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# The falling rate of profit

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# What I will cover

What is the rate of profit

What controls it

The dynamics of the rate of profit

The evidence

The end point of the process

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# What is the rate of profit

For a company, its rate of profit is given as a %, so it might be 10% a year

This means that the annual profits of the company are equal to 10% of the capital that it employs

A rate of profit is always a % per unit time.

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# Profit rate and growth rate

Another way of looking at the profit rate is to see it as the rate of growth of capital

Suppose a capitalist earns 10% on her capital and reinvests all the profit.

She would have the following growth

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# Growth of capital with reinvestment

year	capital	profit
1	£200000	£20000
2	£220000	£22000
3	£242000	£24200

Note that if the rate of profit remains at 10%, the total profit gets bigger each year

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# Implications of a constant profit rate

- IF the rate of profit does not change AND
- The profit is reinvested
- THEN
  - The mass of capital grows exponentially
  - The sum of annual profit grows exponentially

How is this exponential growth possible?

Can it be reconciled with the labour theory of value?

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# Assume constant value of money

- The labour theory of value states that added value in an industry tends to be proportional to labour used.
- But our empirical evidence for it applies to value added in a single year,
- Now we are considering £ profit in different years, and the value of money might change from year to year.
  - If the value of money fell more £ might be less value

*I will assume a constant value of money*

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# Value of money

What does this mean?

The only coherent meaning for the value of £1 in widely different times is *the amount of embodied labour £1 commands*.

You can not really compare the purchasing power of £1 now with £1 in 1918 since the goods that you can buy today did not exist in 1918: no iPhones, big Macs or Volkswagen Polos...

The only unchanged thing was human time. You can ask how much labour £1 represents.

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# Back to the previous questions

- How can an exponential real growth in profit be possible?
- Can it be reconciled with the labour theory of value?

Clearly it can only happen if there is also an *exponential growth in the workforce*.

Hence Marx's aphorism:

“Accumulation of capital is growth of the proletariat”

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# No growth in labour?

What happens if capital accumulates with no growth in the labour force?

THEN the amount of capital per worker must go up.

Suppose an average worker produces £30,000 a year, of which £20,000 is the wage and £10,000 is profit.

Suppose the capital per worker is £100,000 giving a 10% profit rate.

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# Reinvest £10,000 per worker

After 10 years the amount of capital per worker is now £200,000

The rate of profit is now  $10,000/200,000 = 5\%$

So the rate of profit will half what it was to start out.

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# Counteracting forces

1. Change in the wage share
  2. Variation in the rate of accumulation
  3. Population growth
  4. Growth in the wage labour as share of population
  5. Technical change
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# What if wage share falls by half

But suppose after 10 years wages have fallen to only £10,000 leaving £20,000 for profit.

That takes the rate of profit back to 10%.

Next reinvest this for 10 more years.

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## Reinvest £20,000 a year per worker

After another 10 years the capital stock is now £400,000 per worker.

Now, as Marx put it, even if the workers could live on air and were paid nothing, the rate of profit must have fallen

$$30,000/400,000 = 7.5\%$$

*This is why the profit rate eventually falls*

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# Accumulating less?

What happens if capitalists decide to spend all their profits on luxury jets, big country houses and bling?

THEN there is no accumulation

THEN the capital stock does not rise

THEN the rate of profit does not fall

*If they spend half their profits on bling, then the rate of profit falls only half as fast as it would if they accumulated the lot*

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# Population growth

Suppose the initial rate of profit is 10% a quarter of which is accumulated.

Then the capital stock will grow 2.5% a year.

So long as the working population also grows at 2.5% a year the rate of profit need not fall.

If the working population grows faster, or a larger share are employees not self employed, then the profit rate will actually rise.

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# Technology advances

Suppose the productivity of labour rises 2.5% a year.

That means that in real terms things get cheaper 2.5% a year.

This includes the capital stock, which for accounting purposes has to be valued at *current* cost.

So a 2.5% rate of technical change reduces the value of the capital stock by 2.5% a year in the absence of new accumulation. Marx calls this 'moral depreciation'.

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# Simple formula

If we combine these effects we get a simple formula for the final rate of profit  $P'$

$$P' = (g+t+d)/a$$

Where

$g$  = growthrate of the labour supply,  $t$  = rate of technical progress,  $d$  = depreciation rate of capital stock and  $a$  = the share of profit that is accumulated.

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# Attractor

the final rate of profit  $P'$

$$P' = (g+t+d)/a$$

Is the *dynamical attractor* of the rate of profit, the rate towards which the real rate of profit tends.

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# Testing

A scientific theory has to be tested

Does this formula derived from the labour theory of value correctly predict the dynamics of the rate of profit?

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# How we test it

Use the formula to compute the *attractor* of the rate of profit for a country

Look at the real rate of profit.

If the labour theory of value is right, then the real rate will move towards the attractor, which will act as a *leading indicator*.

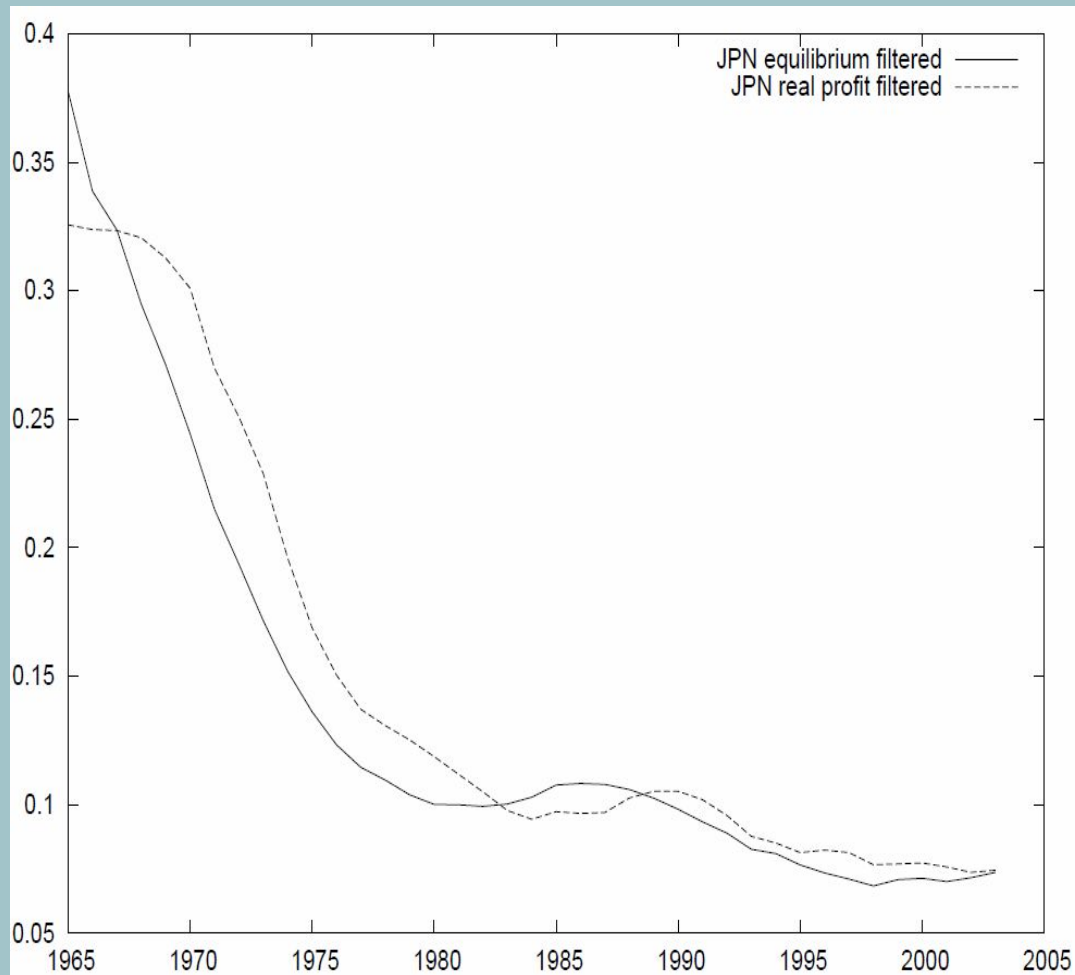
The following diagrams are joint work with Dave Zachariah

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# Japan

- The solid line called JPN equilibrium filtered is the attractor given by the formula
- The dashed line is the real rate of profit.
- Note how the formula predicts the real rate about 4 years ahead,
- the real rate chases the attractor

This validates the theory



# Britain

In this diagram the blue line is the attractor for the rate of profit given by the labour theory of value

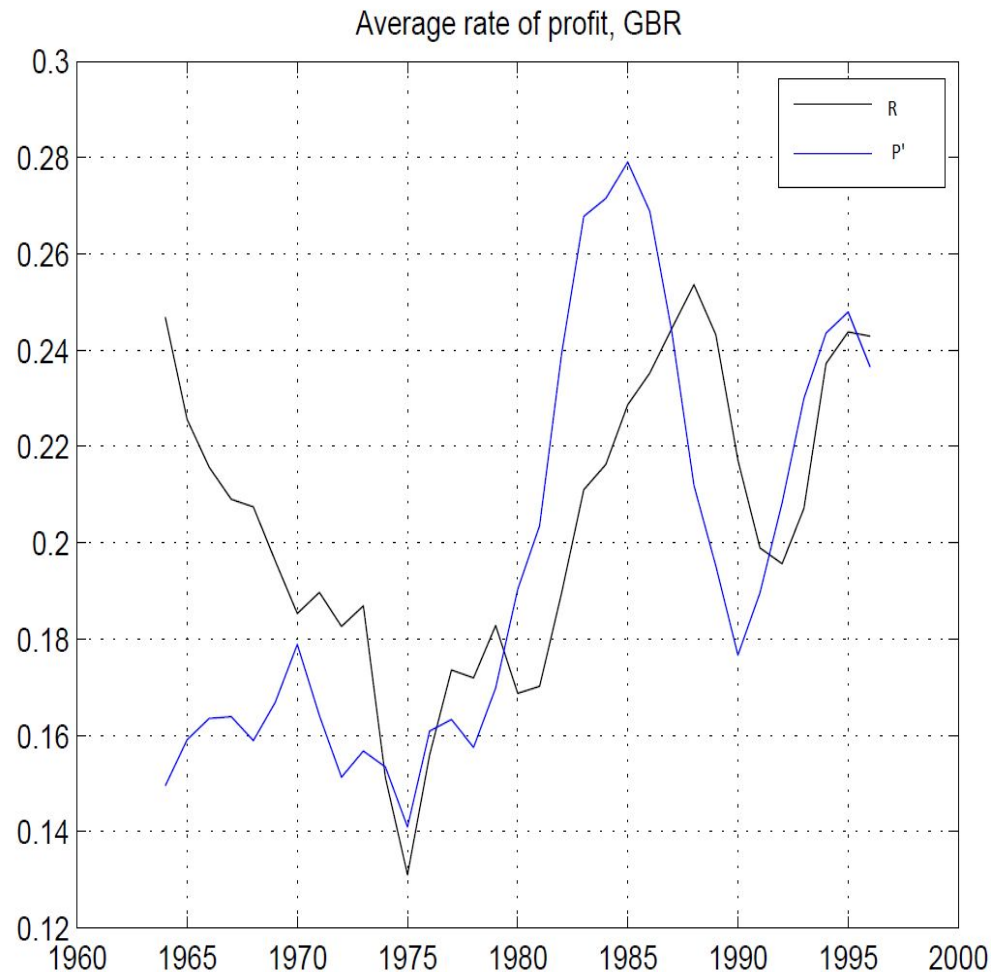
The black line is the actual rate of profit.

- Again the theory correctly predicts how the real profit rate will move
- The black line follows the blue one with a lag of about 3 years

Why does the rate of profit recover in the UK from the 1980s but not in Japan?

1. Slowdown in accumulation in UK
2. Fast growth of workforce in UK

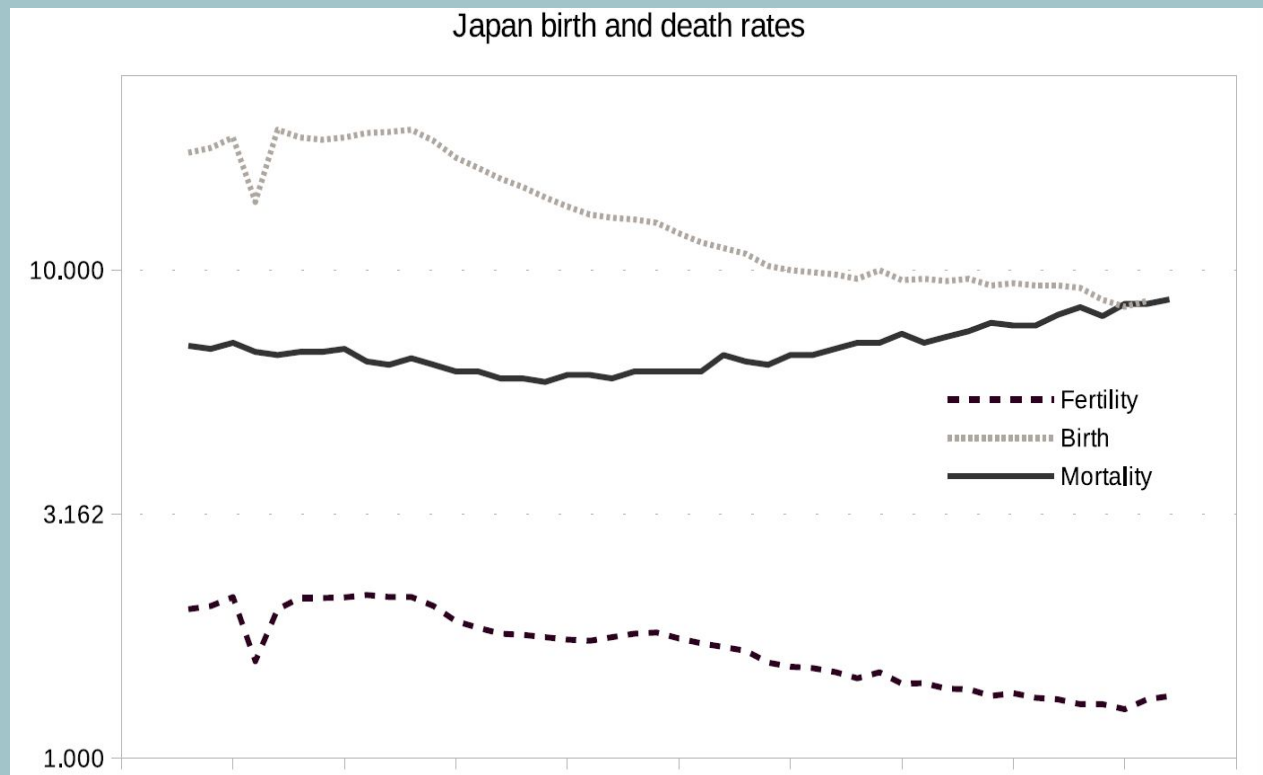
Both tend to raise the rate of profit



# Japan has a stagnant labour force

With a fixed labour force, net accumulation must drive the profit rate down.

This is why the UK government is so keen on expanding the labour force.



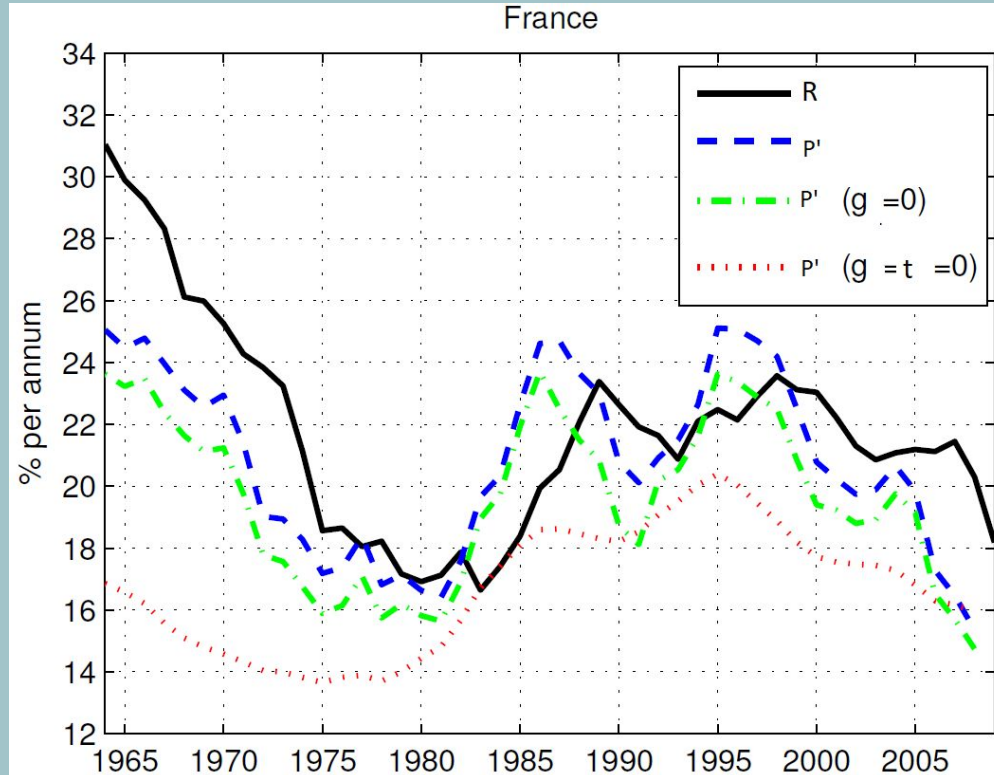


# Compare different causes

Marxist economics allows you to precisely identify how much each factor contributes to changes in the rate of profit.

- R actual rate of profit
- P' blue predicted rate with given labour growth and technical change rate
- P' green, predicted rate if labour growth had been zero
- P' red, predicted rate if labour growth zero and no technical change

Red line shows the pure effect of changes in accumulation rate. This shows that the biggest cause of the recovery in France was that the bourgeoisie slowed down their accumulation in favour of luxury consumption.



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# Lessons

Again Marxist economics comes out trumps. Explains what is happening and makes future predictions.

Developed capitalism has a low birth rate. This implies stagnant profit rates as in Japan unless:

1. There is lots of immigration OR
  2. Technology speeds up a lot OR
  3. Accumulation comes to a halt
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