

# The $r < g$ Debate

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# Fiscal Balance

- Japan's fiscal budget yielded surplus around 1990 when Japan was in the economic bubble.
- After the bubble burst, Japan has suffered fiscal deficits, which was temporarily reduced by the Koizumi cabinet in the middle of 2000s.
- The Lehman shock caused another recession, which made the fiscal budget worse, while it has been improved by the Abenomics.

# Is growth rate larger than interest rate?

- Deficit Gamble : In 1998 a Harvard economist, Greg Mankiw, published a paper and argued that the US government could roll over a higher government debt, because the interest rates of the US treasury bonds have been lower than the US economy nominal growth rate for most of the time in the past.
- In Japan, there was a debate between Takenaka, the economy minister of the Koizumi cabinet, and Professor Yoshikawa, a Todai economist in the early 2000s.

# The $r < g$ debate returns

- In the best-selling book of 2013, *Capital in the 21<sup>st</sup> Century*, Thomas Piketty argued that  $r > g$  would be the driving force of the increasing inequality in the contemporary capitalist economy.
- In 2019 Olivier Blanchard, the president of the American Economic Association, proposed a model to explore the consequence of  $r < g$ .
- The MMT (Modern Monetary Theory) argues that the US federal government should spend more to achieve full employment, and has influenced some leaders of the US Democratic Party.

# Dynamical Inefficiency

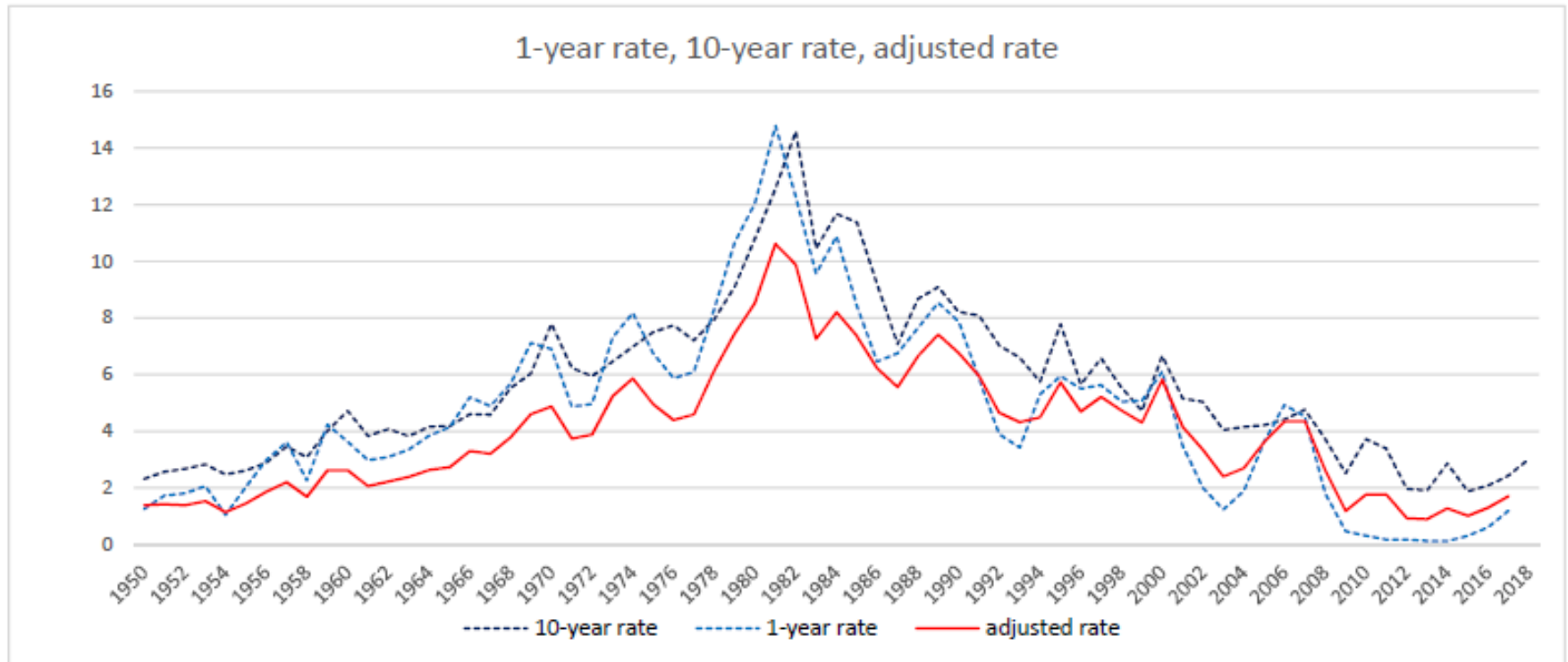
- An economy with the risk-free rate lower than the output growth rate is *dynamically inefficient*.
- In the dynamically inefficient economy, capital is accumulated too much and the interest rate is too low to maximize the welfare of all the generations.
- A slight reduction in investment associated with a slight rise in consumption will improve the welfare of all the generations.
- Then income transfer from young to old generations such as the pay-as-you-go pension system will raise the welfare of all the generations.

# What is the risk-free rate?

- The market rate is not the interest rate that the bond holders receive from the federal government.
- Three adjustments needed
  - different maturities to be averaged and aggregated.
  - Interest rates are taxed.
  - Foreigners and public institutions are exempted from taxation on government bonds.

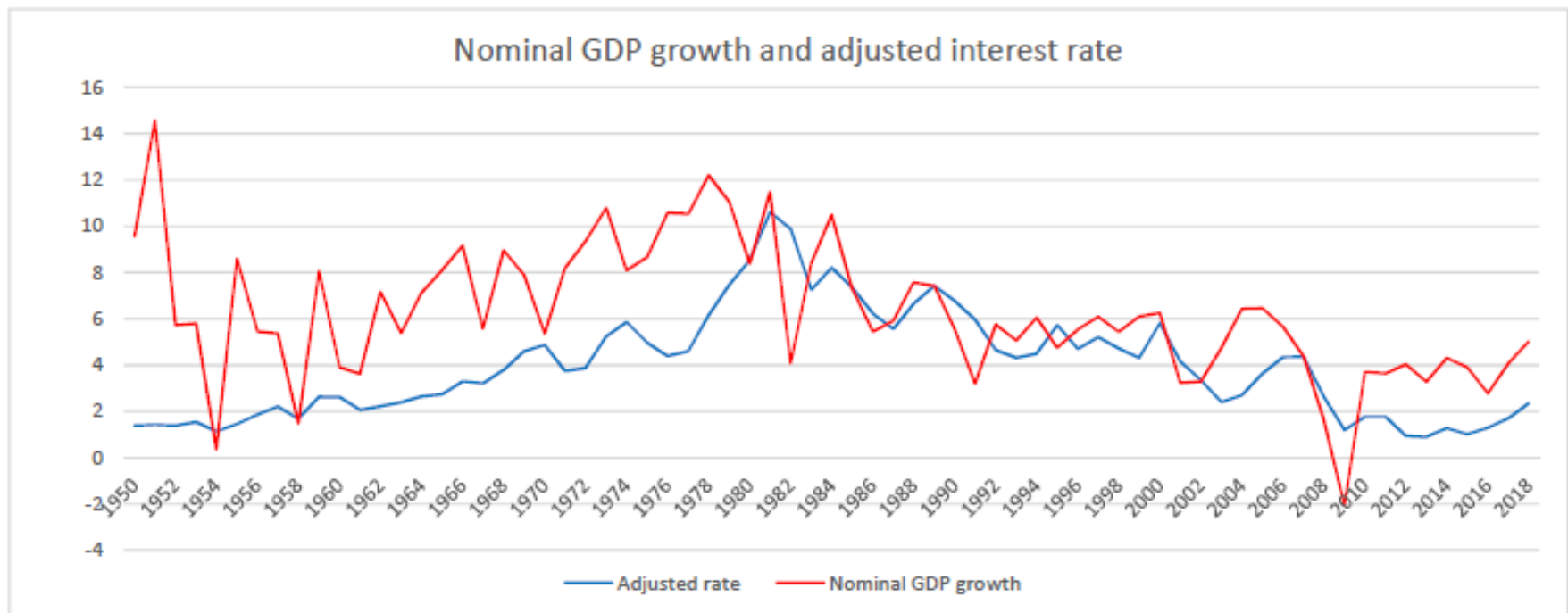
# Adjusted rates differ from market rates

Figure 3. : 1-year rate, 10-year rate, and adjusted rate



# Growth rates have been higher than the adjusted interest rates except for 1980 through 2008

Figure 4. : Nominal growth rate and adjusted rate





# The Blanchard Model

- An overlapping generation model with capital accumulation (Diamond 1965)
- In the economy with no uncertainty, income transfer from young to old generations improves the welfare of all generations, if the economy is dynamically inefficient ( $r < g$ ).

# Under Uncertainty

- The return to hold government bonds differ from the average return to invest in private capital.
- Income transfer from young to old generations have the direct income effect and the non-direct growth effect through changes in factor price (rents and wages) and capital accumulation.
- If the average return to invest in private capital is greater than the economy growth rate, income transfer from young to old generations under  $r < g$  has positive income effect and negative growth effect.

# Income transfer

- Income transfer or rolling over government debts reduces capital accumulation and the economy growth rate.
- If  $r < g$ , income transfer from young to old generations as well as rolling over government debts are sustainable, while their welfare implications depend on the substitution elasticity between labor and capital.

# Substitution elasticity matters

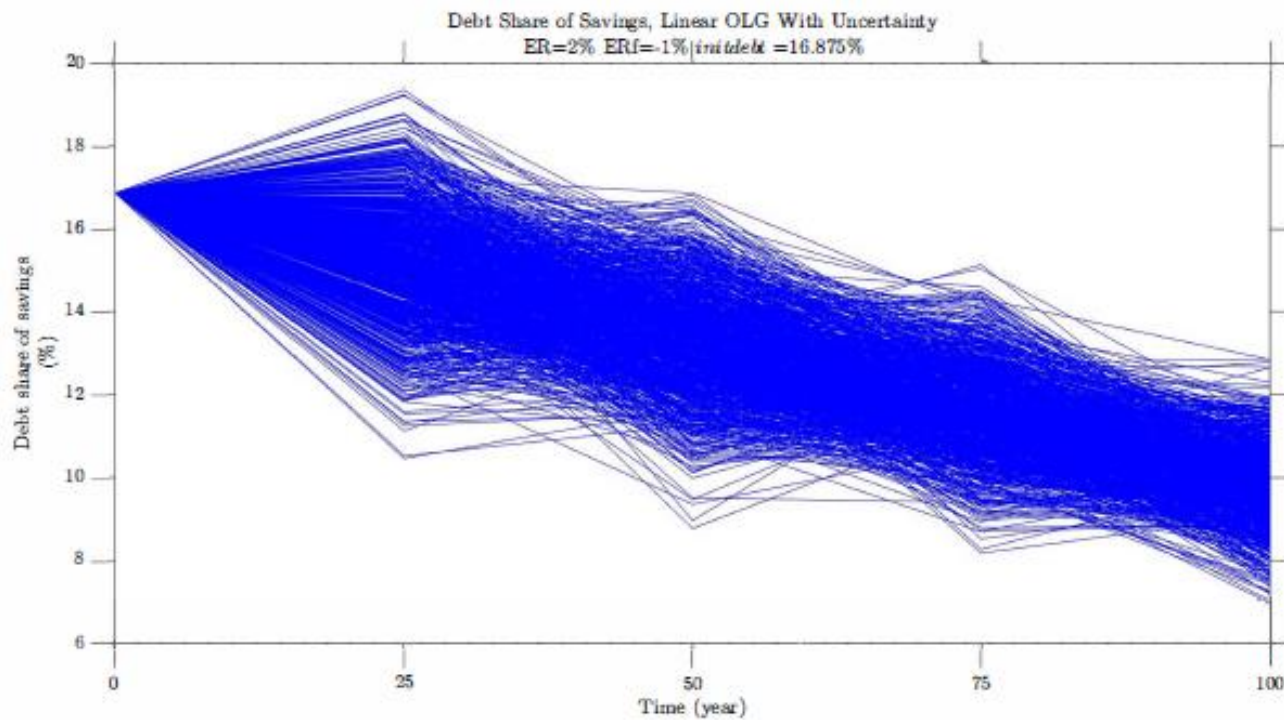
- If the substitution elasticity between labor and capital is sufficiently high, capital shortage is compensated for by more labor inputs, and the total welfare effect is positive.
- However, the substitution elasticity is not so high as to compensate for capital shortage, the total welfare effect is negative.

# Issue more debts ?

- The Reflation advocates in Japan (or the MMTer in the US) argue that the government should spend more to achieve full employment.
- What if the government finances its spending by issuing more debts?
- If labor is sufficiently substitutable for capital, rolling over government debts is sustainable and improves the welfare of all the generations.
- If labor is not well substituted for capital, rolling over debts is unsustainable and improves the welfare of the present generations only, and hurts the future generations through lower capital accumulation and lower output.

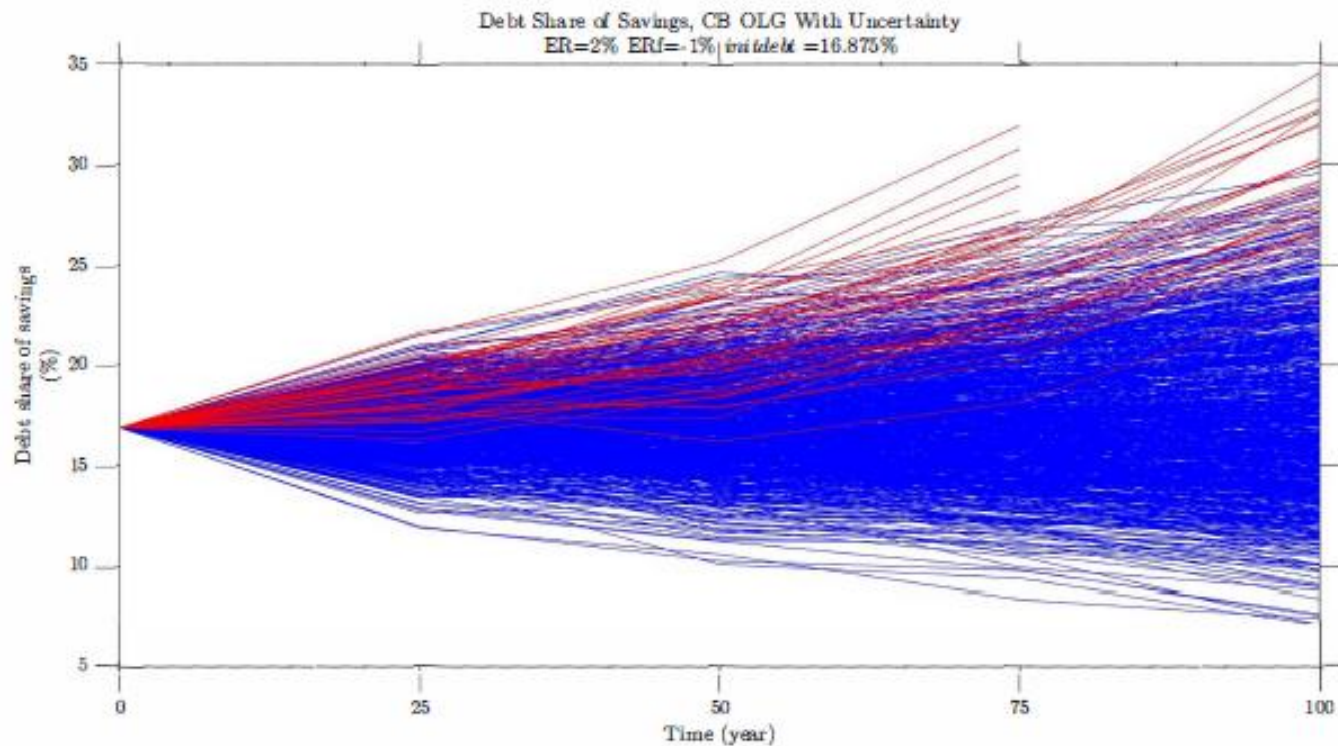
# Debt Rollover with high elasticity between labor and capital

Figure 11. : Linear production function. Debt evolutions under a debt rollover  $D_0 = 16.875\%$  of endowment



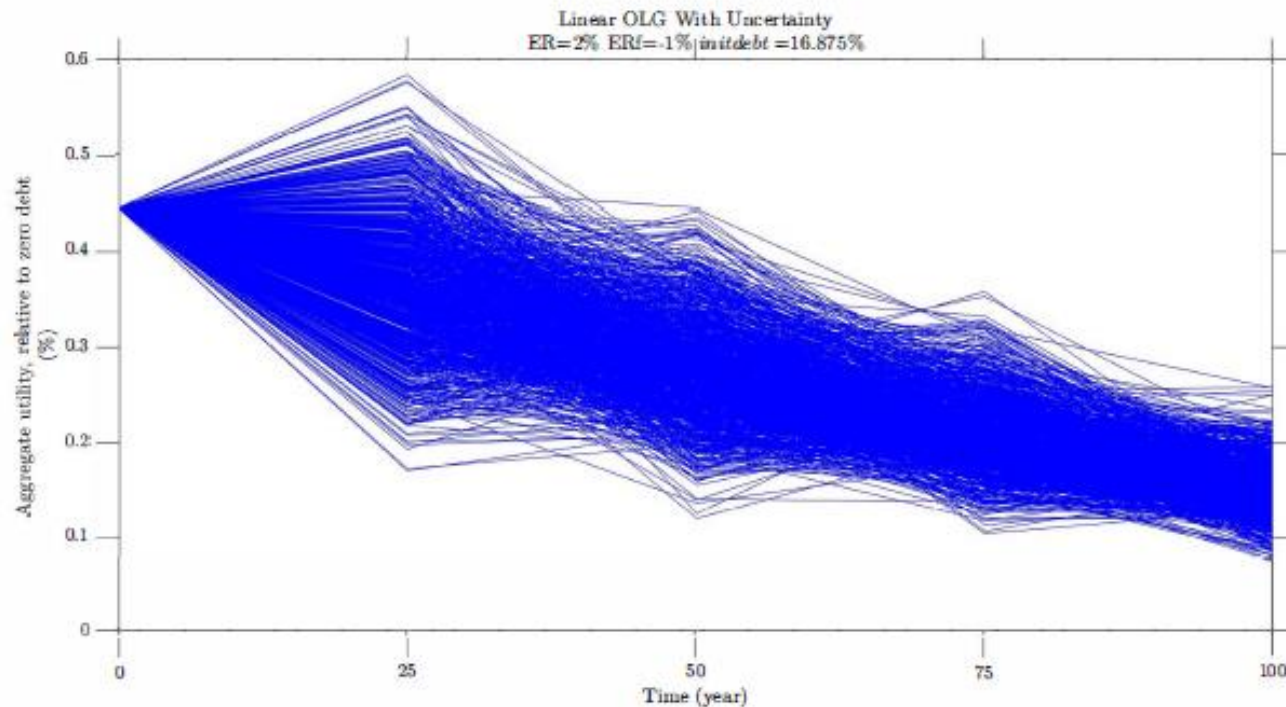
# Debt Rollover with low elasticity between labor and capital

Figure 12. : Cobb-Douglas production function. Debt evolutions under a debt rollover  $D_0 = 16.875\%$  of endowment



# Debt rollover raises the welfare of all the generations if labor is highly substitutable to capital

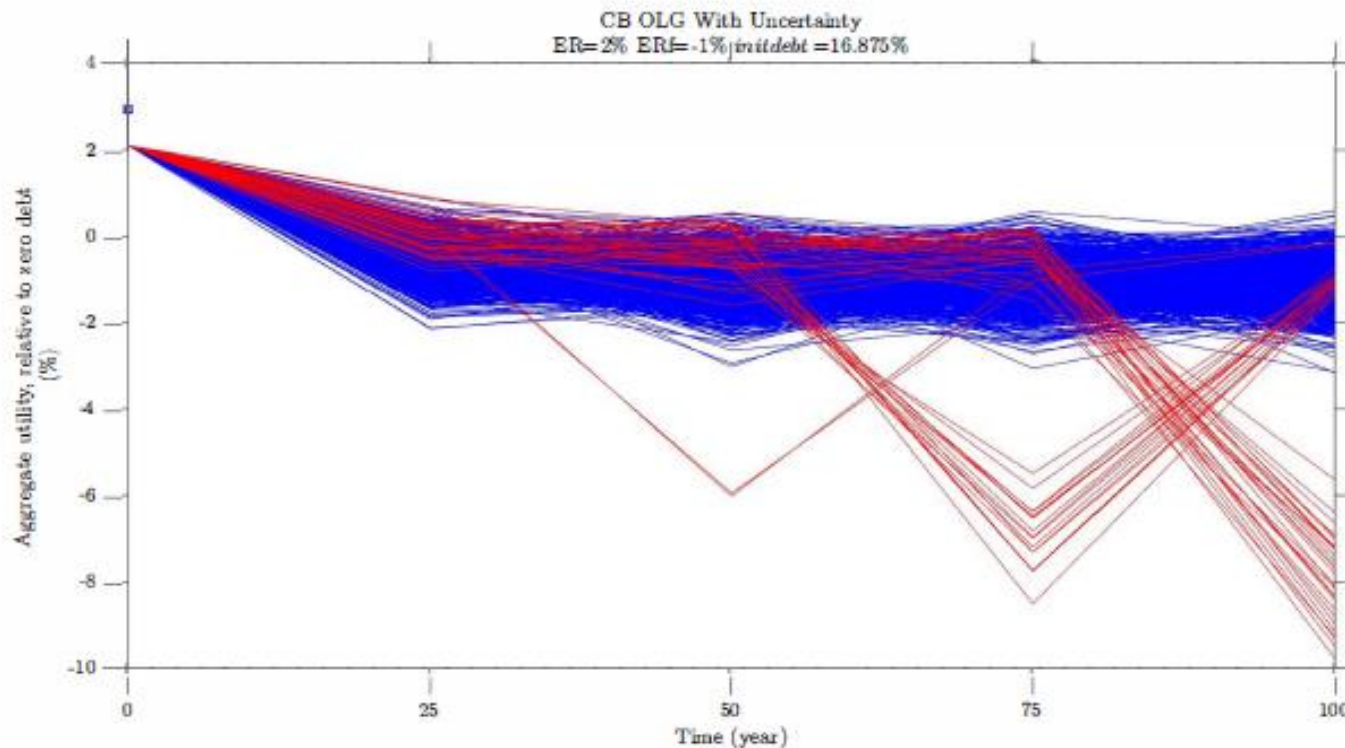
Figure 13. : Linear production function. Welfare effects of a debt rollover  $D_0=18\%$  of endowment





# Debt rollover raises the welfare of the present generations only, and hurts the future generations if labor is not substitutable to capital

Figure 14. : Cobb-Douglas production function. Welfare effects of a debt rollover  $D_0 = 18\%$  of endowment



# Whom the governments care?

- With  $r < g$ , rolling over government debts and transferring income to the present generations might be unsustainable or hurt the welfare of the future generations through lower capital accumulation and lower output.
- The governments optimizes its policy to target a certain weighted average of the welfare of present and future generations.
- If the government puts more weight on the welfare of present than future generations, it might choose debt roll over.

# The return to invest in private capital is sufficiently high as Piketty claims.



Figure 15. : Earnings over replacement cost, Earnings over market value since 1950

# The true return to invest in private capital might be overestimated

1. The denominator might be undervalued: The Intangible asset is incorrectly measured.
2. The numerator might be overvalued: The return to invest might not be the true return from capital but the monopoly rents.

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