Homework 1 – Lillian Haas

Quantitative Macroeconomics

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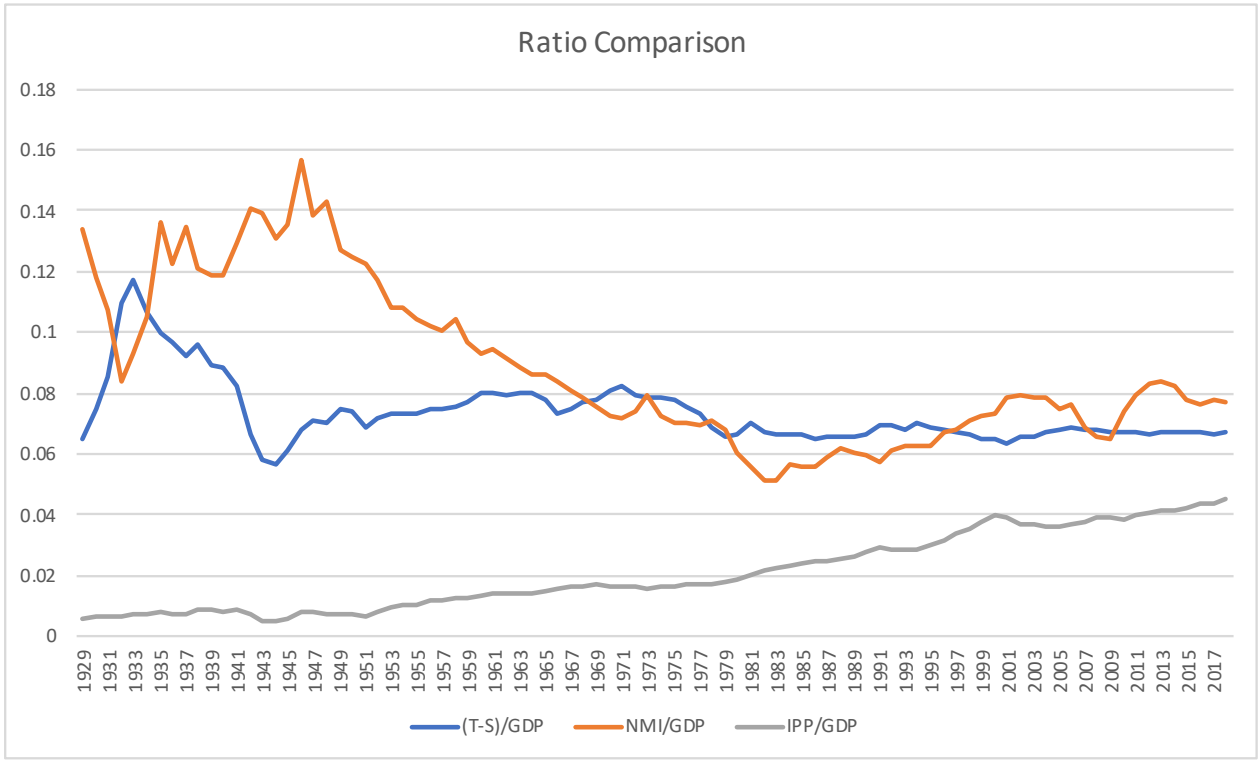
due Monday Sep 23 at 8.30am

Question 1

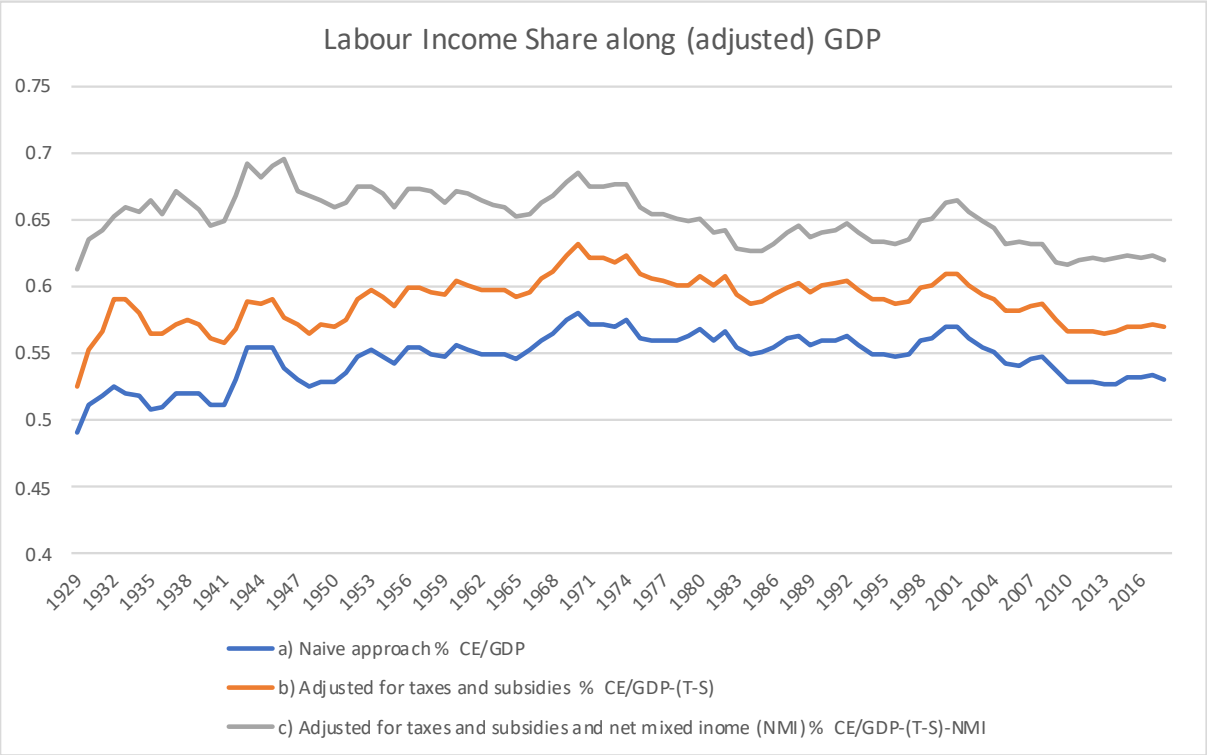
1. *Secular behaviour of the labour share*



The three ratios show the development of the individual sector throughout the documented data from 1929 until 2017. The first ratio, taxes less subsidies for the sectors production and imports, represents a share of the GDP that is created through taxes and subsidies. On one-side the share depends on the share of goods imported and produced. On the other side it depends on the tax and subsidies rates. Starting 1929 an increase and decline of 6% might relate to the market collapse of 1929 and/or the rising expenditures for world war II. Thereafter it falls till roughly 6% by 1945. From the 1950 the tax-subsidy level share varies between the range of 6-8%.
The second ratio is the net mixed income ratio (NMI). It represents the share of non-incooperated businesses. Sloping contrary to the first ratio, the curve shows a drastic fall in 1933 till 8%. Thereafter, the economy seems to grow and small businesses to sprout (economic boom) based on increasing GDP share of the sector until the 1950ies. The curve shows one peak in 1946 of roughly 16%. After the economic flourishment NMI share over GDP declines until 1983 to a ratio share of 6%. Consecutively the ratio levels off to 8% nowadays.

The IPP ratio indicates the expenditures of the economic in the field of Intellectual Property Products such as inventions, literary and artistic work. From the 1950ies on this sector massively increased from 0% towards 5% by now based on the technological rise.

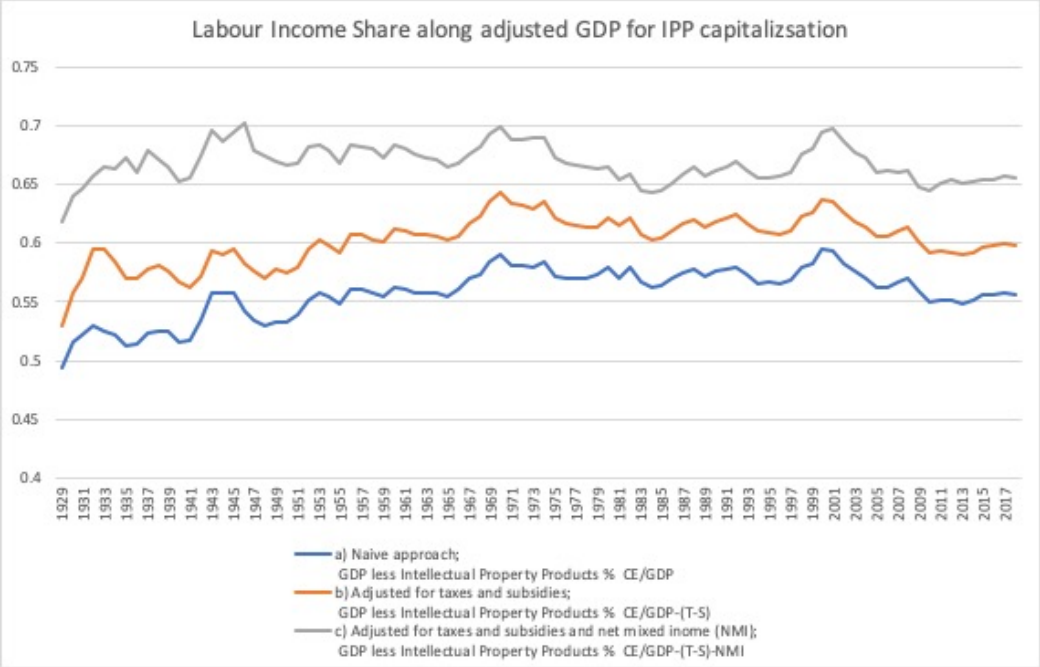
2. *Compute the economy-wide LS for the U.S.*



The three ratios indicate the share of labour income with respect to the GDP. The first approach "naive" shows the employee compensation over the GDP. The labour income share varies overtime around 50% to 57%. The second approach shows bigger values for the labour income share, because the GDP is reduced by its adjustment for taxes and subsidies. Still, the LS ratio slopes between 52% and 62%. The last approach considers besides the adjustment for taxes and subsidies the net mixed income in the GDP. This approach yields to the diverging LS shares for small and farming businesses. The last approach shows the highest LS between 60% to 70%.

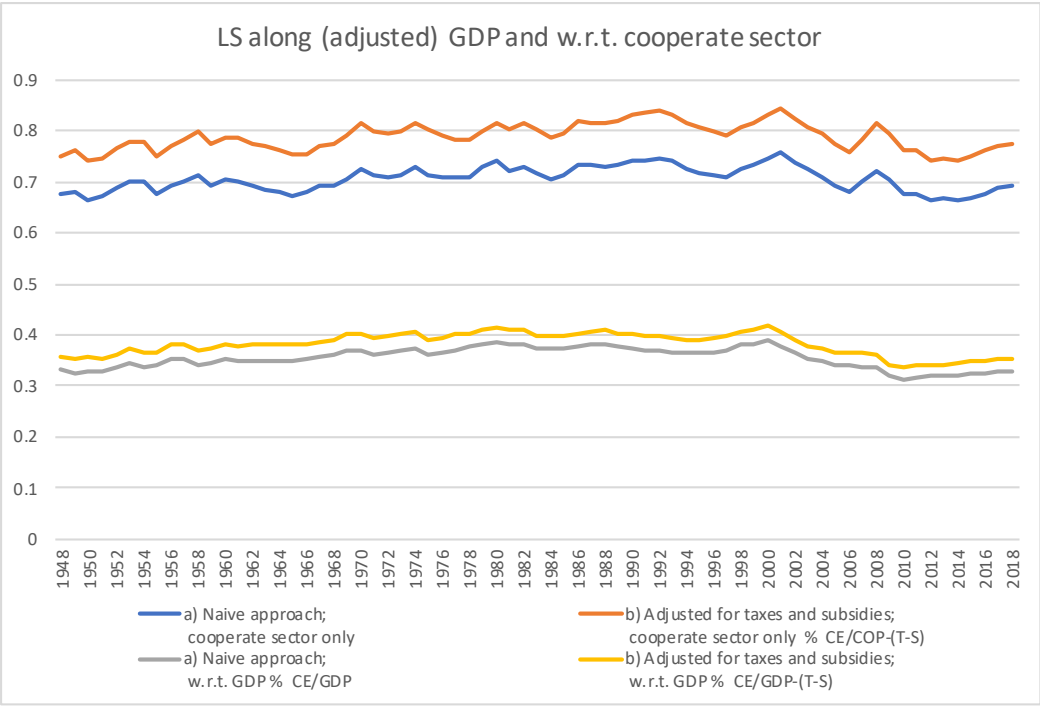
Q2. Effects of IPP capitalization

Examines the effects of IPP capitalization. By shifting Intellectual Property Products to intermediate expenditure in the 1990s, it became part of the capital balance and simultaneously increased GDP. By correcting for IPP in LS ratio, the increasing share of IPP over GDP observed in the very first graph is equalled out in the LS ratio. In comparison to Q1.2. we observe less reduction for labour income shares for the period IPP increases, namely 1950s onwards. This is self-evident as the GDP is reduced by the share of IPP.

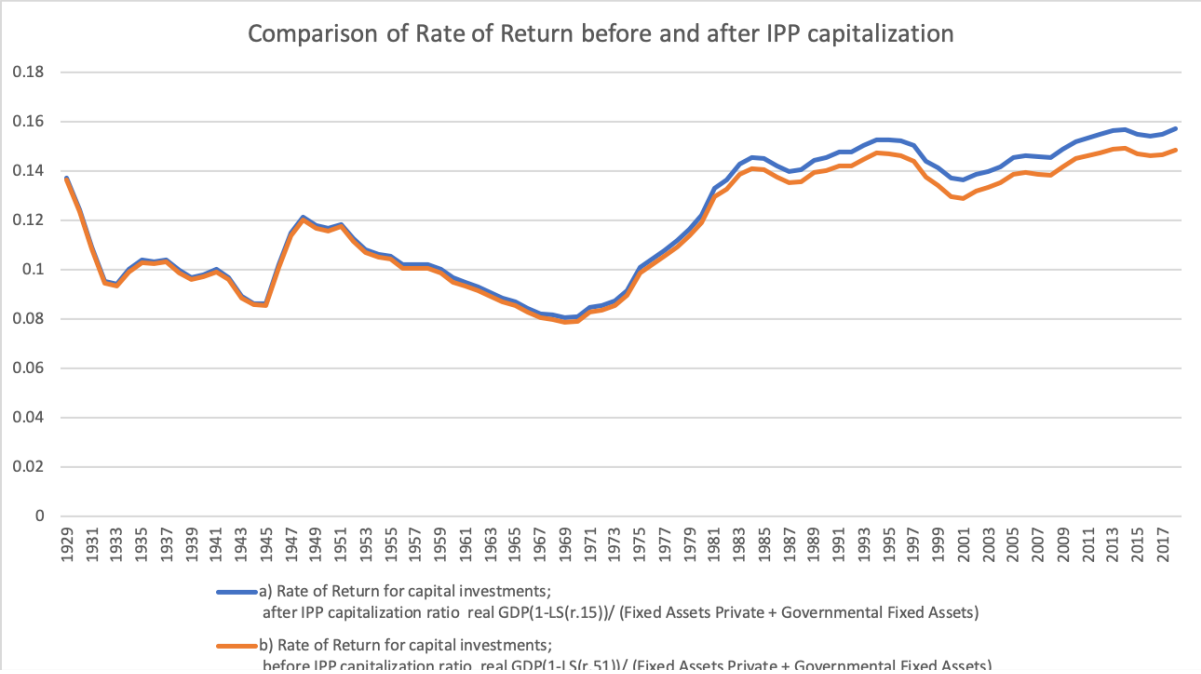


Q3. Considering only the Cooperate Sector

With respect to the cooperated sector, I computed four labour share ratios; namely: the employee compensation with respect to the GDP itself and the GDP corrected for taxes and subsidies. Besides, I computed the labour share ratio with respect to the volume of the cooperated sector. In comparison to the overall LS shares computed before, in the cooperated sector the labour income share is roughly 15% higher. The fact that cooperates have to attract employees by attractive salaries might account for the higher employee compensation in the private sector.



Q4. The rate of return to capital



The rate of return to capital expresses either a loss or a gain of an investment over a certain period expressed as a percentage of the investment costs. Knowing that GDP consists of labour and capital income we are able to compute the capital income share based on the preceding computations. I considered the “naïve” LS share computed in Q1.2. and Q2..Based on a deflated GDP, we are able to compute the capital income for the entire time series. The ratio of net capital income over fixed assets provide the rate of return to capital. The computed rates both show values between 8% to 16%. It shows a minimum of 8% by 1970 and increasing values since then. The timeseries accounting for IPP shows increasing rates of return for capital, because IPP contributes to intermediate investments. The difference between IPP capitalization and non-IPP capitalization shows increasing difference in rate of returns for capital. This spread becomes more distinct with 1% difference in rate of return until 2017. Hence, the change of IPP capitalization favoured the rate of return for capital.