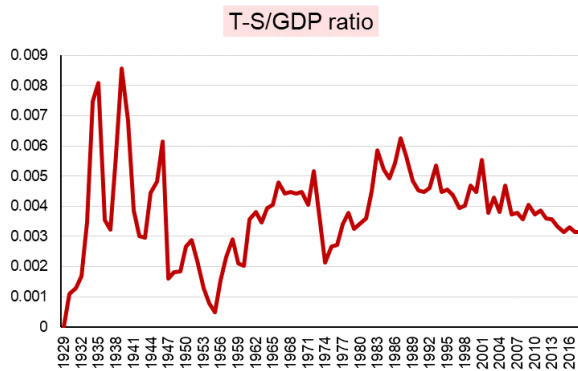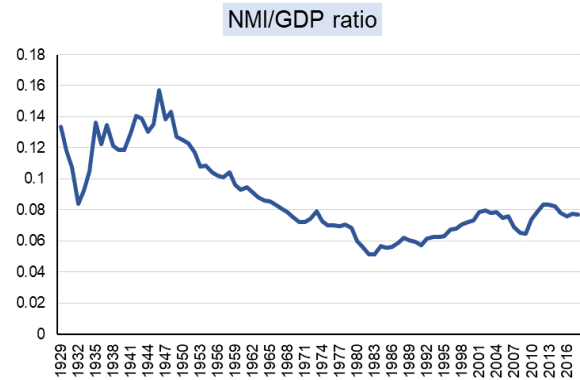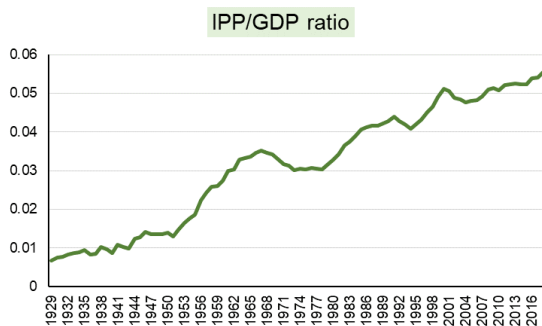## Question 1. Secular behaviour of the labor share.

1. The plots for the proposed ratios are as follow:

Source: Author's elaboration with data from the NIPA.

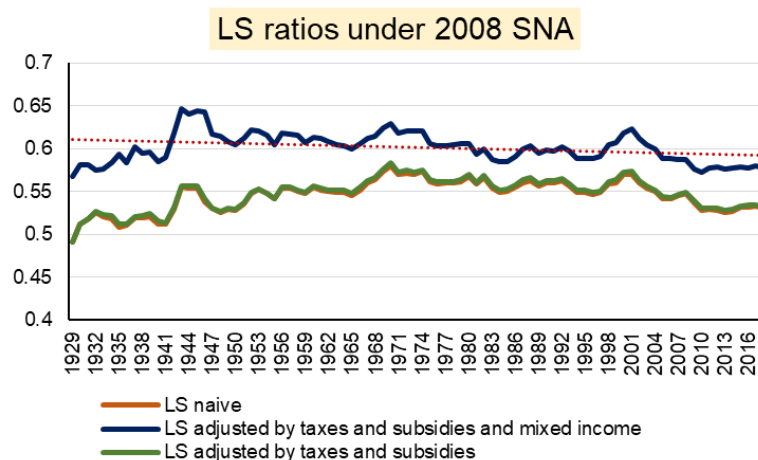Source: Author's elaboration with data from the NIPA.

Source: Author's elaboration with data from the NIPA.

As we can see, the T-S/GDP ratio has a larger volatility given that taxes and subsidies depend, generally speaking, on the party which is in the government and the assignation it does. This fact makes this numerator quite volatile and its tendency has been negative since 1985. However, NMI/GDP ratio presents also big movements at the beginning of the series until 1947 (something similar happens to T-S/GDP ratio), it might be explained by convulsive social conditions at that moment: The Great Depression in 1929 and the end of the second World War (in 1945). The NMI/GDP ratio graph exhibits a negative tendency until 1983 and then it is reverted but without achieving levels as high as in the years before to 1947. Finally, there is a positive tendency for the IPP/GDP ratio as a result of the continuous and increasing effort made by the society in innovation.

2. The following graph collects the labor shares (LS) which can be computed by correcting for different variables which are unlikely capital:
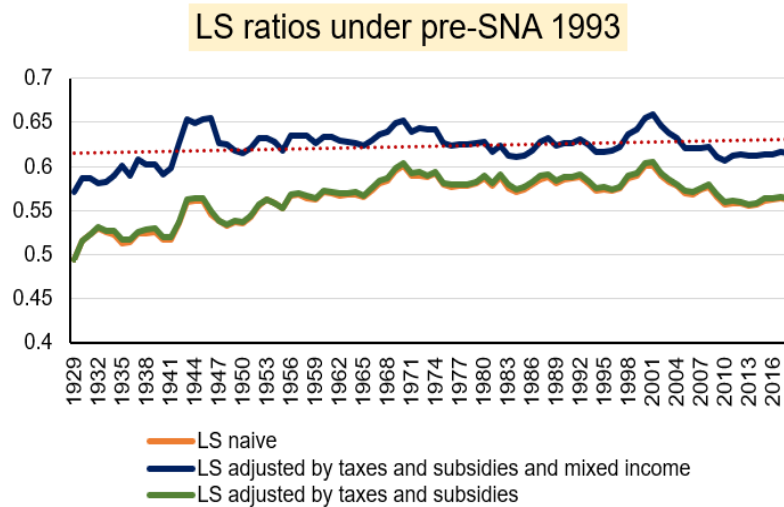

Source: Author's elaboration with data from the NIPA.

The evolution of the three labor shares is quite similar. In fact, there is almost no different between LS adjusted by taxes and subsidies and the one which is naïve (it might be because since taxes and subsidies are a reduced proportion inside the GDP). The largest change comes from the correction made by the mixed income variable although this adjustment does not involve a change in the tendency (this adjustment only increases slightly the labor share). The tendency line has moderately negative slope during the full period.

Question 2. The effects of IPP capitalization.


LS ratios under pre-SNA 1993
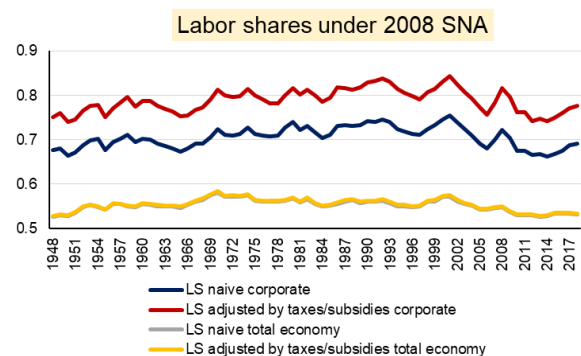
Source: Author's elaboration with data from the NIPA.

Comparing this graph with the labor shares under the old normative and the previous one under the 2008 SNA, we can observe that the labor shares decrease with respect to the labor shares calculated under the normative pre-SNA 1993. This idea is in line with Aum, Koh and Santaeulalia-Llopis (2018)[1] since the labor share goes down under the current normative but the tendency vanishes when IPP was considered an expenditure in the old one (as we can see in the graph for this question, the tendency line is flat).

Question 3. The corporate labor shares.

For this exercise, we need to focus only on the corporate sector so I am considering that there is no mixed income as they were in the case of total economy. Thus, I have only computed the naïve labor share and the one adjusted by taxes and subsidies. I have not been able to find the IPP exclusively for the corporate sector so I have used the private IPP as proxy for IPP corporate (although it is probably much larger than the IPP only for the corporate sector). This variable is needed to redo exercise 2 for corporate sector.
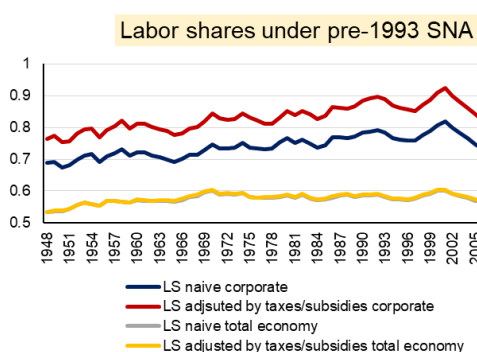
Labor shares under pre-1993 SNA

Source: Author's elaboration with data from the NIPA.

Labor shares under 2008 SNA

Source: Author's elaboration with data from the NIPA.

At corporate level, the gap among the different labor shares is more remarkable than in the case of the total economy. A possible explanation for this fact could be that the proportion of taxes less subsidies with respect to the income generated by the corporate sector (around

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[1] Aum, S., Koh, D., & Santaeulalia-Llopis, R. (2018). *Growth Facts with Intellectual Property Products: An Exploration of 31 OECD New National Accounts* (No. 1029).

10%[2]) is much larger than this same proportion for the case of the whole economy (it does not attain 1%[3]). On the other hand, the fact that the labor shares reach higher levels than the total economy can be due to the contribution of compensation of employees (CE). In the case of the corporate sector, the CE is around the 70%[4] of the total income generated by the sector whilst this proportion for the case of the total economy is around 55%[5].
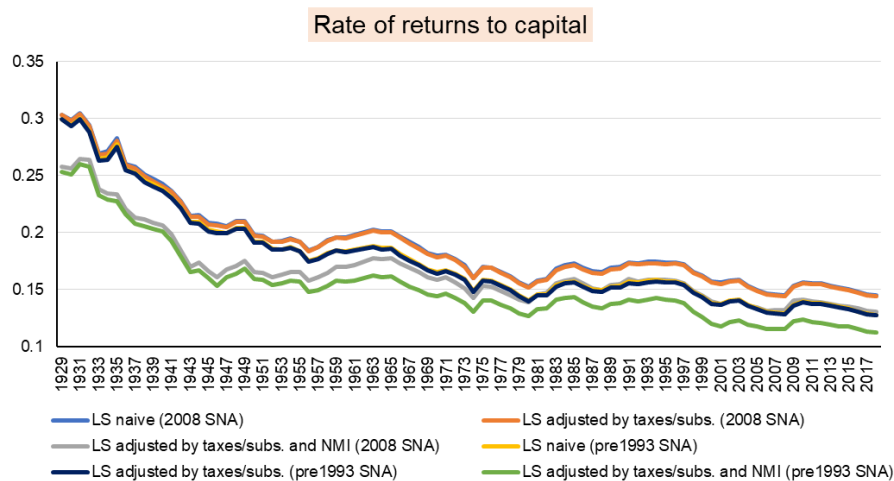
Question 4. The rate of return to capital.

In order to solve this question, the proxy for capital was total fixed assets for the economy in real terms (so we deflated them by using the corresponding deflator for fixed assets). The model was: GDP= w·h+r·k, so r·k= GPD – labor share·GDP. The following table collects the averages for the rates of return to capital under the two norms and using the labor share computed in each case:

Table 1. Averages of rate of return under the different definitions.

Averages	Under pre1993 SNA	Under 2008 SNA
LS naïve	0.17707428	0.18917831
LS adjusted by taxes/subsidies	0.176188	0.1883196
LS adjusted by taxes/subsidies and mixed income	0.152536311	0.165337546

Source: Author's elaboration with data from the NIPA.

Rate of returns to capital

Source: Author's elaboration with data from NIPA.

According to the graph, we can observe a decreasing tendency for the whole period. Moreover, it exhibits that the rate of return to capital under 2008 SNA is over the rate of return estimated by using the pre-1993 SNA. This fact might be explained ought to the IPP capitalization, that is, the GDP under the new definition is larger because of the addition of the IPP as capital and not as an expenditure (as happened in the old definition). Therefore, the numerator under the new normative is larger than the numerator under the old, obtaining a higher rate of return.

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[2] The computation is shown in the appendix at the end of the excel file.
[3] Ibidem.
[4] Ibidem.
[5] Ibidem.