Is the theory of a falling profit rate valid?

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Accumulation

Marx presents his theory in the context of capital accumulation. In volume I he is concerned primarily about the interaction of accumulation with the working population. Although this is not so evident in Volume 3 the same concerns are present there too. According to Marx a key factor in understanding the impact of accumulation is the composition of capital.

> The composition of capital is to be understood in a two-fold sense. On the side of value, it is determined by the proportion in which it is divided into constant capital or value of the means of production, and variable capital or value of labour-power, the sum total of wages. On the side of material, as it functions in the process of production, all capital is divided into means of production and living labour-power. This latter composition is determined by the relation between the mass of the means of production employed, on the one hand, and the mass of labour necessary for their employment on the other. I call the former the value-composition, the latter the technical composition of capital.([Mar87], page 387)
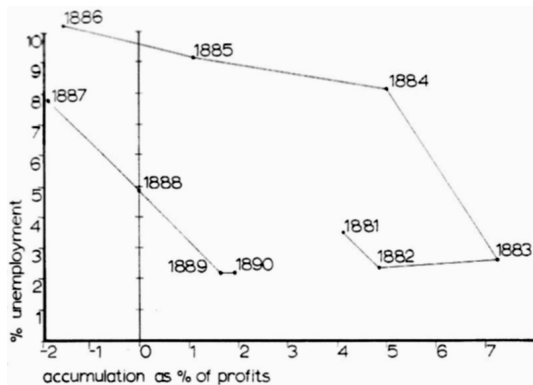
Accumulation : growth of the proletariat

If the value composition of capital remains the same, an increase in the stock of capital necessarily implies an increase in employment.

> *Accumulation of capital is, therefore, increase of the proletariat.([Mar87], page 388)*
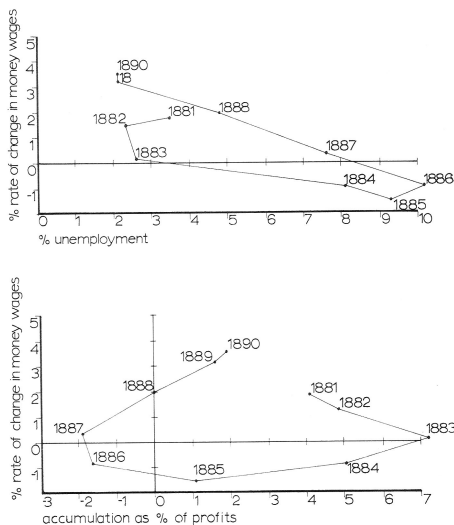
However, if the growth of the labour supply is slow, the demand for labour may exceed the supply allowing wages to rise. This in turn can tend to reduce the rate of profit. Whilst this condition was the one most favourable to the labouring classes, Marx believed it to be temporary and self limiting.

19th century cycle

Figure: The basic cycle of accumulation is well shown in 19th century British trade cycles. Relationship between accumulation and unemployment.

Wage rates

Figure: The relationship between accumulation, unemployment and rate of change of wages.

Cybernetic cycle

The system goes through a cycle. Rapid accumulation uses up the supply of labour. This allows wages to rise. This in turn reduces profits and reduces accumulation. So we return to the starting point. Here we have the basic mechanism by which unemployment acts as a break on wages, and fullemployment as a break on accumulation. The business cycles of the 19th century illustrate this process very clearly.

The theory in Volume 3

In Volume 3 Marx concerned himself with another implication of the change in the value composition of capital. He had previously been concerned with how this affected the demand for labour power, now he looks at its implication for the rate of profit $p' = \frac{s}{c+v}$.

It is clear that if c or v rise then the rate of profit falls.

He believed the tendency to exist, first because of the mechanism described in the first Volume, but also because he thought that the constantly growing mass of capital that was thrown into accumulation will in the long term outstrip the growth of thee proletariat.

Over-production of capital

There would be absolute over-production of capital as soon as additional capital for purposes of capitalist production = 0. The purpose of capitalist production, however, is self-expansion of capital, i.e., appropriation of surplus-labour, production of surplus-value, of profit. As soon as capital would, therefore, have grown in such a ratio to the labouring population that neither the absolute working-time supplied by this population, nor the relative surplus working-time, could be expanded any further (this last would not be feasible at any rate in the case when the demand for labour were so strong that there were a tendency for wages to rise); at a point, therefore, when the increased capital produced just as much, or even less, surplus-value than it did before its increase, there would be absolute over-production of capital; .([Mar94]page 172)
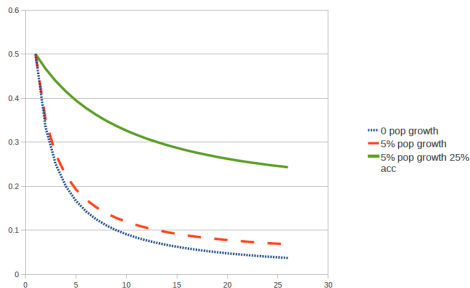
How low

Just how low does Marx's theory predict that profit rates will be driven?

Can we use Marx's theory to predict what the rate of profit will be in the immediate future?

There is no ready answer to be found in Capital, but one can relatively easily extend the theoretical framework laid out by Marx into a dynamic model that does give answers to these questions.

Scenarios

The way the rate of profit declines with different population growth rates and different accumulation fractions. In all cases the starting position is one where $c = v = s$.

First order Model

Consider the situation where the working population grows by 5% a year, and all profits are accumulated. In this case the rate of profit will decline until it reaches 5%. Why?

Because at a 5% rate of profit, all reinvested, the capital stock grows at the same rate as the working population, at which point the value composition of capital stabilises. This scenario was shown as the middle line.

Next consider the scenario where only 25% of profits are reinvested, the rest being unproductively consumed. What is the final rate of profit in this case?

Clear it will be 20%, because at a 20% rate of profit, with a quarter being reinvested, capital stock will again grow at 5% to keep up with the growth of the working population. It follows that the basic equation for defining the equilibrium rate of profit r_e is

$$r_e = g/\alpha \qquad (1)$$

where g is the growth rate of the employed workforce and α is the share of profit that is accumulated.

Cheapening of constant capital

The effect of a cheapening of constant capital is to devalue the existing capital stock. A 5% annual growth in labour productivity will reduce the value of existing plant and machinery etc, by 5% a year. Its effect on the rate of profit is thus the same as that of population growth. Suppose there is no population growth but a 5% rate of technical progress, and assume that all profits are accumulated. Clearly the rate of profit will stabilise at 5% because at that rate of profit the reinvestment is just sufficient to offset the technical devalorisation of the capital stock. So at that rate the value composition of capital must stabilise.
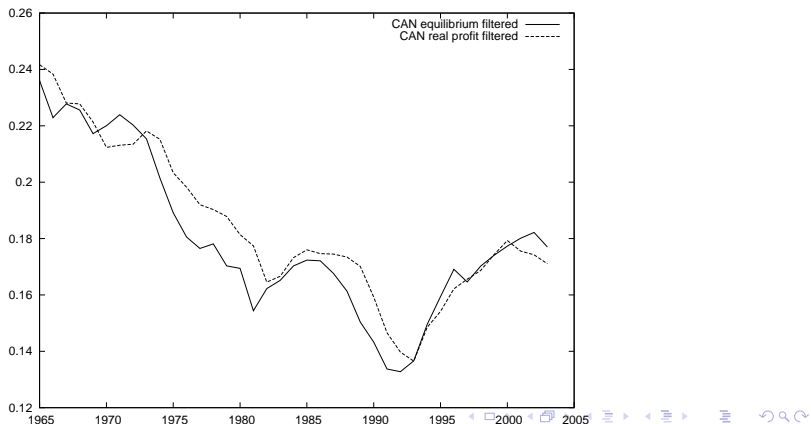
The final equation for the long term rate of profit, on Marx's assumptions must be:
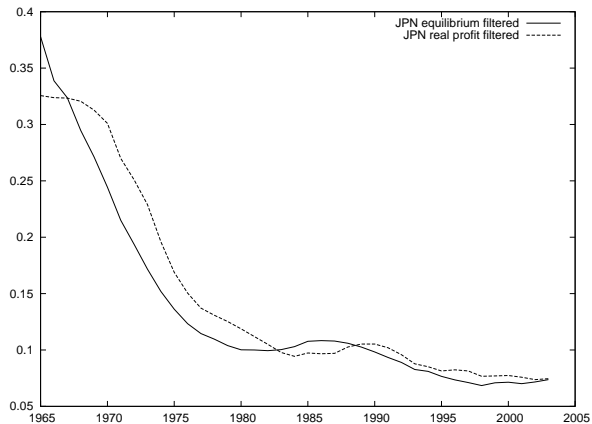
$$r_e = \frac{g + t}{\alpha} \tag{2}$$

This rate of profit r_e is the level to which the law of the falling rate of profit drives the actual rate of profit.
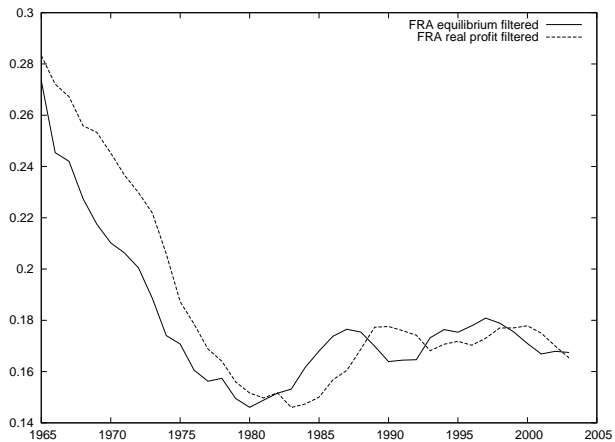
Testing the theory Canada

The following graphs produced by Tamerlan Tadjadinov illustrate how well the model predicts actual profit rates. The dark line is the equilibrium rate given by the theory, the dotted line the real rate. See how the real rate is predicted a couple of years ahead by the equilibrium rate.
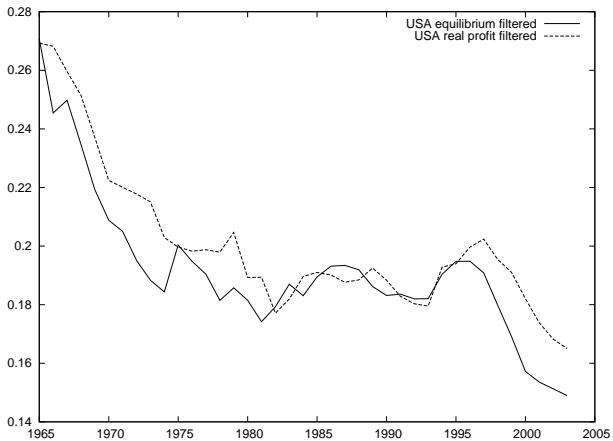
Japan

Legend (top right of plot):
JPN equilibrium filtered ———
JPN real profit filtered - - - - -

France

USA

K. Marx, *Capital, vol. 1. the process of production of capital*, Trans. S. Moore and E. Aveling, Ed. F. Engels. Moscow: Progress Publishers. URL (accessed December 2007): Marx/Engels Internet Archive http://www. marxists. org/archive/marx/works/1867-c1, 1887.

_____ , *Capital: Critique of political economy, vol. 3, the process of capitalist production as a whole,*, The Marx/Engels Internet Archive, 1894.