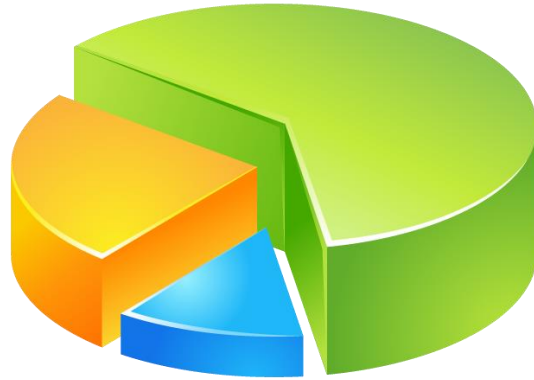


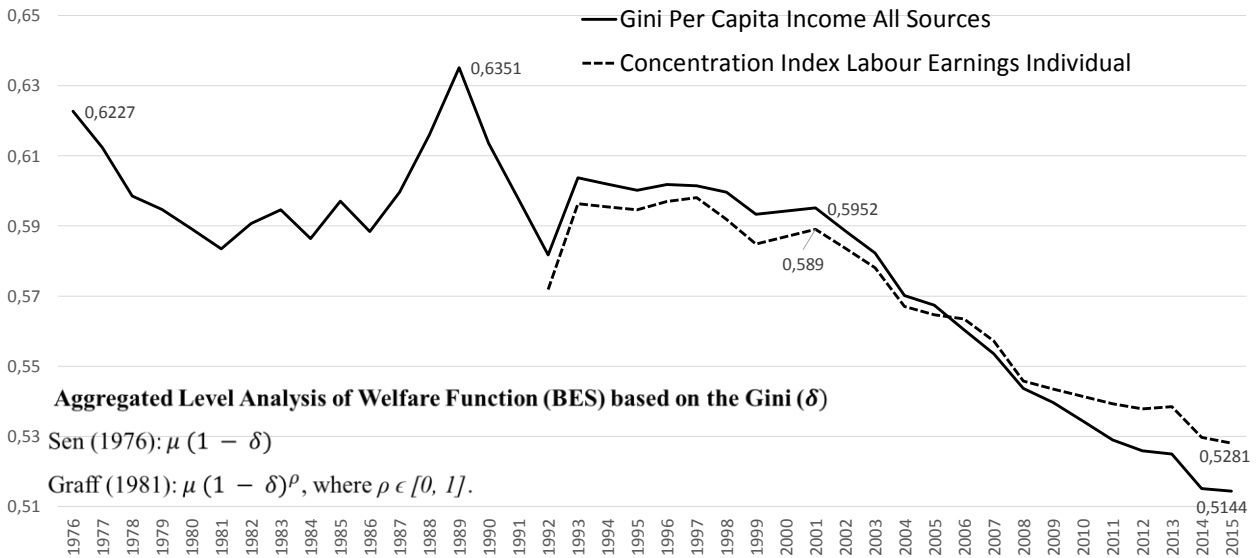
***Inequality, Growth and Social Welfare (Gini based):**

Marcelo Neri
FGV Social



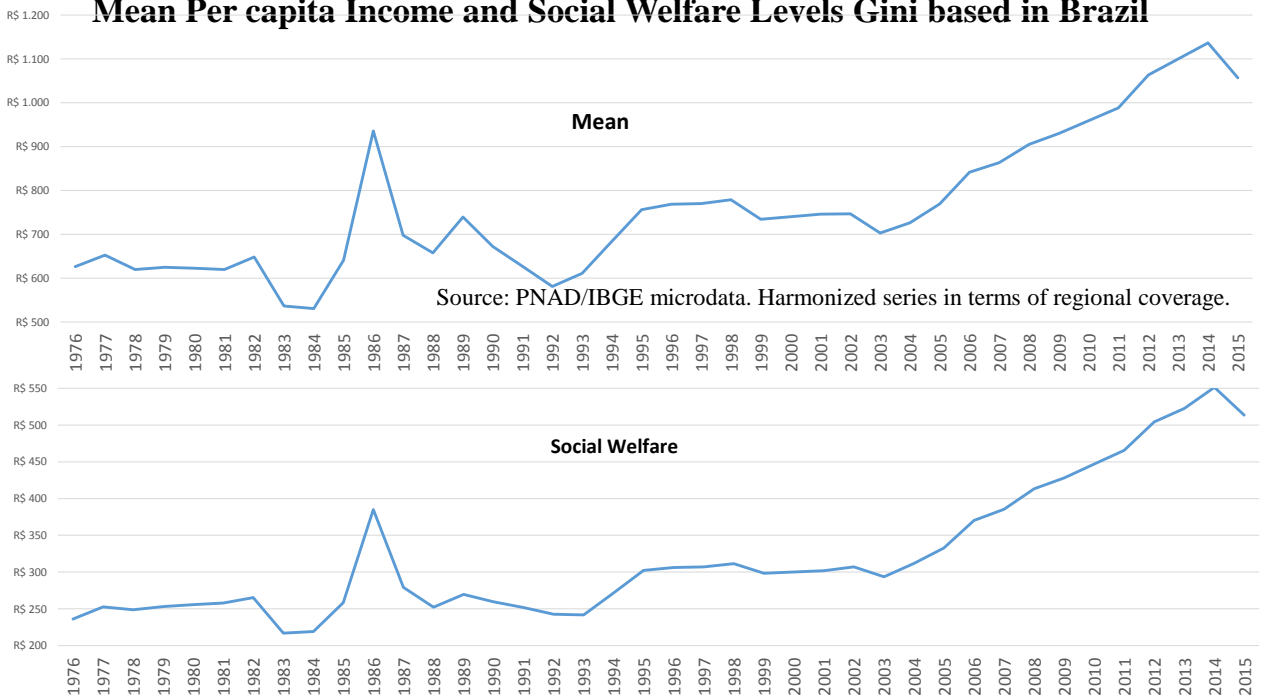
1

Inequality of per capita income (Gini) and of individual earnings (Concentration)



Source: PNAD/IBGE microdata. Harmonized series in terms of regional coverage.

Mean Per capita Income and Social Welfare Levels Gini based in Brazil



A General Social Welfare Function and the Gini Index: Level and Growth Decomposition

Following Atkinson (1970), we can write a general social welfare function denoted as:

$$W = \mu(x^*) = \int_0^\infty u(x)w(x)f(x)dx$$

where x^* is the equally distributed equivalent level of income which, if given to every individual in the society, results in the same social welfare level as the actual distribution of income.

Sen (1974) developed a social welfare function taking into account the relative deprivation suffered by the poor relative to the non-poor in the society.

If $u(x) = x$ and $w(x) = 2 [1 - F(x)]$ then applying Atkinson certainty equivalent idea

$$W_G = \int_0^\infty u(x)w(x)f(x)dx = 2 \int_0^\infty x[1 - F(x)]f(x)dx = \mu(1 - G)$$

where μ is the mean income of the society and G is the Gini Index.

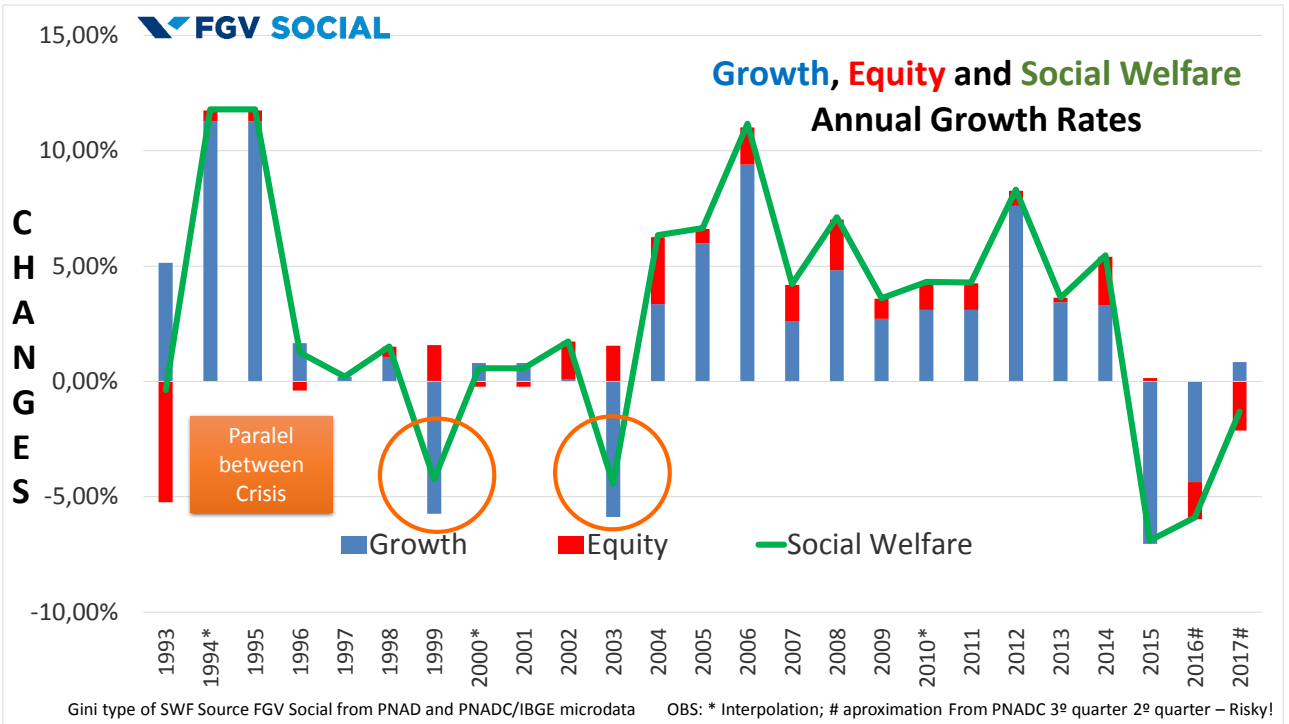
Taking logs: $Ln(W_G) = Ln(\mu) + Ln(1 - G)$

Obs: sdm of weights satisfies:

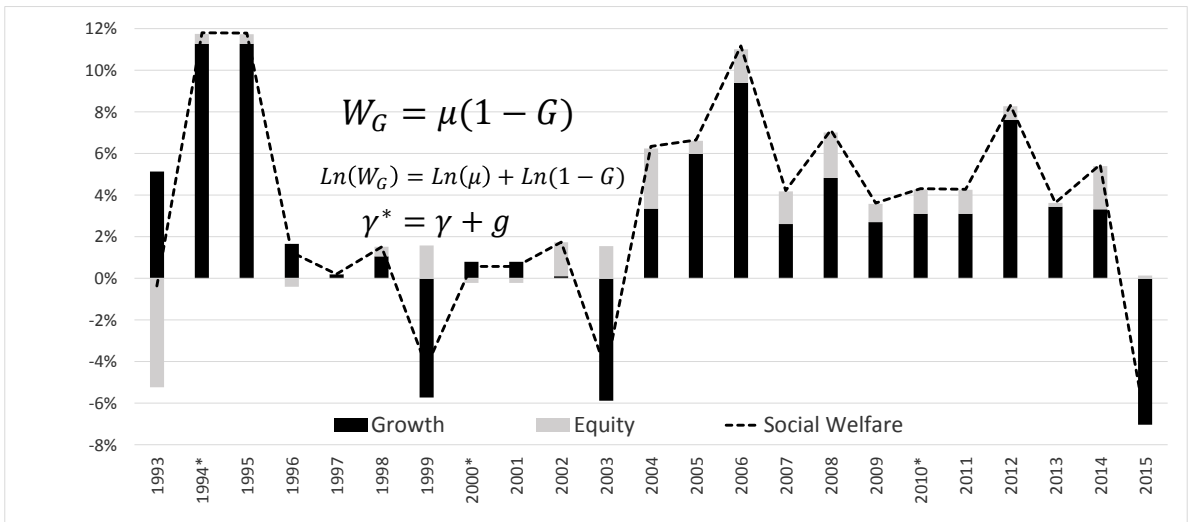
$$\int_0^\infty w(x)f(x)dx = 1$$

which on taking the first difference gives $\gamma^* = \gamma + g$

where $\gamma^* = \Delta Ln(W_G)$ is the growth rate of social welfare, $\gamma = \Delta Ln(\mu)$ is the growth rate of the mean and $g = \Delta Ln(1 - G)$ is the growth rate of equity based on the Gini. Last term will be positive (negative) if equity in equity is increasing (decreasing). Thus, there will be a gain (loss) in social welfare growth rate when equity is improving (deteriorating) opposite to the Gini itself.

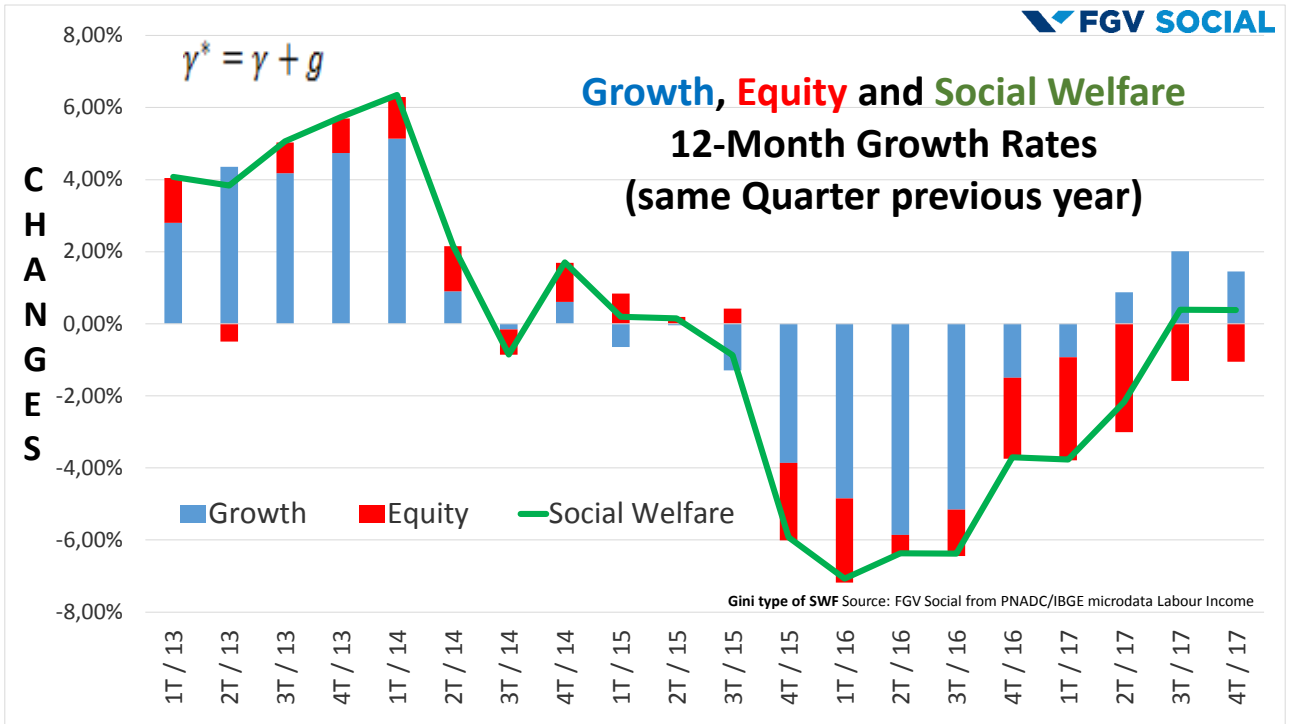


Growth, Equity (Gini) and Social Welfare Annual Growth Rates

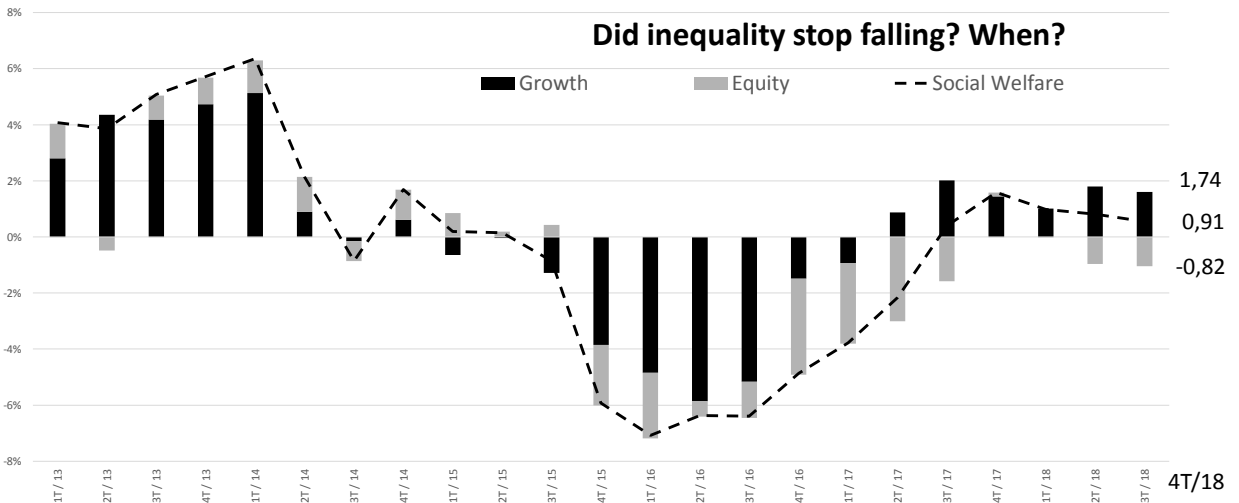


Source: PNADC/IBGE – Per Capita Income

Social welfare growth was evenly divided by falling inequality of household income, the differential of mean incomes between surveys and national accounts and real GDP growth.



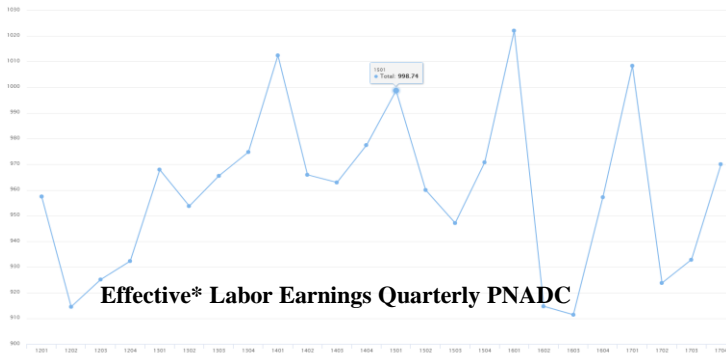
Growth, Equity and Social Welfare Annual Growth Rates by Quarters in Brazil



Source: PNADC/IBGE – Per Capita Earnings based 15 to 60 years

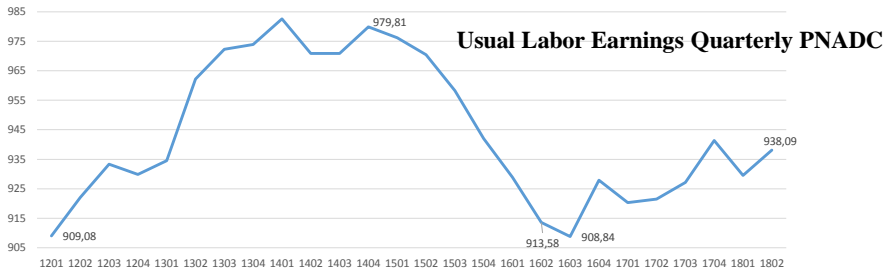
In 2014, a reversal of almost all distributive-growth trends happened, starting with the labor market, which was the main driver behind former distributive changes.

Mean

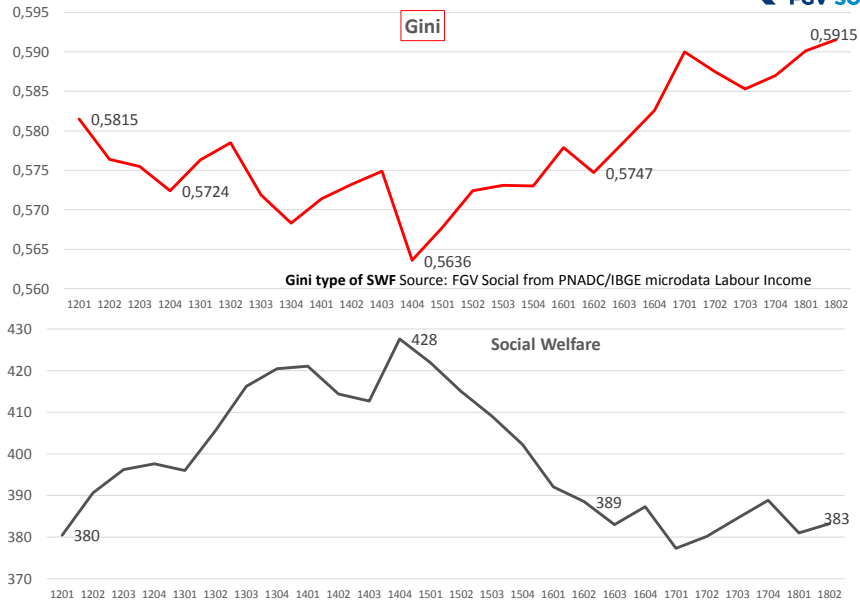


Source: FGV Social from PNADC/IBGE microdata Labour Income

Which Labor Earnings concept to use? Effective (+ Instable) or Normal (+ Traditional)?



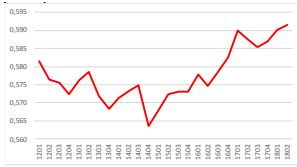
Inequality and Social Welfare



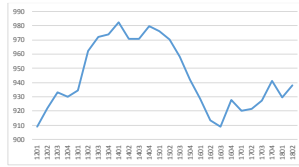
Social Welfare falls 10,6% since 2014 mean income fell (-4,3%) with the rise of inequality (4,95%) (fifty-fifty) .

www.fgv.br/fgvsocial

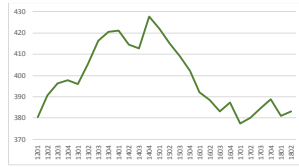
Gini
Usual Labor Earnings Quarterly PNADC



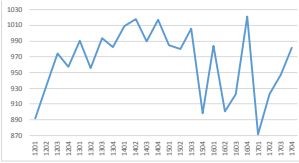
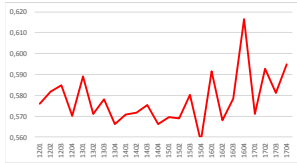
Mean Income



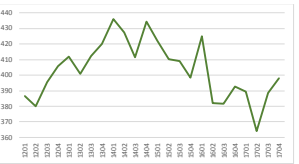
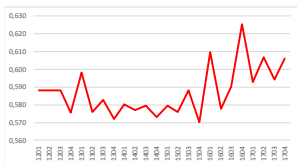
Social Welfare



Usual Labor Earnings Annual PNADC



Effective Labor Earnings Annual PNADC

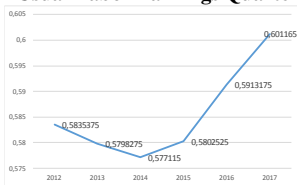


Quarterly Basis

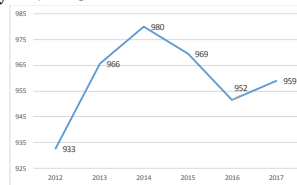
Different Measurement Instruments of the Same Thing Generate Very Different Outcomes

Source: PNADC/IBGE – Per Capita Earnings based 15 to 60 years Annual & Quarterly

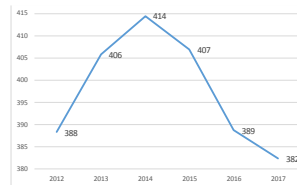
Gini
Usual Labor Earnings Quarterly PNADC



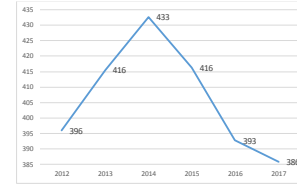
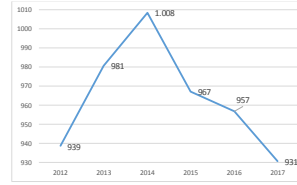
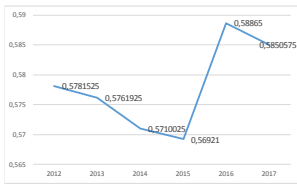
Mean Income



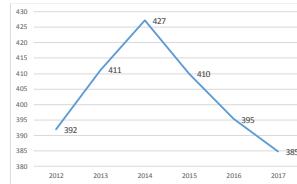
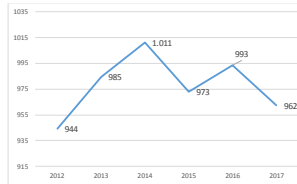
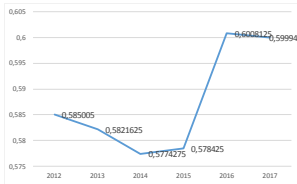
Social Welfare



Usual Labor Earnings Annual PNADC



Effective Labor Earnings Annual PNADC



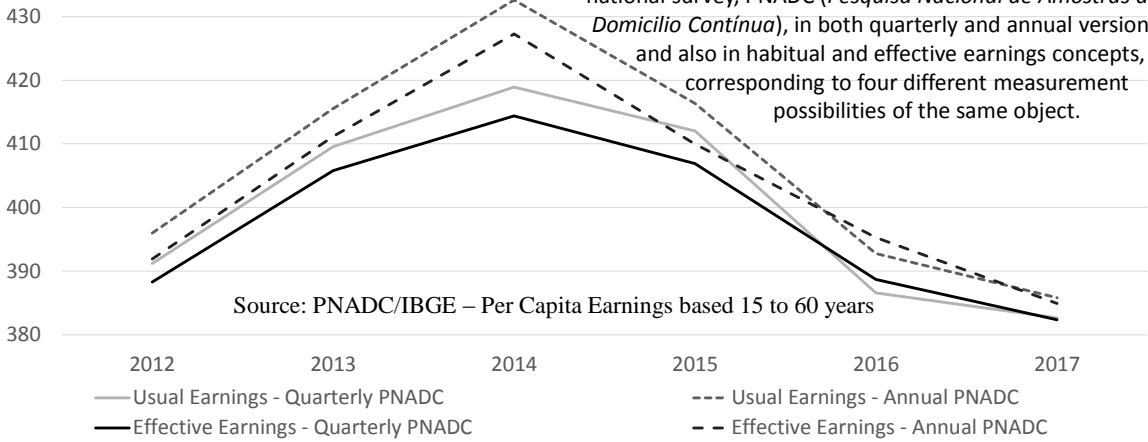
Annual Basis

Different Measurement Instruments of The Same Thing Generate Very Different Outcomes

Source: PNADC/IBGE – Per Capita Earnings based 15 to 60 years

Social Welfare Annual Levels in Brazil

In late 2015 the main Brazilian household surveys, PNAD and PME (*Pesquisa Mensal de Emprego*), were replaced by a new national survey, PNADC (*Pesquisa Nacional de Amostras a Domicilio Contínua*), in both quarterly and annual versions, and also in habitual and effective earnings concepts, corresponding to four different measurement possibilities of the same object.



It should be noted that the rise and fall of Brazilian mean earnings and their equality between 2012 and 2018 is not a robust result across all the empirical possibilities offered by the new surveys. Nevertheless, in all four cases social welfare trends follow a mountain shape, where 2012 and 2017 represent the base of the mountain and 2014 its peak