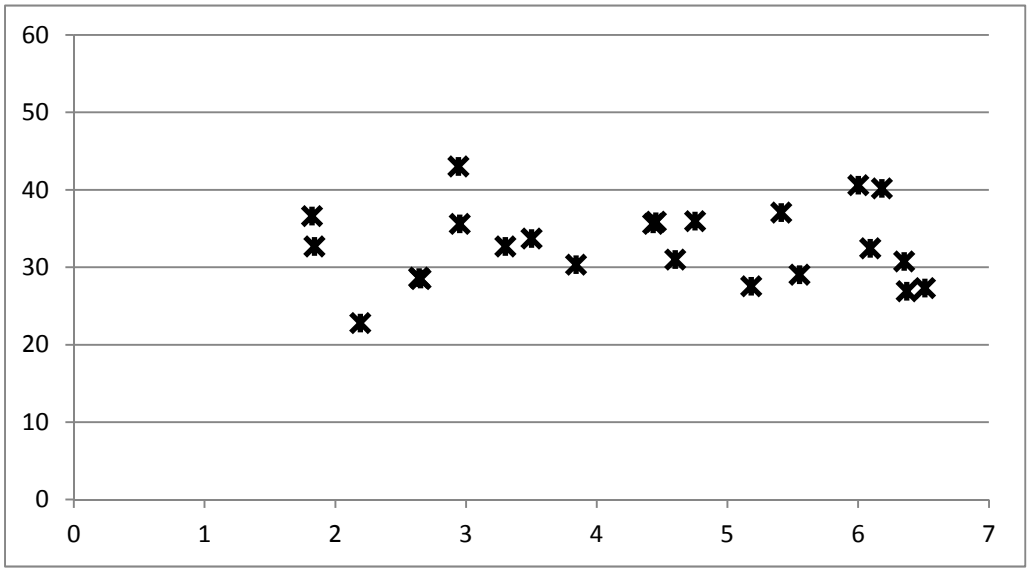
Gini coefficient



Globalization index (Kearney index)

(b) DCs (excluding Slovenia)

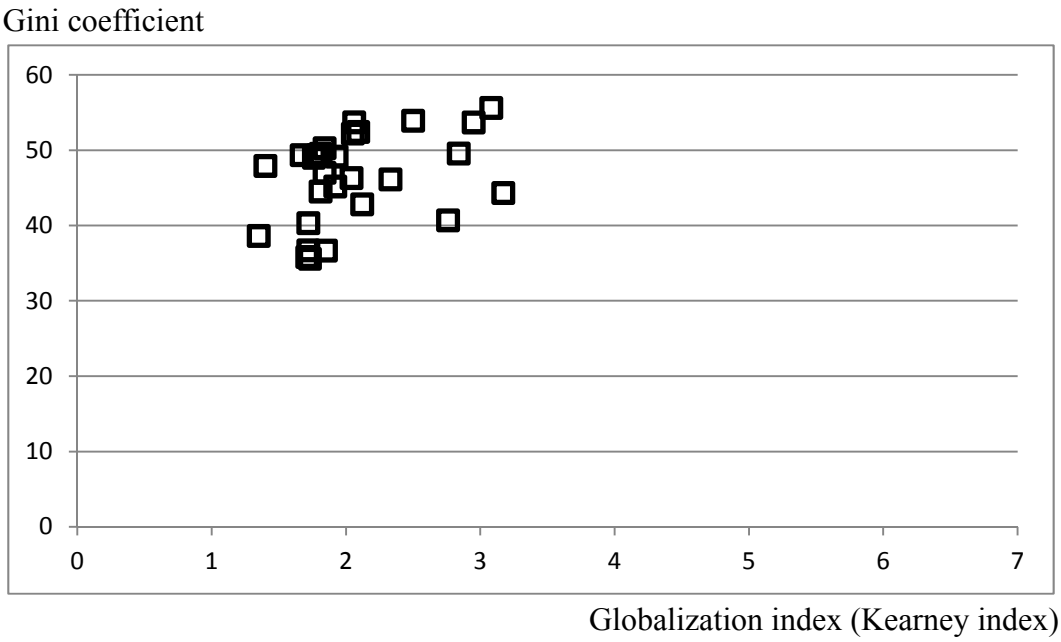
Gini coefficient



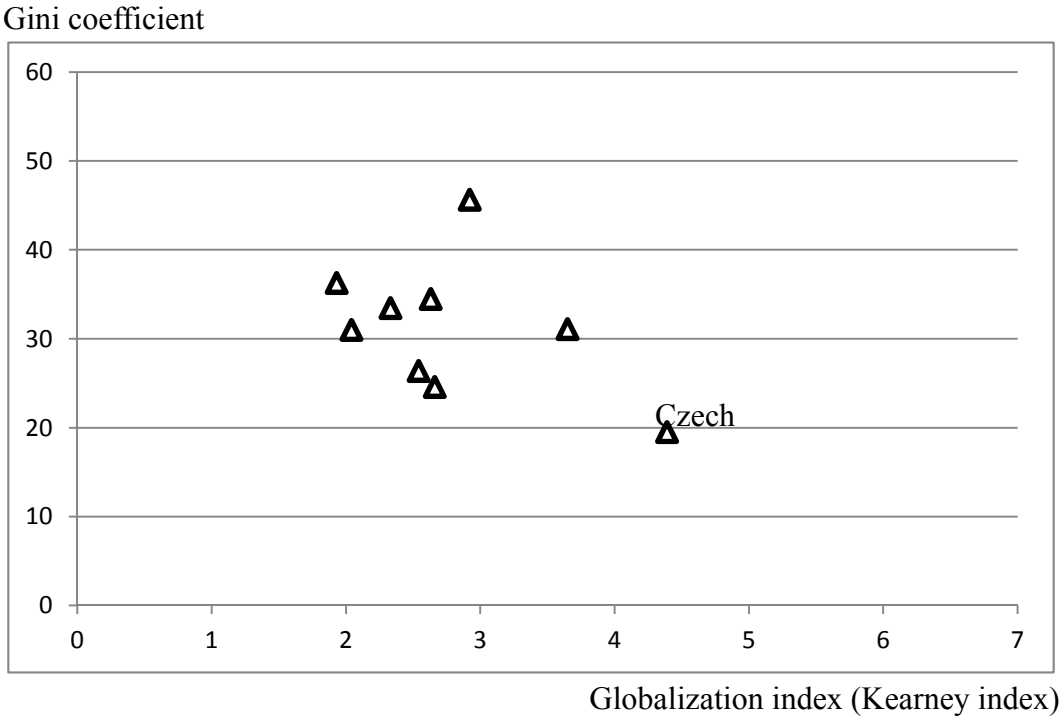
Globalization index (Kearney index)

Unauthenticated | 114.33.180.74
Download Date | 11/6/12 3:43 PM

(c) LDCs (excluding TEs)



(d) TEs



Unauthenticated | 114.33.180.74
Download Date | 11/6/12 3:43 PM

Table 1. Regression results for globalization and inequality

	ZBBS (2011)		Duplication of ZBBS (2011)		Model 2A	Model 2B	Model 3A	Model 3B
	Model 1A	Model 1B	Model 1A	Model 1B				
Intercept	47.052***	57.854***	47.032*** (2.422)	57.855*** (5.678)	39.008*** (2.634)	35.904*** (5.830)	39.764*** (3.318)	27.509*** (7.839)
TEs					-15.222*** (2.451)	-15.790*** (2.765)	-12.067*** (2.507)	-14.045*** (2.786)
Kearney	-2.682***	-2.018**	-2.676*** (0.716)	-2.015** (0.832)	3.197** (1.247)	3.144** (1.276)	12.159*** (3.920)	17.580*** (4.625)
Kearney*PCGDP							-1.323*** (0.342)	-1.893*** (0.432)
Kearney*DCs					-4.435*** (0.826)	-4.636*** (0.905)		
Education		-20.393**		-20.427** (9.002)		1.904 (7.852)		5.287 (8.677)
Urbanization		6.898		6.927 (6.669)		3.257 (5.219)		11.158* (5.649)
R^2	0.19	0.26	0.194	0.262	0.565	0.572	0.480	0.531
$\overline{R}^2$	0.19	0.234	0.180	0.223	0.542	0.532	0.452	0.487
F-statisitc	13.99	6.64	13.969	6.644	24.261	14.423	17.254	12.209
P-value	0.0004	0.0006	0.0004	0.0006	0	0	0	0

1. ***, ** and * indicate significantly different from zero at 1%, 5% and 10%, respectively.
2. Numbers in the parentheses are standard errors.
3. A model indicated by B includes Education and Urbanization as explanatory variables

Unauthenticated | 114.33.180.74
Download Date | 11/6/12 3:43 PM

Appendix: Country classification

Low	Lower Middle	Upper Middle	High
$755 or less	$756-2,995	$2,996-9,265	$9,266 or more
Uganda	Indonesia	Brazil	Korea
Bangladesh	Sri Lanka	**Slovak***	Portugal
Nigeria	China	Panama	**Slovenia***
Kenya	Philippines	Botswana	Greece
Senegal	Morocco	Malaysia	New Zealand
India	Iran	**Croatia***	Spain
Pakistan	Egypt	Turkey	Israel
Ukraine*	**Romania***	**Poland***	Italy
	Russia*	**Hungary***	Australia
	Thailand	Venezuela	France
	Colombia	Chile	Singapore
	Tunisia	**Czech***	Germany
	Peru	Mexico	Finland
	South Africa	Argentina	Canada
			Netherlands
			Austria
			UK
			Ireland
			Sweden
			Denmark
			US
			Switzerland
			Japan
			Norway

* indicates the transitional economies.

Unauthenticated | 114.33.180.74
Download Date | 11/6/12 3:43 PM

References

Flemming, J. and J. Micklewright, 1999, "Income Distribution, Economic Systems and Transition," Innocenti Occasional Papers, Economic and Social Policy Series No. 70.

Frazer, G., 2006, "Inequality and Development Across and Within Countries," *World Development*, Vol. 34, No. 9, pp. 1459-1481.

Girling, R., 1973, "Dependency and Persistent Income Inequality," in F. Bonilla and R. Girling (Eds.) *Structures of Dependency*, Stanford CA: Institute of Political Studies, pp. 83-101.

Tsai, P.L., 1995, "Foreign Direct Investment and Income Inequality: Further Evidence," *World Development*, Vol. 21, No. 3, pp. 469-483.

Zhou, L., B. Biswas, T. Bowles, and P.J. Saunders, 2011, "Impact of Globalization on Income Distribution Inequality in 60 Countries," *Global Economy Journal*, Vol. 11, Issue 1, Article 1.

Unauthenticated | 114.33.180.74
Download Date | 11/6/12 3:43 PM