Are firms effects driving inequality in Brazil?

- formal and top earnings in matched employer-employee records

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The vast majority of the empirical literature in developing countries on income distribution is based on household surveys. Brazil established this tradition during the early 1970s just after the release of the Demographic Census microdata. Recently, a series of papers have documented inequality based on Personal Income Tax (PIT) records. However, establishment-level administrative records are also available in Brazil, but have rarely been used in studies of income inequality. RAIS (*Registro Anual de Informações Sociais*) is a matched employer-employee data that gathers around 30 million observations on workers per year over the last two decades. RAIS depicts formal employment dynamics and wage differentials and is a powerful tool that may complement the evidence presented by other data sources.

MAIN FINDINGS:

Changes in earnings distribution in the formal sector share some of the trends observed in household surveys, in particular, a marked fall in inequality between 2001 and 2014.

In 2015, schooling explained 32.8% of the overall formal earnings inequality.

The contribution of firms' specific effects are even more important, explaining more than 64% of the total inequality for each year in the data.

Firms also seems to drive the overall inequality in developed countries such as the U.S and Germany.

This work documents the evolution and the main determinants of earnings inequality in the Brazilian formal sector from 1994 to 2015 using RAIS.

We plot growth incidence curves and Lorenz curves over the period of analysis, and calculate the main inequality indexes used in the literature such as earnings ratios across different percentiles in the individual earnings distribution, the Gini index and the Theil indexes. We discuss the role of wages, employment, missing values among other measurement issues. We also compare these results using RAIS with broader household surveys that present somewhat similar trends. For example, the Gini of labour earnings in RAIS fell 12.5% between 1995 and 2015, while the concentration index obtained with PNAD survey fell 19.3% in the same period.

Breaking-down inequality - Standard inequality decompositions based information theory help us to understand the main determinants of formal earnings dispersion. This includes workers' characteristics (such as gender, race, age, education and spatial location) and firms' characteristics (sector of activity, firm size, legal nature, etc.). In general, the results indicate the predominant role played by the "within" component in explaining the total inequality, for the entire historical series of 1994-2015. However, looking at the "between" effect for the educational categories, we observe a relatively higher contribution of this attribute. For instance, in 1994, schooling explained 24.1% of the total inequality measured by the J-Divergence index, while in 2015 this statistic reached 32.8%.

Similarly to what we found for several individual workers' characteristics above, the between-within decomposition for firms' characteristics shows a predominant power of the "within" component in determining the total inequality. Nonetheless, when we look at a highly disaggregated level by considering a firm fixed effect (i.e., each firm being a category itself which consumes quite a lot of degrees of freedom), the results show a remarkable contribution of individual firms. For the 1994 to 2015 period, the contribution of firms' specific factors explained around 65% of total inequality in each year considered. In 2015, the portion of the total inequality measured by the J-Divergence index explained by the between component reached 64.7%.

Taken together, our findings suggest that, among several workers' characteristics, the differences in schooling between groups were a primary factor in explaining total inequality in the Brazilian formal labour market. However, the explanatory power of firms fixed effects is even more pronounced, playing the major role in determining labour earnings inequality levels in the Brazilian formal labour market.

Inequality Changes - When one looks at the changes observed from 1994 to 2015, the explanatory power of individual firms effect to explain the fall of inequality observed is 64.5%. Applying the same type of analysis across time to different characteristics, we have also found: education (-4.3%), gender (2.55%), age (8.8%), macro-region (1.96%), sector of activity (9.92%), nature of the firm (-2.61% from 1995 to 2015) and firm size (3.06%). The specific firm-effect explains around three times more the 1994 to 2015's inequality fall than the join gross contribution of all other characteristics considered.

The other striking result is the increasing impact of education on inequality in this period. This concentration effect disappears if one a more recent period of analysis. From 2001 onwards, there is a clearer inequality downward trend and it may be advisable to also consider this period. Education explained 33.3% of the marked inequality fall observed assuming the role of the second higher explanatory power to explain inequality change. Once again, specific firm effects explain 75.9% of inequality fall occurred between 2001 and 2015. This means that the gross explanatory power of individual firms to explain inequality in the Brazilian formal labour market is almost twice the one for education. In sum, in the context of inequality change, firms also appear as the main driving variable.

Top Incomes - Besides applying between and within groups decomposition for Theil T and Theil L indexes, we use J-Divergence measures to disentangle the role played by specific categories of different variables. Unlike other data sources, RAIS does not have top coding, which permits to measure wages at the very upper tail of earnings distribution.

IMPLICATIONS ON TOP INCOMES:

In spite of overall inequality fall, the monotonic decrease of earnings growth goes only until the 90 percentile above this point the trend is reverted, which is in line with evidence based on Personal Income Tax data (see figures).

J-Divergence analysis of the role played by specific categories show that the share of inequality explained by the top 10%, 1% and 0,1% rose since 1995: 20.2%, 43.1% and 90,1%, respectively. Similarly, in spite of falling mean schooling returns, the share of inequality explained by those with high school diploma rises 29.5% in the same period.

Cumulative Growth Curve 1994 – 2015 Lower Percentiles and Top Percentiles