Marx's law of the tendency of the rate of profit to fall and theory of crises: does it fit the facts?

Presentation to the Critique conference Friday 11 April 2014 by Michael Roberts

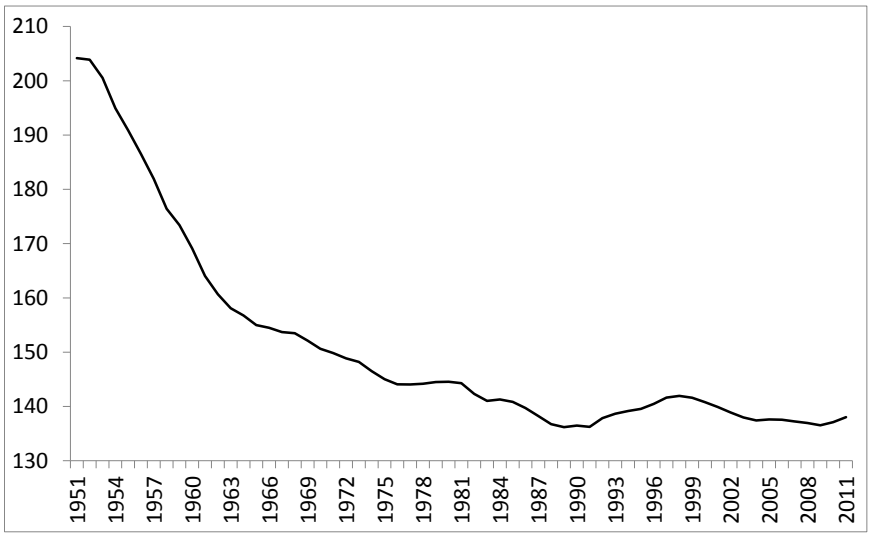
Marx's law is logically consistent and can explain recurrent crises. But does Marx's law fit the facts?

Well, what do we want to know? Does the rate of profit fall over a long period as the organic composition rises? Does the rate of profit rise when the organic composition falls? Does the rate of profit recover if there is sharp fall in the organic composition of capital through the destruction of capital?

There is plenty of evidence to answer in the affirmative, as the Americans would say. And let's start with the US by looking at the overall rate of profit in the economy and the rate of profit in the corporate sector, including the financial sector.

The US rate of profit has been falling since the mid-1950s and is well below where it was in 1947.[1] There has been a secular decline. Figure 1 irons out shorter fluctuations to show this[2].

Figure 1. US average rate of profit, ten-year rolling annual average (indexed 1947=100)



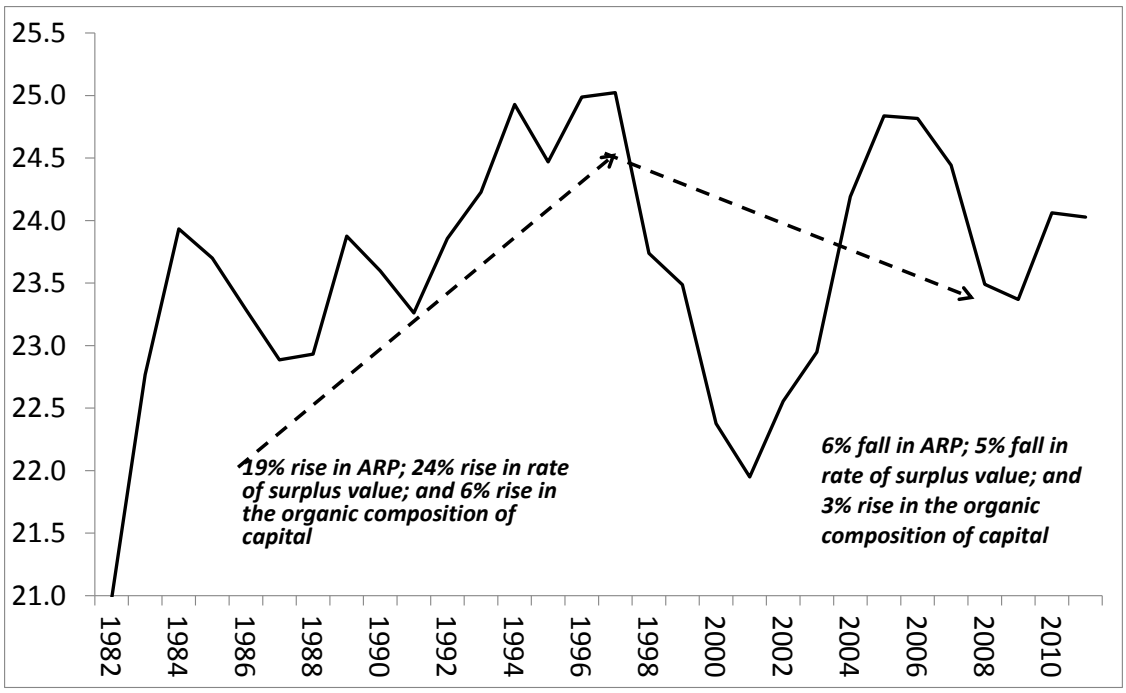
But the US rate of profit has not moved in a straight line. In the US economy as a whole, after the war, it was high but decreasing in the so-called Golden Age from 1948-65. Profitability kept falling

[1] All empirical research on the US rate of profit agrees with this statement. See Roberts (2009, 2011), Carchedi (2011a, 2011b, 2013), Kliman (2012), among others. See Roberts, op. cit. for references to other research. Basu and Manolakos (2010) applied econometric analysis to the US economy between 1948-07 and found that there was a secular tendency for the rate of profit to fall with a measurable decline of about 0.3% a year "after controlling for counter-tendencies." Roberts finds an average decline of 0.4% a year through 2009 using the latest data.

[2] Carchedi and Roberts, 2013b

also from 1965 to 1982.[3] However, in the era of what is called 'neoliberalism', from 1982 to 1997, US profitability rose as Figure 2 shows.

Figure 2. US average rate of profit, 1982-2012 %



In this period, the counteracting factors to Marx's law of falling profitability came into play i.e. the greater exploitation of the American workforce (falling wage share); the cheapening of constant capital through new 'hi-tech' innovations; the wider exploitation of the labour force elsewhere (globalisation), and speculation in unproductive sectors (particularly real estate and finance capital). Between 1982 and 1997, the rate of profit rose 19%, as the rate of surplus value rose nearly 24% and the organic composition of capital rose just 6%.

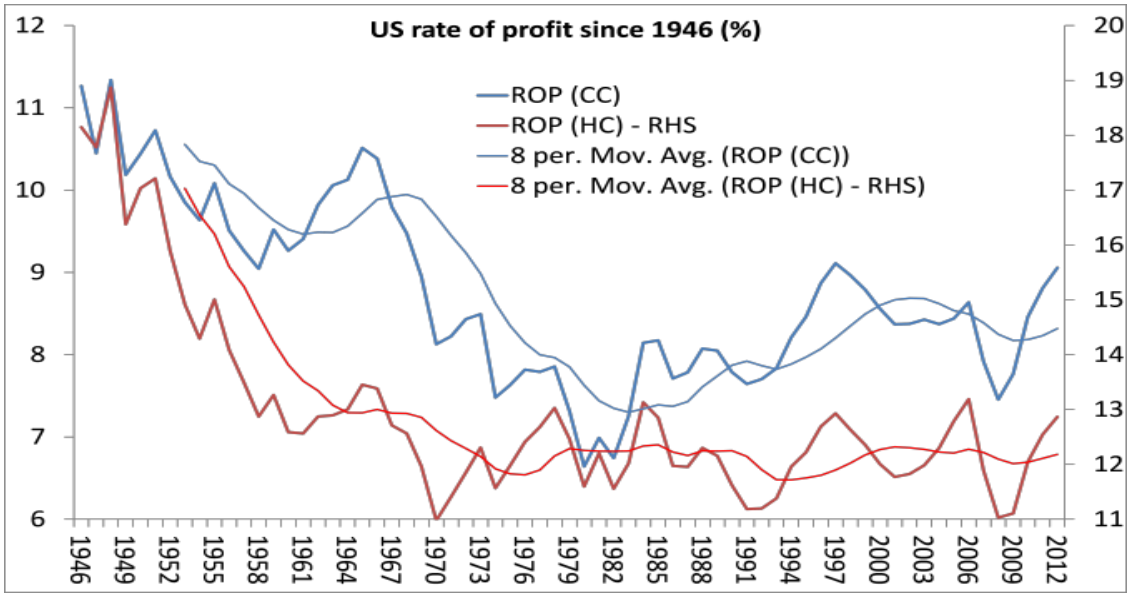
But even this neo-liberal 'recovery' period, with the dot.com bubble of the late 1990s and the credit-fuelled property boom after 2002, was not able to restore overall profitability back to the high levels of the mid-1960s. The ROP peaked in 1997 and the recovery in US profitability during the 2000s and since the Great Recession has not got the ROP back to that 1997 peak (Figure 3)[4].

[3] Carchedi and Roberts 2013b, op cit

[4] I reckon the closest measure of the rate of profit *a la Mar*x is to use the net operating surplus in the whole economy as a measure of surplus value (BEA NIPA table 1.10 line 10) divided by net private fixed assets in historic (HC) and current cost (CC) terms as a measure of constant capital (BEA table 6.1 line 1 and BEA table 6.3 line 1) and employee compensation for the whole economy as a measure of variable capital (BEA NIPA table 1.10 line 2). Inventories ought to be included in the estimation of constant capital and it can be done, but the inclusion does not make much difference; so to save some work, I have left inventories out. To be as close to Marx's formula of the rate of profit (s/c+v), I include variable capital in my calculation, unlike other analysts. They leave it out because it is considered circulating capital with a turnover of less than one year (or the period of calculation). So wages are turned over more frequently. However, G Carchedi and I do not agree (we have an unpublished paper on this issue). We think the removal of variable capital is not correct theoretically and unnecessary practically as the BEA data do take the turnover issue into account. But that discussion is for another day.

Here is the graph showing the US rate of profit as I measure it, based on net fixed assets in both current and historic costs measures.

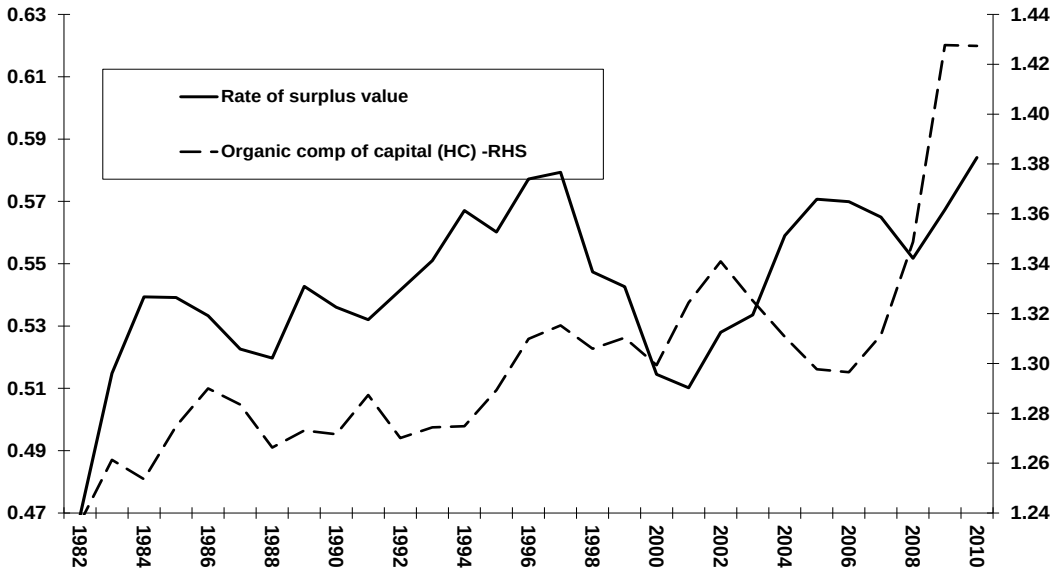
Figure 3. US rate of profit since 1946 (%)



Profitability peaked in 1997 and began to decline. Between 1997 and 2008, the rate of profit dropped 6%, the rate of surplus value fell 5%, while the organic composition of capital rose 3%. Indeed, US profitability started to fall from 2005. And the US rate of profit remains below the peak of 1997. But the rate is clearly higher than it was in the early 1980s at its trough. That can be explained by one counteracting factor to the secularly rising organic composition of capital, namely a rising rate of surplus value since 1982[5]. – Figure 4.

Figure 4. US ratio of surplus value to employee compensation and the organic composition of capital

[5] The rate of surplus value rose from 0.47 to 0.57, up to 2005, or 21%, while the organic composition of capital rose from 1.24 to 1.31 or just 6%. After 2005, the organic composition began to rise sharply, while the rate of surplus value tapered off. The rate of profit fell from 2006 onwards, a good year or more before the credit crunch and two years before the recession.



Source: Carchedi and Roberts (2013b)

In summary, the US rate of profit fell 24% from 1963 to a trough in 1982, while the organic composition of capital rose 16% and the rate of surplus value fell 16%. Then the rate of profit rose 15% to a peak in 1997, while the organic composition of capital rose 9% but was outstripped by the rise in the rate of surplus value of 22%. From 1997 to 2008, the rate of profit fell 12% while the organic composition of capital rose 22%, outstripping the rate of surplus value, up only 2%.

Table 1 shows the level of the ROP at the end of certain periods compared to the start, expressed as a fraction of 1. So, for example, in the whole period from 1946 to 2012, the US ROP fell 20% (from 1.0 to 0.80) in current cost terms and 29% (from 1.0 to 0.71) in historic cost terms.

Table 1: US rate of profit at end of period relative to start (ratio)

	1965-82	1982-97	1997-12	1946-12	1965-12	1982-01	2001-08
CC	0.64	1.35	0.99	0.80	0.86	1.24	0.89
HC	0.86	1.12	1.00	0.71	0.96	1.02	0.94

First, there has been a secular decline in the US ROP from 1946 to 2012 or from 1965 to 2012; with the main decline between the peak of 1965 and the trough of 1982 (however you measure it). The ROP measured in current costs has risen since reaching a trough in the early 1980s, while the ROP measured in historic costs has been more or less flat (looking at the moving average in the graph above). *Second*, there was a rise in the ROP between 1982-97, 35% under the CC measure and 12% under the HC measure. *Third*, from 1997, the ROP has fallen in CC terms and been basically flat in HC terms. *Fourth*, the ROP at its trough during the mild recession of 2001 was still higher than at the ROP trough during the deep recession of 1980-2 (24% higher under the CC or 2% under the HC measure). However, the ROP in the trough of the 2008 Great Recession was 11% (CC) and 6% (HC) below the 2001 trough, although it was still 10% higher on the CC measure than in 1982 (5% lower on the HC measure).

Again, all three phases fit Marx's law, when the organic composition of capital rose faster than the rate of surplus value, the rate of profit fell and vice versa. Over the 45 years to 2008, the US rate of profit fell secularly by 21% because the organic composition of capital rose 51%, while the rate of surplus value rose just 5%. The rise in the organic composition of capital explained 62% of the fall in the rate of profit, while there was no significant correlation with any change in the rate of surplus value[6].

What these points show is that Marx's law of profitability holds good for the US: there is a tendency for the rate of profit to fall over time in capitalist accumulation and this tendency will overcome the counteracting factors eventually. But it also shows that, for a period, and especially after a major slump that devalues existing capital, counteracting factors can rule – namely a rising rate of surplus value, higher profits from overseas and the cheapening of constant capital through new technology, among others. That was the experience of the so-called neo-liberal period from 1982 to the end of 20th century. But even this neo-liberal 'recovery' period, with the dot.com bubble of the late 1990s and the credit-fuelled property boom after 2002, was not able to restore overall profitability back to the high levels of the mid-1960s. The ROP peaked in 1997 and the recovery in US profitability during the 2000s and since the Great Recession has only got the ROP back to that 1997 peak.

Another Marxist economist has also done a recent analysis[7]. Themis Kalogerakos finds that the US rate of profit, however it is measured, appears to have two main periods: one where a high rate falls from the 1960s to the 1980s; and one where it recovers from the 1980s. He also identifies within those two periods, two sub periods. The first is the high and slightly rising rate of profit from 1946 to 1965, then the decline from 1965 to the early 1980s, then the rebound up to 1997 and then, finally, a period of decline from 1997. This matches exactly my own interpretation of the data, first analysed in 2006[8] .

However you measure the rate of profit, whether by the broadest or the narrowest measure or in between[9], the US rate of profit exhibits the four phases described above. The average rate of profit for the whole period 1946-2011 was 17.99% for the broadest measure and 6.03% for the narrowest. Between 1946-65, the rate of profit was 11% above this average of the broadest measure and 15% above for the narrowest. In the neoliberal period from 1982 to 1997, the rate was still 9% below the average (broadest) or 18% below (narrowest). And the average for 1997 to 2011 was still below the overall average by 5% (broadest). It was 5% higher than the average for narrowest measure from

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[6] Both Freeman (2009) and Kliman (2012) have found similar correlations. Izquierdo (2010) finds that: "*the drop in the productivity the capital from the 1946-1973 period to the 1974 -1983 period explains 78% of the fall in the rate of profit, while the minor decrease in the profit share explains only 22%. Therefore, the declining profitability manifested during the Keynesian period is explained by the technological component of the rate of profit, confirming the expectations of the Marxian law of the tendency of the rate of profit to fall. The scant recovery of the general rate of profit during the neoliberal period is also explained mostly by the productivity of capital, which accounts for 84% of the relative increase in profitability, while the profit share remains nearly constant; it grows only 1% in relative terms –and explains only 16% of the recovery".*

[7] Themis Kalogerakos http://thenextrecession.files.wordpress.com/2013/12/ekhr61_themistoklis_kalogerakos.pdf and also see http://thenextrecession.files.wordpress.com/2012/06/deepankar_basu_ramaa_vasudevan_technology_distribution_and_the_rate_of_profit_in_the_us_countdown.pdf

[8] M Roberts, The Great Recession (2009)

[9] Broad measure = profits before tax and interest, narrow = after tax, or retained funds etc, for the whole corporate sector or just the non financial sector, historic or current cost.

1997-2011. But in this latest period, the rate in both cases was still below the 1946-65 golden age period by 10% and 15% respectively.

These measures were based on current cost fixed assets. If historic costs are used, then the results are no different. On the broadest measure, the closest to Marx's, the average rate of profit from 1997 to 2011 was 23% lower, while on the narrowest measure it was 16% lower. .

Kalogerakos looked not just at the level of profitability, but also at the annual change in the US profit rate. Across the whole period from 1946, whatever the measure of the rate of profit and whether measured from trough to trough in the cycle or from peak to peak, the US rate of profit has fallen, by about 0.6% a year. And even more useful for deciding whether profitability can be seen as the underlying driving cause of the Great Recession, in the period of 1997 to 2011, the rate profit fell annually by 0.6% (broadest) and 0.3% (narrowest). This confirms that Marx's law has been operating[10] - and was operating just before the Great Recession.[11] So Marx's law of the tendency of the rate of profit to fall over time is thus validated by extensive empirical analysis and is extremely relevant for a theory of crises.

This inverse relationship between the organic composition of capital and the rate of profit that Marx's law predicts is also validated for other capitalist economies. Take that of the UK. Between 1963 and 1975, the UK rate of profit fell 28%, while the organic composition of capital rose 20% and the rate of surplus value fell 19%. Between 1975 when the UK rate of profit troughed, and 1996, it rose 50%, while the organic composition of capital rose 17% but the rate of surplus value rose 66%. Finally, from 1996 to 2008, the rate of profit fell 11%, as the organic composition of capital rose 16% and the rate of surplus value was flat. All these three phases are compatible with Marx's law. Indeed, over the whole period, 1963 to 2008, in the UK, the organic composition of capital rose 63%, while the rate of surplus value rose 33%, so the rate of profit fell in a secular trend.

The cycle of profit and investment

A slump under capitalism begins with a collapse in capitalist investment. And the movement in investment is initially driven by movements in profit, not vice versa.[12] Profits fell for several quarters before the US economy went into a nose dive. US corporate profits peaked in early 2006 – that's the absolute amount, not the rate of profit, which, as we have seen, peaked earlier. From its peak in early 2006, the mass of profits fell until mid-2008, made a limited recovery in early 2009 and

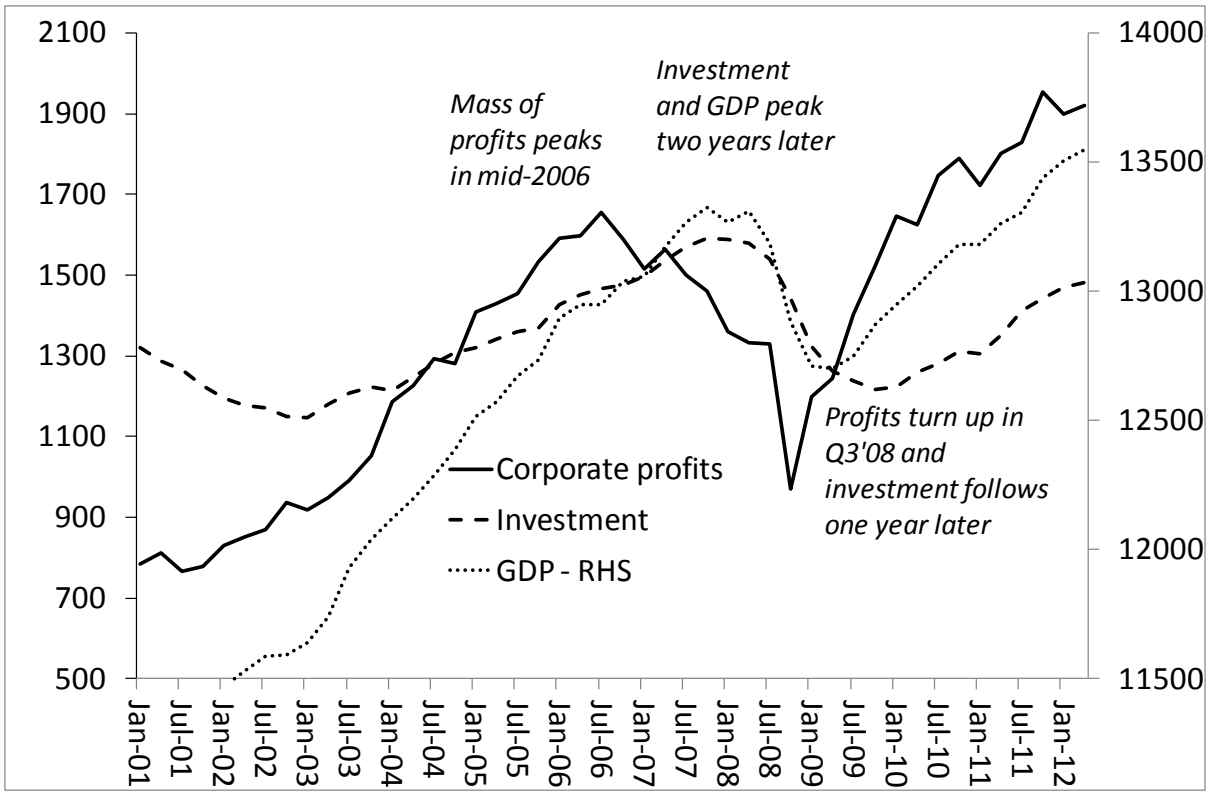
[10] G Carchedi and I reach the same results in our recent paper, The Long Roots of the Present Crisis: Keynesians, Austerians and Marx's Law, World Review of Political Economy, Spring 2013 (

[11] As young TK puts it[11]: *"in the last period, that includes the Great Recession and the years leading up to it, the CAGRs (compound annal growth rates) of all profit measures are negative in both sectors. The average profit rates are slightly higher than in the preceding period, but still lower than in any other phase of the long wave and lower than the average rates for the whole period under scrutiny (except for the after-tax profit rate for the whole corporate sector). In addition to that, the trend of the TSVR (total surplus value rate) in both sectors is slightly descending and that of the other measures is leveling off. What is more, it is obvious from the peak-to peak and trough-to-trough CAGRs, that the long-term profitability in the corporate and non-financial corporate sectors, aside from the partial revival of profit rates during the 1980-1997 period, is one of declining or at best stagnating nature. This denotes that prior to the crisis, the accumulation process in the US economy was certainly problematic, and profit rates in the "real" economy may have led to the boom of the financial sector."*

[12] See Mitchell (1927), Tinbergen (1939), Haberler (1939), Feldstein and Summers (1997), Bakir and Campbell (2006) Camara (2010). More recently, Tapia Granados (2012), using regression analysis, finds that, over 251 quarters of US economic activity from 1947, profits started declining long before investment did and that pre-tax profits can explain 44% of all movement in investment, while there is no evidence that investment can explain any movement in profits.

then fell to a new low in mid-2009. After that, the recovery in profits began and the previous peak in nominal dollars was surpassed in mid-2010. Figure 5.

Figure 5. US corporate profits, real investment and GDP Q1-2001 to Q2-2012, $bn



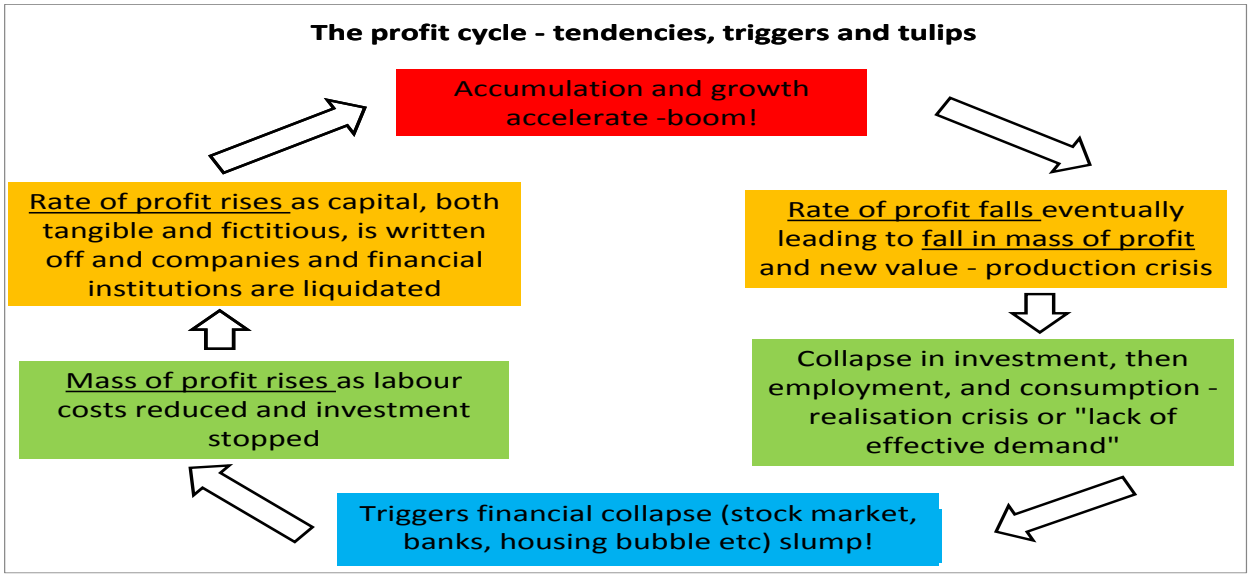
Source: Carchedi and Roberts (2013b)

What was the reaction of investment to this movement in US profits? When US corporate profit growth started to slow in mid-2005 and then fell in absolute terms in 2006, corporate investment went on growing for a while as companies used up reserves or increased borrowing in the hope that profits would be restored. But when that did not materialise, investment growth slowed during 2007 and then fell absolutely in 2008, at one point falling at a near 20% yoy rate.

Profits started to recover at the end of 2008 but investment did not follow for a year. It was the same for GDP. GDP peaked well after profits did and recovered after profits did. The movement of profits leads the movement of investment, not vice versa. Profits were falling well before the credit crunch began. So Marx's law provides an explanation of the crisis of 2001-2, the subsequent recovery of 2002-2006, the great 2007-2009 slump and the subsequent recovery.

We can illustrate this process schematically as in Figure 6.

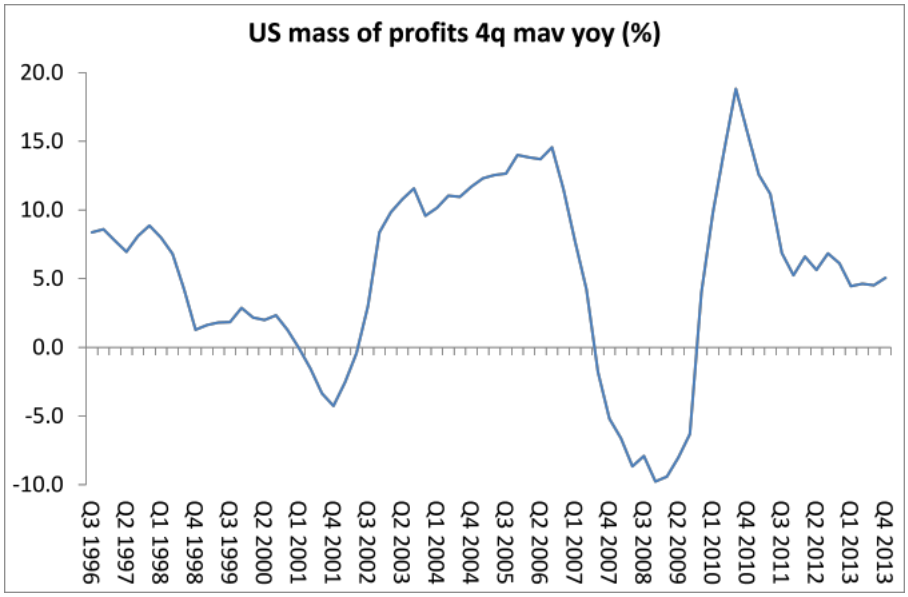
Figure 6. The profit cycle and slumps



There were five recessions or slumps after 1963: 1974-5, 1980-2, 1990-2, 2001 and 2008-9. In each case, the rate of profit peaked at least one year before, but on most occasions up to three years before. And on each occasion (with the exception of the very mild 2001 recession), a fall in the mass of profit led or coincided with a slump. This is shown clearly for the Great Recession.

But most important for forecasting another recession is what is happening to the mass (or total) of profits. Usually, if the rate of profit starts declining consistently, at a certain point, the mass of profit will start to fall. When that happens, investment drops off fast a few quarters later and then the capitalist economy slips into a slump. Both the BEA and Fed data suggest that the mass of profits is still rising, but at a slowing pace as in Figure 7 So no recession is imminent.

Figure 7. US total profits growth (% yoy)

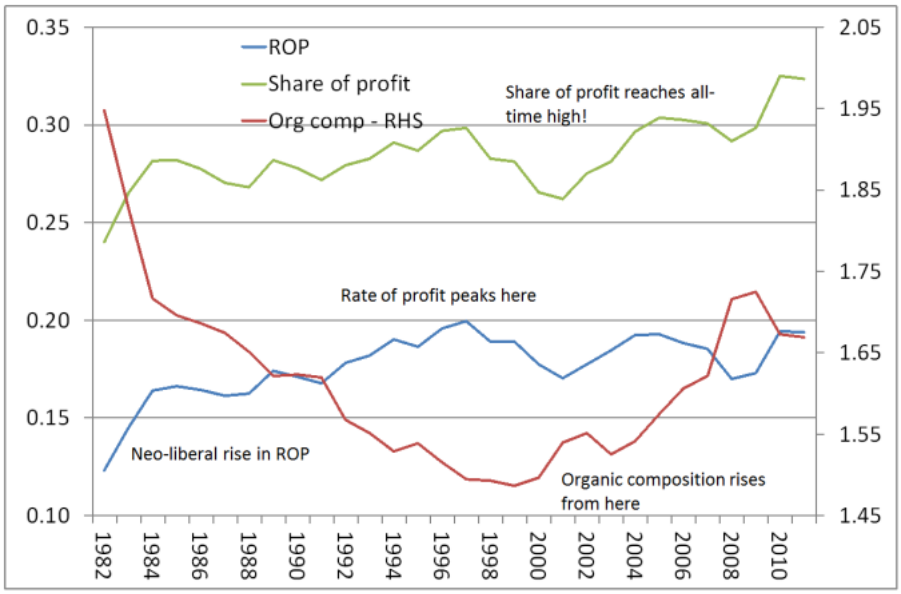


It's not the law

Some Marxists want to deny what they call a mono-causal explanation of crises. They prefer a more eclectic approach. Duminel and Levy[13] argue that capitalism "*underwent four large crises, which we denote as "structural crises": the crisis of the 1890s, the Great Depression, the crisis of the 1970s, and the current crisis. The first and third ones were profitability crises. The second and fourth crises followed phases of financial hegemon. During financial hegemonies, capitalist classes attempt to remove all barriers to their power and quest for income. Thus, in the determination of the nature of a structural crisis, not only the trends of the profit rate are involved, also the mechanisms of the crises themselves. The forms of the crisis are quite distinct. In a profitability crisis, capitalism "sinks"; in a crisis of financial hegemony, capitalism "explodes". The two crises of profitability manifested themselves, respectively, in a crisis of competition (in the 1890s) and a cumulative wave of inflation (in the 1970s), both signalling the pressure on profitability levels. Nothing similar happened before the Great Depression and the current crisis; instead a sequence of phases of explosion of financial mechanisms—notably the dramatic rise of stock-market indices, unsustainable levels of indebtedness, and the involvement in speculative financial investment—and financial crashes was observed.*

As for the current crisis, if we use D-L's data, we can discern two periods: first the neo-liberal period of 1982-97 when the rate of profit rose and the organic composition of capital fell, although interestingly, the share of profit did not change much. Then the period after 1997 when the rate of profit started falling (although not by much) while the organic composition of capital rose, exactly according to Marx's law 'as such'. The rate of profit did not fall much up to the point of the Great Recession because the share of profit rose to a record high. So the huge exploitation of the workforce compensated somewhat for the rising organic composition of capital.

Figure 8. US rate of profit as measured by Dumenil and Levy – ROP and share of profit (LHS) and organic composition of capital (RHS) – ratios.



A similar approach is adopted by Panitch and Gindin's in their new prize-winning book[14]. For them, each crisis is unique depending upon the particular relationships and alliances forged between

[13] The Crisis of the Early 21st Century: Marxian perspectives Gérard Duménil and Dominique Lévy

[14] *The making of global capitalism: the political economy of the American Empire* by Leo Panitch and Sam Gindin, http://www.versobooks.com/books/1527-the-making-of-global-capitalism

workers, business, finance, and the state. There have been four major historical global crises, the Long Depression in the 1870s onwards, the Great Depression of the 1930s, the Great Recession of 1970s, and what they call the Great Financial Crisis of 2007-09. For them, each has a different cause.

As for the Great Recession in particular, *"Going back to the theories of imperialism a century earlier, that overaccumulation is the source of all capitalist crises, the crisis that erupted in 2007 was not caused by a profit squeeze or collapse in investment due to overaccumulation. In the US, in particular, profits and investment has recovered since the early 1980s… Indeed investment was growing significantly in the two years before the onset of the crisis, profits were at a peak and capacity utilisation in industry had just moved above the historic average… it was only after the financial meltdown in 2007-8 that profits and investment declined."* Instead, the authors prefer to explain the Great Recession as a result of stagnating wages, rising mortgage debt and then collapsing housing prices, causing *"a dramatic fall in consumer spending".*

But the Gindin/Panitch account quoted above of the years before the credit crunch of 2007 and the Great Recession of 2008-9 just does not correspond with the facts. Yes, investment did not start to fall until 2008 BUT by then US corporate profits had been falling some two years and investment dropped as a result followed by GDP. And in the recovery, again it was profits that led investment and GDP up.

These conclusions are confirmed by other authors. For example, Tapia Granados[15] found that *"data from 251 quarters of the US economy show that recessions are preceded by declines in profits. Profits stop growing and start falling four or five quarters before a recession. They strongly recover immediately after the recession. Since investment is to a large extent determined by profitability and investment is a major component of demand, the fall in profits leading to a fall in investment, in turn leading to a fall in demand, seems to be a basic mechanism in the causation of recessions."* Sergio Camara Izquerdo[16] also finds that "*a significant cyclical decline of the profit rate has substantially preceded the last two recessions… the cyclical slump in the rate of profit must be seen as an important precipitating factor in the deepest economic downturn since the 1930s".*

The 2002-2006 rise in profitability before the recession of 2007-9, far from proving Marx's law wrong, actually substantiates it. Crises emerge within the context of a downward profitability cycle. The 2002-2006 recovery period in profitability was part of a whole downward cycle (in my view, starting in 1997) and the 2007-2009 crisis emerges within this downward cycle. Falling profitability sets the stage for the crisis, which is preceded (and indicated) by a fall in new value and total profits. In the 2006-2010 downward profitability cycle, new value and total profits fell 26.7% and 63.7% respectively, by far the deepest of all the post-WWII crises. So the 2007-2009 Great Recession does fall into line with Marx's theory of crisis.

Yes, there was rise in the rate of profit and the mass of profits from 2002 to 2006. But profitability was still in a downward cycle from 1997 and the rate and the mass of profits did start to fall from 2006 onwards.

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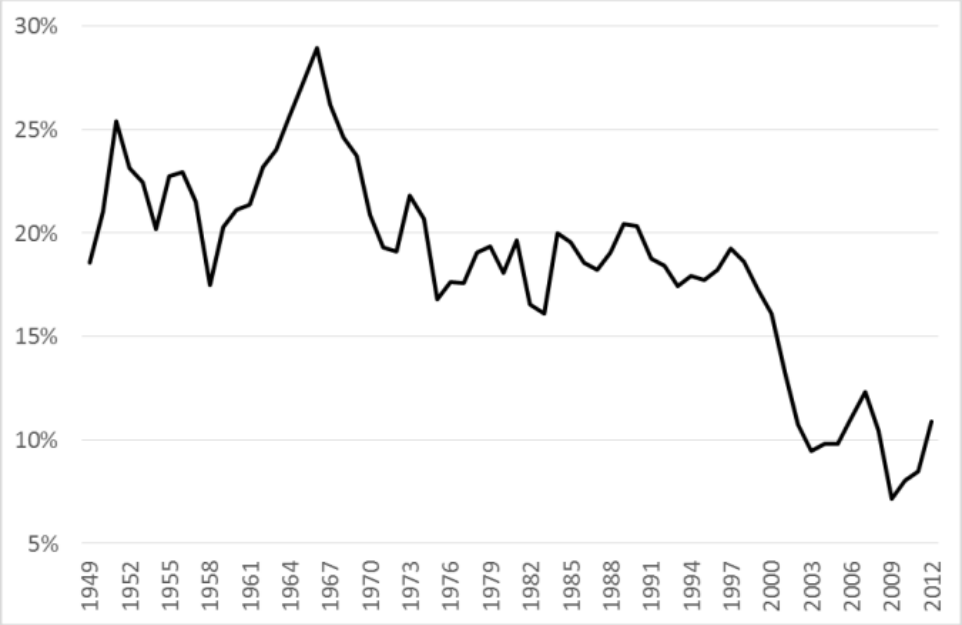
[15] Jose A Tapia Granados, *Does investment call the tune? and Empirical evidence and endogenous theories of the business cycle,* Research in Political Economy, May 2012, *http://sitemaker.umich.edu/tapia_granados/files/does_investment_call_the_tune_may_2012__forthcoming_rpe_.pdf).*

[16] Sergio Camara, http://thenextrecession.files.wordpress.com/2012/11/izquierdo-rate-of-profit.pdf

And much of these profits were fictitious in nature. In a recent paper, Peter Jones[17] adjusted the official figures for profit for fictitious profits, namely those made by banks from lending to government (bond purchases) and from utilising the savings of workers (mortgages etc). Government spending that is financed by borrowing is recorded as output in NIPA. But it is really fictitious income. Jones goes through the NIPA accounts to deduct what he reckons are the components of this fictitious profit to come up with a measure of profit that best represents surplus value created in production and realised by the corporate sector. When he puts this against net fixed assets, the result looks like this.

Figure 9. US rate of profit with 'fictitious profit' removed (%)



The credit and property boom from 2002 generated profits that could not eventually be realised, creating the conditions for a huge collapse in values. The trigger for the collapse was a fall in the mass of profits and the fictitious nature of those profits.

Each crisis can have its own trigger: the 1974-5 slump was triggered by high oil prices; the 1980-2 slump triggered again by high energy prices; the 1991 by a property slump; the 2001 by stock market hi-tech crash; and 2008-9 was preceded by a credit-fuelled bonanza in property, diversified through financial instruments of mass destruction (collateral debt obligations).

If each crisis under capitalism has a different cause depending on the development of capitalism into different forms, the analysis turns theory into tautology: crises of capitalism are caused by capitalism. It has no explanatory power; it cannot by empirically tested and it certainly has no predictive value. We have no idea why, when or how the next crisis of capitalism will materialise, apart from knowing it is going to happen.

Let me summarise an alternative explanation to Gindin's. Even though there was a rise in the rate of profit in the US from the early to mid-1980s, this peaked in 1997. The subsequent sharp rise in profitability from 2002 to 2006 was mainly fictitious in character, just delaying the oncoming slump that would be engendered by the squeeze in profitability in the productive sectors of the economy and indeed making the eventual slump, a Great Recession.

[17] Peter Jones (2013), The Falling Rate of Profit Explains Falling US Growth

I am not arguing that each crisis of capitalism does not have its own characteristics. The trigger in 2008 was the huge expansion of fictitious capital that eventually collapsed when real value expansion could no longer sustain it, as the ratio of house prices to household income reached extremes. I do not say that such triggers are not 'causes', but argue that behind them is a general cause of crisis: the law of the tendency of the rate of profit to fall.[18]

[18] See M Roberts, *Tendencies, triggers and tulips - The causes of the crisis: the rate of profit, overaccumulation and indebtedness*, Presentation to the Third Economics seminar of the IIRE, 14 February 2014, Amsterdam, Netherlands