Quantitative Macroeconomics - Problem Set II

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Part I

United States - Secular Behavior of the Labor Share

1 Nationwide Net LS for 1947-2017

As discussed in class, there are different ways to account for labor share based on the National Income Account of a country. In this analyzis, I used data from the US National Income by Type of Income Account (NIPA Table 1.12 - BEA) and opted to calculated labor share including a fraction of 'Proprietor's Income' that's assumed to be part of wages [1].

Hence, my computation was as follows:

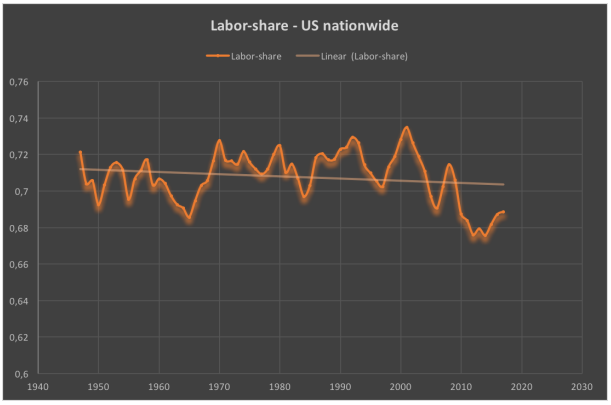
$$Y = CE + RI + CP + PI + NI + T - S$$

$$\theta_{PI} = \frac{CE}{Y - PI} \tag{1.1}$$

$$\boxed{wH = \frac{CE + (\theta \times PI)}{Y} \rightarrow \text{labor share}}$$

Data is available only from 1945 until 2017.

My result is depicted in the graph below.



American LS had an average of 0.71 over the analyzed years, with a minimum of 0.676 (2013) and a maximum of 0.735 (2001). It exhibits a slightly decreasing trend. Morover, LS has not varied significantly over the years, even though it's been

[1] 'Proprietor's Income' entry cannot be distinguish as being part of capital or labor remunerations

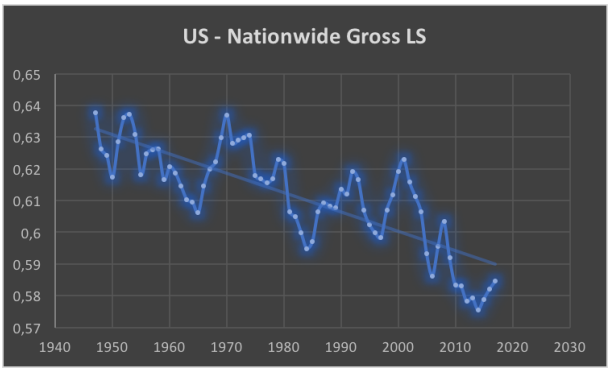
declining since 2001.

2 Nationwide Gross LS

The difference from the above calcutation is that now I used *Gross Domestic Income* instead of National Income, in order to account for depreciation.

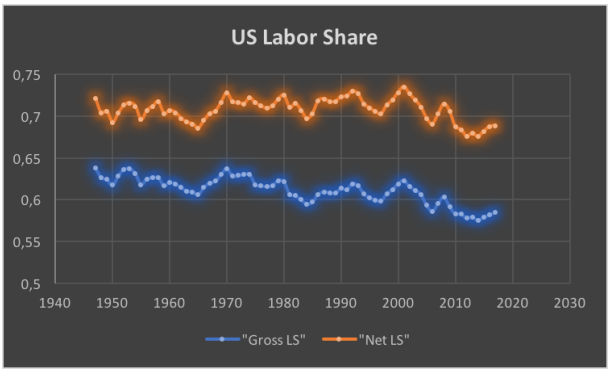
Data was taken from GDI Account NIPA Table 1.10 - BEA.

My result is depicted in the graph below.



There is a significant difference between the two measures of LS. Gross LS ehbits a decreasing secular trend for the entire period analyzed. It had an average of 0.606 over the analyzed years, with a minimum of 0.565 (2013) and a maximum of 0.629 (2001). However, its behavior is similar to the Net LS despite the fact that the latter is everywhere above (in term of share value) the former.

The graphical comparison between the two measurements is depicted below.



3 Corporate LS for 1948-2017

For the Corporate Sector, I collected data from the National Income by Sector account (NIPA Table 1.13 - BEA).

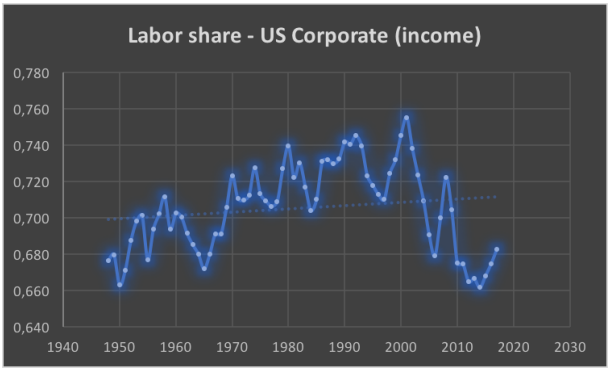
The calculation was similar as above, but there there is no proprietory income. Hence, corporate income and labor share is given by:

$$Y_{cp} = CE + CP + NI + T - S \tag{3.1}$$

$$\boxed{wH_{cp} = \frac{CE}{Y_{cp}} \rightarrow \text{corporate labor share}}$$

Data is available only from 1948 until 2017.

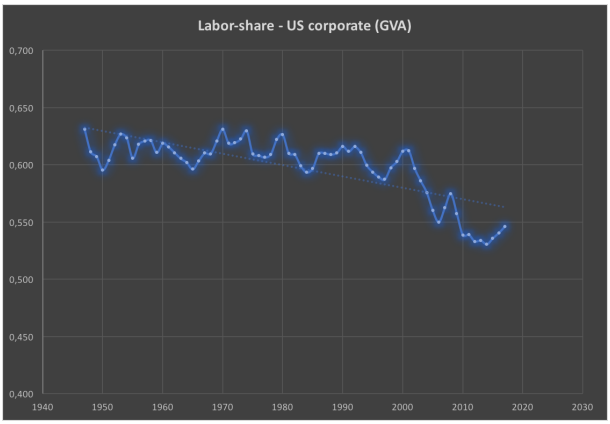
My result is depicted in the graph below.



American corporate LS had an average of 0.708 over the analyzed years, with a minimum of 0.662 (2014) and a maximum of 0.755 (2001). It exhibts a slightly increasing trend even though it has not varied significantly over the years.

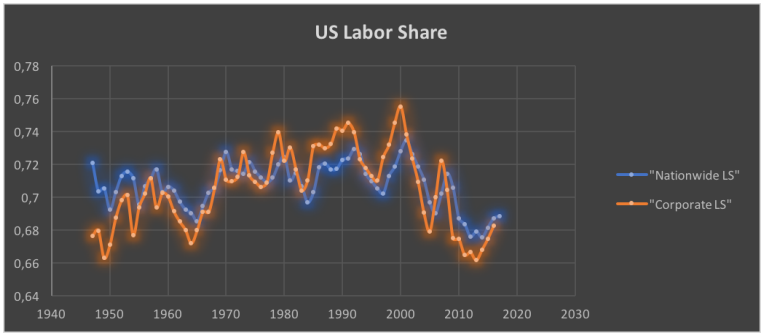
Lastly, I also computed the corporate LS based on the GVA in order to compare with the Brazilian Corporate LS - which I calculated by this method[2] - using data from the Gross Value Added of Domestic Corporate Business Account NIPA Table 1.14 - BEA

This method delivered a (not much) lower LS than the previous approach, for all the period analyzed. Results are depicted in the following graph.



Contrary to the previous method, corporate LS exhibits a slightly decreasing trend.

4 Nationwide vs. Corporate LS



American nationwide and corporate LS have been moving together over the years, even though the corporate one has had

[2] details in the next section

a slighter variance. Also, their values are close to one another.

Part II

Brazil - Secular Behavior of the Labor Share

5 Nationwide LS for 2000-2015

The Brazilian National Accounting System is not the same as the American one, and so the data specification and detailments do not always meet.

Given the available data, I followed IBGE's[3] guidelines in computing National Income (Sistema de Contas Nacionais - System of National Accounts). Brazilian GDP can be accounted for/expressed under three optics: production, consumption and income. I adopted the latter view.

By definition [4], (Income) GDP is defined as being equal to the remuneration of employees (CE), plus the total of taxes, net of subsidies (T-S), on production and imports, plus gross mixed income, plus gross operating surplus.

Gross mixed income (GMI) is the remuneration received by owners of unincorporated companies (self-employed), which can not be separately identified if it comes from capital or labor. *Gross operating surplus (GOS)*, on the other hand, is what is 'left' from GDP after subtracting from remuneration, taxes, (negative) subsidies and plus gross mixed income. In its detailments, there is a sub-category called 'Proprietor's Income' which accounts only for income received by the owner and paid by the user of a financial asset or an asset not produced, such as land.

In this sense, I treated GMI as the 'Proprietor's Income' accounting entry and GOS as the (Rental Income + Corporate Profits + Net interest and miscellaneous payments) part of the American Income Account[5].

Therefore, my computation was as follows:

$$Y = CE + GOS + GMI + T - S$$

$$\theta_{GMI} = \frac{CE}{Y - GMI} \tag{5.1}$$

$$\boxed{wH = \frac{CE + (\theta \times GOS)}{Y} \rightarrow \text{labor share}}$$

Data is available only from 2000 until 2015.

My result is depicted in the graph below.

Brazilian LS had an average of 0.448 over the analyzed years, with a minimum of 0.429 (2004) and a maximum of 0.486 (2015). Hence, LS has not varied significantly over the years, at least for the period under analysis.

[3] Brazilian Institute of Geography and Statistic

[4] Here I followed IBGE's methodology

[5] to get an equivalent to the US data

6 Corporate LS for 2000-2015

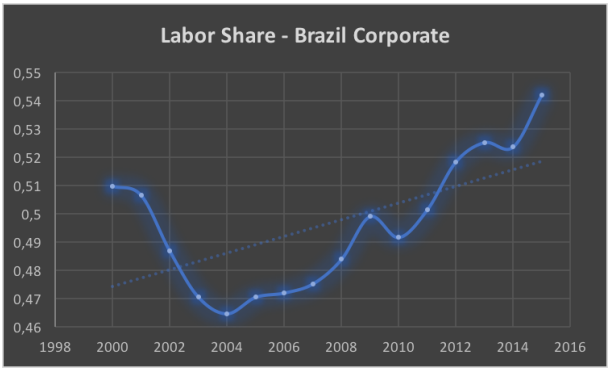
For the Corporate sector, the detailed information avaible is regarding the Gross Value Added of Corporate Business[6]. Thus, I treated Income as GVA.

GVA's detailment is similar to the GDP one, except that there is no gross mixed income. Moreover, data is split between Financial and Non-Financial Business. Hence, my computation was as follows:

$$Y_c = CE + GOS + GMI + T - S$$
$$\boxed{wH_c = \frac{CE}{Y} \rightarrow \text{labor share}} \tag{6.1}$$

Data is available only from 2000 until 2015.

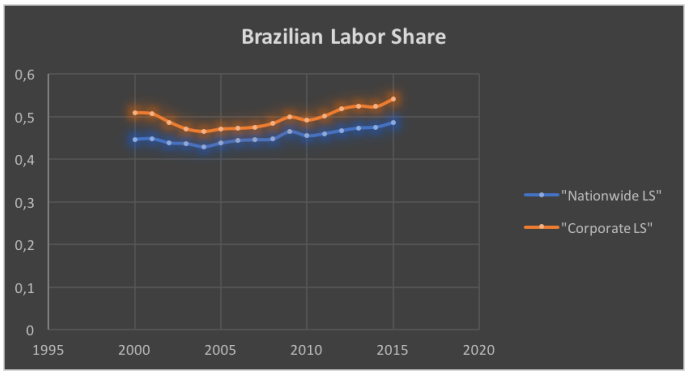
My result is depicted in the graph below.



Brazilian LS had an average of 0.495 over the analyzed years, with a minimum of 0.465 (2004) and a maximum of 0.542 (2015). LS declined from 2000 until 2014 and it's been augmenting since.

[6] unlike the US data where you can retrive information for GVA and Income of Corporate Business

7 Nationwide vs. Corporate LS



Brazilian nationwide and corporate LS have been moving together over the years. Corporate LS has been greater for all period.

Part III

US vs. Brazil - Labor Share

The following graphs present a time-series comparison between Brazilian and American LS for the period of 2000-2015.

As we can see, both nationwide and corporate labor-shares are lower in Brazil for all years.

In regarding corporate LS, the method used for calculation makes a significant difference on the comparison. When using the US-LS based on National Income, the two countries' labor share are 'far apart': US-LS is significantly higher for all observations. However, when using the same approach to calculate both corporate LS (based on GVA), the magnitude of difference is lower. Also with this method, Brazilian and American LS have approached each other.