1. The recent literature on inequality with PIT tables

**Other countries**

- Personal income tax (PIT) vs. household surveys and/or national accounts: *inequality is higher than previously thought and rising in the last decades* (Piketty, 2001, Piketty and Saez, 2003, Alvaredo, 2008, Atkinson, Piketty and Saez, 2011)

**Brazil**

- Interpolation of PIT vs. national accounts and integration of PIT and PNAD sample survey: *inequality, which fell in surveys* (Medeiros, Souza and Castro, 2014a, b)


- PIT integrated to the PNAD to correct distribution and then adjusted to the total income of the national accounts: stable inequality and average growth according to national accounts (Morgan, 2017)

- PIT in 8 income brackets, opened by sources: *capital incomes explain the stability of inequality 2006-2012*, since they have a growing participation in the PIT, although with some deconcentration within filers (Medeiros and Castro, 2018)

**Several countries, including Brazil** (World Inequality Report 2018 - coordinate: Alvaredo, Chancel, Piketty, Saez and Zucman)

- Brazil (Morgan series) stable at the *high-inequality frontier* with Latin America, Middle East and Sub-Saharan Africa

- Russia, India, USA, Canada, China and Europe with inequality rising since 1980: *toward the frontier*?
Formal Labour Market in Brazil: Cumulative Growth Curve 1994 – 2015

• Lower percentiles

Formal Labour Market in Brazil: Cumulative Growth Curve 1994 – 2015

• Top percentiles

Source: RAIS microdata
Motivation

1. Look into details of Personal Income Tax (PIT) and combined surveys-PIT data 2007-15
2. The literature gave little emphasis to inequality and income growth in PIT tables.
   - Growth has direct effects on social welfare
   - It also determines the change of inequality over time.
   - 1st moment of income distribution provides valuable information on measurement issues on the 2nd moment (and vice versa).

Individual Monthly Income by Population Quantile in 2007 (R$)

Source: PNAD (National Household Survey/IBGE) and IRPF (PIT – Personal Income Tax/RFB)
### PNAD and IRPF overlap points: Inequality (Gini)

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2015</th>
<th>total var.</th>
<th>annual var.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNAD</td>
<td>0.625</td>
<td>0.582</td>
<td>-0.043</td>
<td>-0.005</td>
</tr>
<tr>
<td>Fit 0.911</td>
<td>0.698</td>
<td>0.690</td>
<td>-0.008</td>
<td>-0.001</td>
</tr>
<tr>
<td>Fit 0.900</td>
<td>0.690</td>
<td>-0.008</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Fit 0.866</td>
<td>0.690</td>
<td>-0.008</td>
<td>0.001</td>
<td></td>
</tr>
</tbody>
</table>

Source: PNAD/IBGE; IRPF/SRF and Combined databases.

### PNAD and IRPF overlap points: Mean Income (constant R$ at 2015 prices)

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2015</th>
<th>total % var.</th>
<th>annual % var.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNAD</td>
<td>1,333</td>
<td>1,521</td>
<td>14.2%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Fit 0.911</td>
<td>1,675</td>
<td>2,100</td>
<td>25.4%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Fit 0.900</td>
<td>2,107</td>
<td>25.8%</td>
<td>2.9%</td>
<td></td>
</tr>
<tr>
<td>Fit 0.866</td>
<td>2,108</td>
<td>25.9%</td>
<td>2.9%</td>
<td></td>
</tr>
</tbody>
</table>

Source: PNAD/IBGE; IRPF/SRF and Combined databases.
PNAD and IRPF overlap points:
Social Welfare (Sen 1976)

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2015</th>
<th>total var. %</th>
<th>annual var.%</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNAD</td>
<td>500</td>
<td>636</td>
<td>27.2%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Fit 0.911</td>
<td>505</td>
<td>651</td>
<td>28.9%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Across Bases</td>
<td>1.02%</td>
<td>2.41%</td>
<td>1.7%</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

+2.36%

Source: IBGE/PNAD and combined PNAD-IRPF databases


Just PIT Data

Annual real growth rate of PIT declared income per file (%)

Source: Authors with IRPF/RFB tables. Deflator: IPCA/IBGE.

Income Inequality Just within PIT has fallen

2007-2015: Gini within PIT falls 0.034 (79% of PNAD's Gini fall)
Income Distribution Within PIT – By Municipality

Summarizing Results

Static - The level of inequality measure rises when higher top incomes replace previous lower estimates based on surveys, this same exercise also increases by construction, the mean and the social welfare levels associated with it.

Dynamic - The movement of these combined estimates present a slower inequality trend fall than pure household surveys, at the same time income mean growth trends rose at a faster pace which implies higher social welfare growth rates than suggested by previous surveys estimates.

Inequality has fallen in PIT by itself as in PNAD. Inequality rise depends on datasets are combined.

If you declare you pay tax so we can use PIT for higher incomes. How about exempt incomes?
PIT growth boosted by exempt incomes

<table>
<thead>
<tr>
<th>Type of income</th>
<th>2007</th>
<th>2015</th>
<th>var.2007-2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exempt</td>
<td>21.4%</td>
<td>31.3%</td>
<td>+9.9 pp</td>
</tr>
<tr>
<td>Exclusive taxation at source</td>
<td>7.9%</td>
<td>9.8%</td>
<td>+1.9 pp</td>
</tr>
<tr>
<td>Taxable</td>
<td>70.7%</td>
<td>58.9%</td>
<td>-11.8 pp</td>
</tr>
</tbody>
</table>

Source: Authors with IRPF/RFB tables.

There is no incompatibility of incentives in over-declaring exempt incomes. In some cases, the declaration of exempt incomes may justify wealth stock without tax cost.

Sources (out of 44) that most increased were exempt incomes:

1. **Formalization** of preexisting incomes. Micro or small business owner income (+2.43 pp)
2. PIT measurement problems in financial income. Savings account income (+1.19 pp)
3. **Exempt part of retirement benefit for 65 years and over (+1.32 pp)** Choices of dependents and tax exemptions and interaction with legal & demographic trends
4. **Also Deflator differences**

Percentage of PIT filers among the population of each age group (%)

![Percentage of PIT filers among the population of each age group](chart.png)

Source: Authors with IRPF/RFB tables.