EXTENDED ABSTRACT

Title: Public Expenditure and Unequal Income Distribution in EU regions. Theil decomposition.

Authors and e-mail of all:
María J. Ruiz-Martos (ruizmartosmaria@ugr.es)*
Ángeles Sánchez (sancheza@ugr.es)**

Department: *Economía Internacional y de España
**** Economía Aplicada**

University: Universidad de Granada

Subject area: S04 - Regional disparities in Europe and in Spain from 2007 to date. Evolution, causes and perspectives

Abstract: *(minimum1500 words)*

The 2008 economic crisis and the more recent Covid-19 pandemic have increased EU concerns about the effects of unequal income distribution on economic growth and social development and have rendered public economic and social policies unavoidable. The general aim of this work is the study of the association between inequality in the distribution of income in the European Union (EU) regions and fiscal policies (public spending and progressiveness of the tax structure) carried out throughout the region at the Member State level. To achieve this general aim, two specific objectives are set. Firstly, we study wage inequality -as the main source of income for families- between productive sectors at the regional or NUTS-2 level. Following the methodology developed in the Inequality Project of the University of Texas at Austin (United States), we estimate an index of wage inequality for the NUTS-2. Second, taking the wage inequality index as the dependent variable, we estimate two multilevel regression models or hierarchical models with two-level explanatory variables: level 1 or regional and level 2 or country. These models allow us to contrast the incidence of tax and public spending policies at the Member State level in the distribution of wages or labor income

in the regions (distributive incidence analysis). To do this, we use various Eurostat databases, such as Income and Living Conditions, and the OECD's Governance database, as well as the Bank of Spain's Household Financial Survey.

Inequality in income distribution is an ever-present phenomenon that has been studied since the birth of modern economics with Adam Smith and continues to this day. In addition, inequality in income distribution has led to remarkable social and political changes throughout history (Piketty, 2014). Thus, in the last decade we can see a significant increase in governments' concern in inequality. This interest does not respond exclusively to the increases registered in the levels of inequality during the last decade (OECD, 2016), but is also motivated by the harmful socioeconomic, health and political effects that inequality causes. First and obviously, inequality in income distribution has negative effects on the economy. Various studies show a negative correlation between inequality in income distribution and economic growth (Cingano, 2014; Dabla-Norris et, al. 2015; Sánchez & Pérez-Corral, 2018; Stiglitz, 2021). Increases in inequality levels are associated with reductions in job creation in SMEs (Doerr et al., 2021), higher absenteeism (Wilkinson & Pickett, 2009) and lower productivity (Stiglitz, 2012). In addition, increases in inequality levels cause a loss of productive investment and productivity in the economy (for example, De Nardi, 2004; OECD, 2015, 2016), as well as greater instability financial (Rajan, 2011).

For example, in the context of the OECD, it is estimated that for every three units of growth in income inequality distribution, measured by the Gini index, the country will suffer an annual loss of 0.35% of potential economic growth for 25 years. This implies a future loss of 8.5% of economic growth after 25 years (OECD, 2015). In this way, the increases in inequality have subtracted more than 10 percentage points in some OECD countries such as Mexico or New Zealand, while in others such as Sweden, Finland or the United Kingdom potential economic growth has been reduced by a fifth (Cingano, 2014). In the context of the EU, Sánchez and Pérez-Corral (2018) have revealed a negative correlation between the annual per capita GDP growth and the Gini Index relative to disposable income for the period 2005-2014. On the contrary, reducing these disparities in income distribution fosters economic growth. Its reduction in the Thirty Glorious (1950-1980) allowed a robust and sustained growth over time (Piketty, 2019; Stiglitz, 2021). The importance of inequality was also pointed out by the Nobel Prize winner Amartya Sen, who defined economic inequality as an unbearable loss of talent, by not allowing the achievement of the maximum possible potential of the human being (Sen, 1993).

Moreover, inequality is behind numerous pernicious effects on physical health, such as greater heart problems and higher incidence of obesity among the population, due to the preference for taste over quality in food (Banerjee & Duflo, 2012). In addition, some studies establish a positive correlation between socioeconomic level and higher economic cost and drug use (Álvarez et. al, 2004). The most unequal societies tend to suffer up to three times more mental problems than the most egalitarian societies, with a higher incidence of depression, self-esteem or anxiety problems, and higher homicide rates (Wilkinson & Pickett, 2009, 2019).

In turn, inequality in income distribution causes a series of social problems, such as greater conflict in the most unequal neighborhoods (Kelly, 2000), increased drug use, higher rates of school dropout, lower educational level in these areas (Wilkinson & Pickett, 2009, 2019), as well as less participation in political life in the poorest areas (Filetti, 2016). All this is accompanied by infant mortality rates that are up to three times higher than in the most egalitarian societies (Kawachi et al., 1997). For example, in England for the period 2003-2018 it was estimated that one in three premature deaths could be a consequence of socioeconomic inequality (Lewer et al., 2020). Ultimately, increases in economic inequality result in lower life expectancy for the general population with fewer resources (Marí-Klose, 2013). Thus, in cities like Barcelona, an estimated 11-year difference in life expectancy between the richest neighborhoods and the poorest neighborhoods (Agència de Salut Pública de Barcelona, 2017). In other words, the persistence of income inequality represents a threat to the sustainability of social welfare because it prevents a true social promotion of minors from families with lower incomes (Martín and Salido, 2019). All this prevents a true equality of opportunities and, therefore, a better quality of life. Additionally, income distribution has a gender component and is the cause of horizontal inequalities, since income inequality affects women more deeply than men (Martín & Salido, 2019).

Finally, increases in inequality in income distribution have produced increases in political and economic instability (OECD, 2015; Stiglitz, 2021). In Spain, a recent Bank of Spain report identifies inequality in income distribution as one of the main challenges facing the Spanish economy in the coming years, due to COVID-19 and its previous structural persistence (Banco de España, 2021). In Spain there has been a notable increase in inequality in income distribution because of the 2008 economic crisis. Thus, the Gini Index of disposable income has gone from 0.319 in 2007 to 0.330 in 2019, while in the EU- 28 the values between 2007 and 2019 have remained practically constant, around 0.306 (Eurostat, Income and living conditions). However, the European Commission (2018) considers these levels of inequality "really high".

More concretely, this work studies the evolution of inequality in wages distribution in the different sectors in the European regions between 2005 and 2018. Differences in wages distribution respond to regional differences but also to the dissimilar productive specializations within sectors between EU regions. We begin by measuring inequality in the wage distribution by using the Theil-decomposition. This methodology distinguishes between intra-regional inequality and interregional inequality. Intra-regional inequality measures, within a region, inequality in wages between the different sectors (i.e., determined by the sectorial specialization in the region). Interregional inequality measures, within a particular sector, inequality in wages between the EU regions (i.e., determined by regional inequality).

Once we have a Theil-measure (Conceição and Galbraith,2000) of inequality in wages distribution across EU regions, focusing on 2018 and by means of multilevel analysis, we study how this measure of wage inequality is affected by the public expenditure and the tax structure in those regions, as well as by the percentage of population with tertiary education and the political and legal stability in the region. Preliminary results suggest that crucial disparities in the Theil index are due to interregional inequality, that is, inequalities in wages -of the same sector- between regions seem more determinant than inequalities in wages -among sectors- within the region. Moreover, increases in public expenditure and tax progressivity; as well as increases in the percentage of population with tertiary education and political and legal stability, reduce wages inequality among EU regions.

References:

Agència de Salut Pública de Barcelona (2017). *La salut a Barcelona 2017*. Retrieved in may 2021 from: https://www.aspb.cat/wp-content/uploads/2018/11/Informe-Salut-2017-web.pdf

Álvarez, M. A., Bayle, M. S., García, C. G., & Martín, R. M. (2004). *Nivel socioeconómico y consumo de recursos sanitarios en atención primaria*. https://doi.org/10.1016/S1695-4033(04)78391-5.

Banerjee, A., &Duflo, E. (2012). *Repensar la pobreza: un giro radical en la lucha contra la desigualdad global*. Taurus.

Banco de España (2021). *Informe anual 2020*. Retrieved in may 2021 from: https://www.bde.es/bde/es/secciones/informes/Publicaciones_an/Informe_anual/

Cingano, F. (2014). *Trends in income inequality and its impact on economic growth.* https://doi.org/10.1787/5jxrjncwxv6j-en

Conceição, P. and Galbraith, J.K. (2000). Constructing Long and Dense Time-Series of Inequality using the Theil Index. Eastern Economic Journal, 26(1), 61-74.

Dabla-Norris, E., Kochhar, K., Suphaphiphat, N., Ricka F., and Tsounta, E. (2015). *Causes and Consequences of Income Inequality: A Global Perspective. IMF Staff Discussion Note, 15/13.* Washington: International MonetaryFund. Retrieved in february 2021 from: https://www.imf.org/external/pubs/ft/sdn/2015/sdn1513.pdf

De Nardi, M. (2004). Wealth inequality and intergenerational links. *The Review of Economic Studies*, *71*(3), 743-768. DOI: 0034-6527/04/00300743$02.00.

Doerr, S., Drechsel, T., & Lee, D. (2021). Income Inequality, Financial Intermediation, and Small Firms. *BIS WorkingPapers*, *944*. Retrieved in june 2021 from: https://www.bis.org/publ/work944.pdf

European Commission (2018). *Country Report Spain 2018 Including an In-Depth Review on the prevention and correction of macroeconomic imbalances SWD(2018) 207 final.* Retrieved in may 2021 from: https://ec.europa.eu/info/sites/default/files/2018-european-semester-country-report-spain-es.pdf

Filetti, A. (2016). Participating unequally? Assessing the macro-micro relationship between income inequality and political engagement in Europe. *Partecipazione e conflitto*, *9*(1), 72-100. https://doi.org/10.1285/i20356609v9i1p72

Kawachi, I., Kennedy, B. P., Lochner, K., & Prothrow-Stith, D. (1997). Social capital, income inequality, and mortality. *American journal of public health*, *87*(9), 1491-1498.https://doi.org/10.2105/AJPH.87.9.1491

Kelly, M. (2000). Inequality and crime. *Review of economics and Statistics*, *82*(4), 530-539.https://doi.org/10.1162/003465300559028

Lewer, D., Jayatunga, W., Aldridge, R. W., Edge, C., Marmot, M., Story, A., and Hayward, A. (2020). Premature mortality attributable to socioeconomic inequality in England between 2003 and 2018: an observational study. *The Lancet Public Health*, *5*(1), e33-e41. https://doi.org/10.1016/S2468-2667(19)30219-1

Marí-Klose, P. (2013). Desigualdad y pobreza en las sociedades contemporáneas. En Miranda Aranda, M. (Director). *Aportaciones al trabajo social*. (pp 57-97). Universidad de Zaragoza.

Martín, M. and Salido, O. (2019). Evolución reciente de la desigualdad económica en términos de rentas y riqueza. *Oxfam Intermón.* Retrieved in november 2020 from: https://cdn2.hubspot.net/hubfs/426027/Oxfam-Website/OxfamWeb-Que-Hacemos/Oxfamweb-Desigualdad-Como-lo-Hacemos/dominio4_economia.pdf

OCDE. (2015). *In it together: why less inequality benefits all*. Retrieved in march 2021 from: http://www.oecd.org/social/in-it-together-why-less-inequality-benefits-all-9789264235120-en.htm

OCDE. (2016). *The Productivity-Inclusiveness Nexus.* Retrieved in November 2020 from: http://www.oecd.org/inclusive-growth/publications/The-Productivity-Inclusiveness-Nexus-Preliminary.pdf

Piketty, T. (2014). *El capital en el Siglo XXI.* Fondo de Cultura Económica.

Rajan, R. G. (2011). *Fault lines: How hidden fractures still threaten the world economy*. Princeton University press.

Sánchez A., and Pérez-Corral A.L., (2018). Government Social Expenditure and Income Inequalities in the European Union. *Review of Public Economics*, 227(4), 133-156. DOI 10.7866/HPE-RPE.18.4.5.

Sen, A. (1993). *Inequality reexamined*. Oxford: Clarendon-Press.

Stiglitz, J. (2012). *El precio de la Desigualdad*. Taurus.

Stiglitz, J. (2021). *Reescribir las reglas de la economía europea: propuestas para el crecimiento y la prosperidad compartida.* Antoni Bosch.

Wilkinson R., &Pickett R. (2009). *Desigualdad: un análisis de la (in)felicidad colectiva*. Turner.

Wilkinson, R., &Pickett, K. (2019). *Igualdad: cómo las sociedades más igualitarias mejoran el bienestar colectivo*. Turner.

Keywords: (máximum 6 words) Income inequality, inequality indicators, public policies, economic policy, European Union, multilevel models.

JEL codes: J31