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Income Inequality in Transition. New Results for Poland Combining Survey and Tax Return Data

We re-examine the evolution of income inequality in Poland in the process of post-socialist transition focusing on the previously neglected problem of under-coverage of top incomes in household survey data. Multiple statistical techniques (Pareto imputation, survey reweighting, and microsimulation methods) are applied to combined household survey and tax return data in order to obtain top-corrected inequality estimates. We find that the top-corrected Gini coefficient grew in Poland by 14-26% more compared to the unadjusted survey-based estimates. This implies that over the last three decades Poland has become one of the most unequal European countries among those for which top-corrected inequality estimates exist. The highest-income earners benefited the most during the post-socialist transformation: the annual rate of income growth for the top 5% of the population exceeded 3.5%, while the median income grew on average by about 2.5% per year. This brief summarizes the results presented in Brzezinski et al. (2019).



Introduction

There is a large economic literature documenting income inequality changes experienced by former communist countries during their post-1989 transformations. While in Russia and in many post-Soviet economies, inequality exploded during the transition, Poland is often perceived as a country where inequality grew rather moderately. However, these conclusions may be unreliable as they are based on inequality measures estimated using income data only from household surveys. Many recent studies show that surveys are plagued by significant under-coverage of top incomes, which leads to a severe downward bias of the inequality estimates. Several approaches have been proposed to correct for this problem. One of them is to combine survey data with income information taken from administrative sources such as tax returns. While top-corrected inequality estimates have been produced for many advanced economies, transition countries received little attention in this context so far. For Poland, Bukowski and Novokmet (2019) provided series of top income shares estimated using tax data. However, their estimates are constructed for gross (pre-tax) income distributed among tax units. This kind of income concept deviates considerably from the primary measure of the standard of living analysed in income distribution literature, namely disposable equivalized household income defined for the entire population. Estimates based only on tax data are not directly comparable to standard

survey-based measures, which makes it difficult to decide which of the two kinds of results are closer to the underlying inequality trends and levels.

In a recent paper (Brzezinski, Myck, Najsztab 2019), we provide the first estimates of top-corrected inequality trends for real equivalized disposable incomes in Poland over the years 1994-2015. These estimates can be readily compared with standard survey-based estimates available from Statistics Poland or from Eurostat. Our analysis re-evaluates distributional consequences of post-socialist transition in Poland. According to the standard view, the Polish transition to a market economy was an almost unqualified success story. Poland managed to achieve fast and stable economic growth (around 4.3% per year since 1994) that was at the same time broadly inclusive and shared rather equally by various social classes and segments of the income distribution. Survey-based estimates suggest that the Gini index for Poland has not increased significantly since 1989 and reached the average level among the EU countries in 2015. In contrast to the standard view, our top-corrected results show that the inequality of living standards in Poland grew sharply over 1989-2015. The adjusted Gini index grew by 4-8 p.p. to a level that ranks Poland among the most unequal European countries for which comparable estimates exist.

Data and Methods

We use data from two sources. Our survey income data comes from the representative Polish Household Survey (PHBS) conducted annually by



Statistics Poland since 1957. We use the PHBS data for 1994-2015 as the pre-1994 surveys do not contain data on individual incomes (required for our microsimulation modelling) and 2015 is the last year for which estimates of tax-based inequality measures are available. We adjust the baseline PHBS survey weights to match the census-based number of males and females by age groups (population weights). We also create a further adjusted set of weights to match the number of PIT payers in each tax bracket according to the Polish tax scale (tax weights).

Our main income variable is real equivalent household disposable (post tax and transfer) income. We obtain it from the Polish microsimulation model SIMPL applied to the PHBS data. The microsimulation model allows us to construct a gross (before PIT and employee SSCs) income distribution among the tax units, which is unavailable in the raw PHBS data. This is crucial as it is the gross income distribution between tax units to which we impute top incomes estimated using tax-based statistics.

Our second data source is the series of tax-based top income shares for Poland taken from Bukowski and Novokmet (2019). To construct top-corrected inequality estimates, we follow the methodological approach of Bartels and Metzger (2019). Using the microsimulation model applied to the PHBS data we obtain the distribution of gross income among tax units (individuals). In the next step, we use data on top income shares to estimate the parameters of a Pareto distribution for gross income distribution in terms of tax units.

Then, we replace the top 1% (or 5%) of tax units' incomes with the incomes implied by the estimated Pareto distribution. The resulting imputed gross distribution is subsequently reweighted using either population or tax weights. After imputing top incomes, we again use the microsimulation approach to compute top-corrected real equivalized household net incomes.

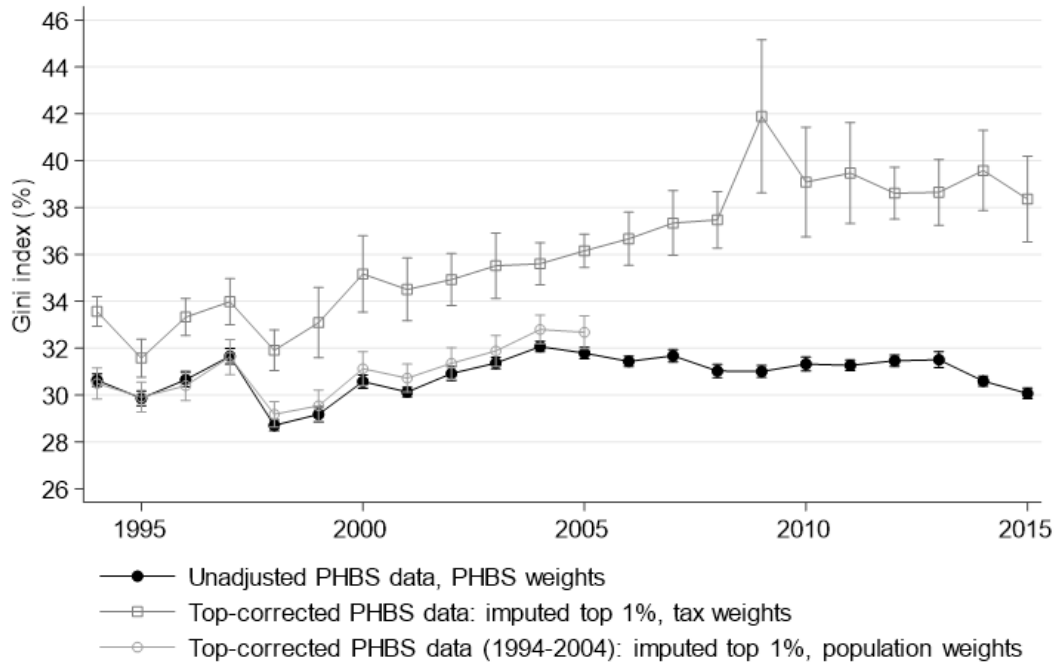
Corrected Income Inequality Trends

Figure 1 presents our income inequality estimates in terms of the Gini coefficient. For the period 1994-2005, we present two top-corrected series, which can be considered as lower and upper bound estimates of the "true" Gini. The results for this period are more uncertain as they are affected by the 2004 tax reform in Poland that introduced an optional flat tax for non-agricultural business income, which reduced the marginal tax rate for the highest income taxpayers from 40% to 19%. Research suggests that before the reform the problems of tax evasion and avoidance could have been more pronounced in Poland and some of the top incomes were unreported or under-reported. The upper bound series on Figure 1 corrects for the possible higher tax evasion and avoidance before 2005.

The unadjusted Gini series suggests that income inequality in Poland was rather stable over 1994-2015. On the other hand, our top-corrected series point to a very different story. Until 2005, our two correction procedures show similar inequality



Figure 1: The Gini index for Poland, 1994-2015: unadjusted vs top-corrected estimates



Note: Vertical lines show 95% confidence

trends, but somewhat different levels. After 2005, our corrected series shows systematic and high divergence between unadjusted and top-corrected Ginis ranging from 4 to 8 p.p. The top-corrected Ginis increase in the range from 14 to 26% over 1994-2015. While according to the unadjusted data Poland is only moderately unequal, the comparison of top-corrected estimates shows that in 2015 Poland has higher level of income inequality than even high-inequality EU countries such as Germany, Spain or UK.

We also show that each percentile of the disposable income distribution in Poland saw income increases in absolute terms between 1994 and 2015. This implies that on average the incomes of all social groups increased during the transition

to market economy. However, these gains were shared unequally. According to our adjusted estimates, the cumulative growth in real income over 1994-2015 for the top 1% of Poles reached 122-167%, while for the bottom 10% the corresponding number is at most 57%.

Redistribution and Progressivity of the Tax System

We also analyse how our correction procedures affect measures of redistribution and progressivity of direct taxation (income taxes, employees' mandatory social security contributions, and health insurance). The top-corrected estimates show that the percentage reduction in the Gini index due to social insurance contributions and PIT has fallen from 19.2% in 1999 to 11.6% in 2015.



While the unadjusted series suggests that the progressivity of the Polish system of PIT and social insurance contributions has decreased only mildly over time, the top-corrected series points to a much steeper fall, especially during 2005-2009. Without the top-correction, the progressivity in 2015 is overestimated by 2.3 p.p. (or by 40%). Much of the decline in tax progressivity over 2005-2009 is due to the reduction from three PIT brackets and marginal tax rates to just two brackets and rates (18% and 32%) in 2009. Even in terms of the unadjusted data, Poland ranks in the recent years as the country with lowest PIT and SICs progressivity in the EU.

Conclusion

Our recent paper on estimating the top-corrected measures of income inequality shows that while Poland was already a relatively unequal country in the early 1990s, it has become one of the most unequal European countries (not including Russia) among those for which comparable estimates exist. The results have important implications for the assessment of the distributional consequences of post-socialist transformations or modernization processes in emerging countries. They indicate that using income tax data and imputation or reweighting techniques to account for the problem of missing top incomes in survey data can significantly alter

the conclusions about income inequality levels and trends. More reliable inequality estimates would contribute not only to a better understanding of economic transformation and modernization processes but could also shed some light on recent political turmoil in many transition and emerging countries (such as Turkey, Hungary or Poland). As suggested by some recent research, the growing distributional tensions in emerging countries of Eastern Europe and Central Asia may be associated with more distrust in governments and an increased propensity to vote for radical political parties.

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References

- Bartels, C., Metzger, M. (2019). An integrated approach for a top-corrected income distribution. *The Journal of Economic Inequality*, 17(2), 125-143.
- Brzezinski M., Myck M., Najsztub M. (2019), Reevaluating Distributional Consequences of the Transition to Market Economy in Poland: New Results from Combined Household Survey and Tax Return Data. IZA DP No. 12734.
- Bukowski P., Novokmet F. (2019), Between Communism and Capitalism: Long-Term Inequality in Poland, 1892-2015. CEP Discussion Paper No 1628 June 2019.





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