

PROBLEMS ASSOCIATED WITH USING THE SNA TO VERIFY THE EQUALISATION OF PROFIT RATES.

Marx did not discover the tendency for profit rates to equalise between industries. The very process of capitalist accumulation is the restless movement of capital in search of higher profits, a movement which erodes, but only momentarily, the difference in rates of profit. What political economists prior to Marx could not explain was the process of equalisation. Marx was able to show this was caused by the redistribution of surplus value when the movement of capital forced prices and values to diverge. In this posting, I will use the National Accounts prepared for the US economy to establish this law whose results are “intricate”, “approximate”, always in a state of “perpetual fluctuations” and “never firmly fixed”. (Volume 3, Chapter 9, page 261. Penguin Edition) It is the first to use both fixed as well as circulating capital to compare profit rates.

Until recently extracting a rate of profit from the National Accounts was crude. The reason was the absence of circulating capital. In its absence the rate of return acted as a proxy for the rate of profit. In the case of the 15 industries examined here, the ratio of circulating capital to fixed capital amounts to about a third, and, for the non-financial corporate sector to nearly a quarter. Thus, there is a significant difference between total capital which includes circulating capital and fixed capital which does not. The reader will see the extent of the error as we proceed with the analysis. In sum the rate of return should not be used as a proxy for the rate of profit now that circulating capital is known.

Problems with the data.

In this posting the rates are calculated over 5 years, from 2011 to 2015. This covers the period of prosperity, over-production and the beginnings of stagnation (2015). Comparing the equalisation over a single year would be wrong as the “perpetual fluctuations” could be misleading. I have attached individual spreadsheets for each year. An inspection of the Oil & Gas producing sector shows a high degree of volatility due to changes in oil prices. When oil prices reached their zenith in 2014 profitability improved and when they collapsed in 2015 profitability plunged. Conversely profits in those industries sensitive to the movement of oil prices like trucking, saw profitability fall as oil prices rose and with it the price of diesel, only to see profit margins improve when oil prices fell in 2015.

I would have liked to extend the series beyond 2015 to make it more contemporary but the absence of depreciation figures for key industries beyond 2015 made that impossible. On the other side I did not consider it beneficial to extend the series back beyond 2011 as the economy was still in the process of recovering from the financial crash at the end of 2008.

In addition, there is one qualification. In the retail sector I have used the same formula for turnover as found in the other sectors for consistency. However, the retail sector has a special formula because the BEA does not count merchandise for resale as part of gross output because it has been previously accounted for in other industries. When factoring for it the following formula emerges:

$$\frac{RS + IS + [(RS + IS) - GVA]}{GVA} \quad \text{instead of} \quad \frac{GO + (GO - GVA)}{GVA}$$

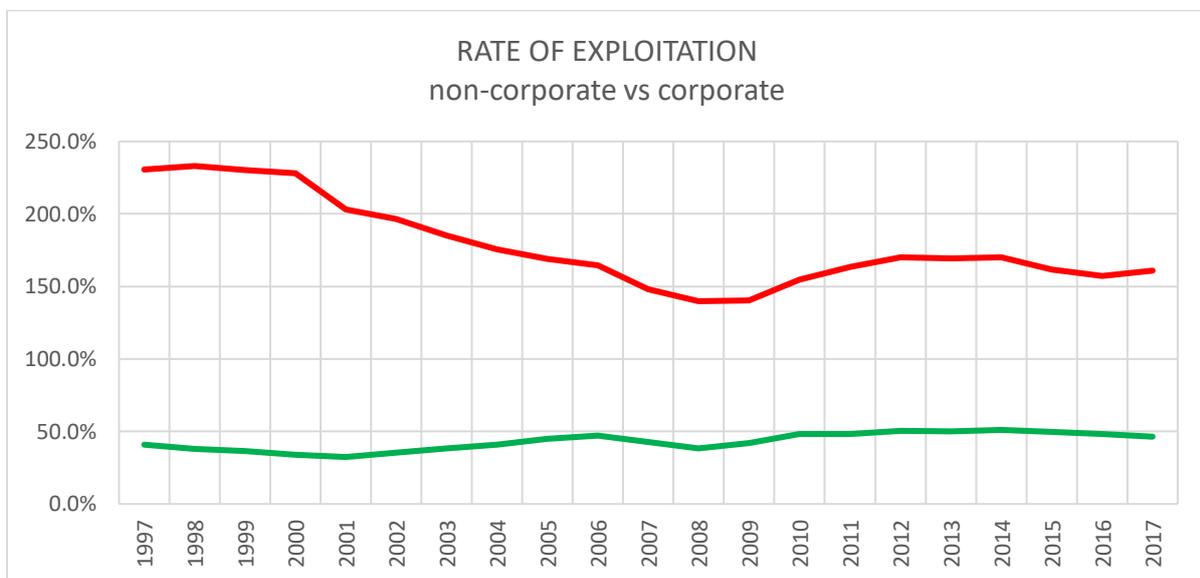
When using the former formula, a rate of turnover four times greater is found. Thus, working capital would be reduced by three quarters and the ratio of circulating to fixed capital for all 15 industries over the five years would be reduced from 33% to 26%. Crucially this is still 3% higher than that found in the whole of the non-financial corporate sector. The importance is about to become clear.

One of the confounding problems when comparing rates of profit is not the duplication of final sales or the omission of final sales which can be minimised by selecting specific industries. Rather, it has to do with the distinction between the corporate and non-corporate sector. The non-corporate sector embodies partnerships and sole proprietors. Just over 10% of the total labour force are employed in establishments smaller than 10 employees. This is where partnerships and self-employment predominate. https://www.bls.gov/web/cewbd/table_f.txt

One has to have sympathy with the statistical bureaus over their treatment of the surpluses that arise in the non-corporate sector. In the corporate sector itself, the “wages” of senior officers and management of these firms are treated as employee compensation. On the other hand, in the non-corporate sector, all the income of partners or sole proprietors, regardless of whether they are working capitalists, are treated as surplus. In other words, no partner or proprietor pays themselves a wage, rather they “pay themselves a surplus” so to speak.

Correspondingly the ratio of the surplus to employee compensation, or the crude rate of exploitation, is much higher in the non-corporate sector than it is in the corporate sector. This is counter-intuitive as the productivity found in the corporate sector is much higher, which makes higher rates of relative exploitation possible. The substantial difference in the rates of exploitation are found in Graph 1.

Graph 1.



(Source: Table 1.13. National Income by Sector, Legal Form of Organization, and Type of Income.)

The rate of exploitation is over three times higher in the non-corporate sector. This is one more reason why whole economy profit figures are often misleading, because of the overestimation of the surpluses. The largest sector we can utilise to avoid this, is the corporate sector. Unfortunately, the industry levels used here do not distinguish between corporate and non-corporate. Despite being only 23% the size of the corporate sector, the relatively higher surpluses found in the non-corporate sector does influence industry level rates of profit and explains in some cases the degree of divergence.

As we will see, those industries with the lowest compositions of capital, as measured by the ratio of fixed to circulating capital, are prone to have the highest density of non-corporate firms. They tend to yield the highest cash flow and undivided rates of profit, though thanks to creative accounting, not necessarily the highest enterprise rates of profit. In this bracket are to be found, publishing, data + information, as well as the performing arts (columns 12, 13 & 15 in the tables).

The industries selected.

<u>Description</u>	KLEMS row	Table Column
Oil and gas extraction	55	1
Fabricated metal products	145	2
Machinery	154	3
Computer and electronic products	163	4
Motor vehicles, bodies and trailers, and parts	181	5
Food and beverage and tobacco products	226	6
Paper Products	253	7
Chemical Products	280	8
Plastics and rubber products	289	9
Retail	307	10
Truck Transportation	388	11
Publishing industries, except internet (includes software)	442	12
Data processing, internet publishing, and other info serv.	469	13
Computer systems design and related services	604	14
Performing arts, spectator sports, museums, etc	739	15.

The descriptions of industry is provided by the BEA. The KLEMS tables are found under GDP-by-Industry in the interactive section of the BEA's website. The Table columns refer to the columns found in the attached worksheets. Of the 15 industries, 8 are to be found in the manufacturing sector, with 4 located in the durable and 4 in the non-durable sub-sectors. I have included retail and distribution as they take part in the overall equalisation of profit. In total the value added by these 15 industries amounted to \$7330.2 billion compared to \$8887 for the entire corporate sector in 2015.

Thus, in aggregate these industries are substantial. And they are representative of industries with significantly different compositions of capital. This ranges from the oil and gas extraction where circulating capital is only 7.5% of fixed capital to 247.4% for Computer systems design and related services.

We can now return to the observation that the ratio of circulating to fixed capital is lower in the 15 industries than is found in the non-financial corporate sector. This is because the 15 industries are populated with non-corporate partnerships and sole-proprietorships as well as the self-employed. Generally, the corporate sector manifests a higher composition of capital because they employ relatively more constant capital.

We can thus expect to find a higher ratio of circulating capital in the 15 industries which averages 26% or 33% depending on methodology compared to 23% for the non-financial corporate sector. However, the ratio of circulating capital to fixed capital must not be confused with the ratio of variable capital to constant capital which constitutes the value composition of capital. Circulating or working capital comprises in the aggregate, both variable capital as well as the fluid element of constant capital.

Circulating capital can be arrived at from two directions. Firstly, it is gross output less net surplus divided by turnover. I choose this formula because I prefer using gross output data rather than intermediate data. But it can also be arrived at by adding intermediate sales to employee compensation divided by turnover. The latter formula is closer to cost price and is therefore clearer.

Both yield the same result as the following simple example shows. Intermediate sales amount to 20, net value added to 30 making up net output of 50. In turn net value added is divided into 15 for employee compensation and 15 for net surplus. (We can set depreciation aside.) Thus, net output less the surplus, or 50 less 15, also corresponds to intermediate sales of 20 plus employee compensation of 15. Both computations yield 35. (All worksheets embody the formulas for turnover and fluid capital)

By using intermediate inputs plus employee compensation, we can immediately identify the element that belongs to constant capital and the element that belongs to variable capital. In our example inputs of 20 are larger than 15 for compensation. In this case fluid constant capital is larger than variable capital. Where annual turnover are greater than 3, fluid constant capital will always exceed variable capital. The higher the rate of turnover, the more fluid constant capital exceeds variable capital. In our example of a rate of turnover around 3.8, fluid constant capital is 30% larger than variable capital.

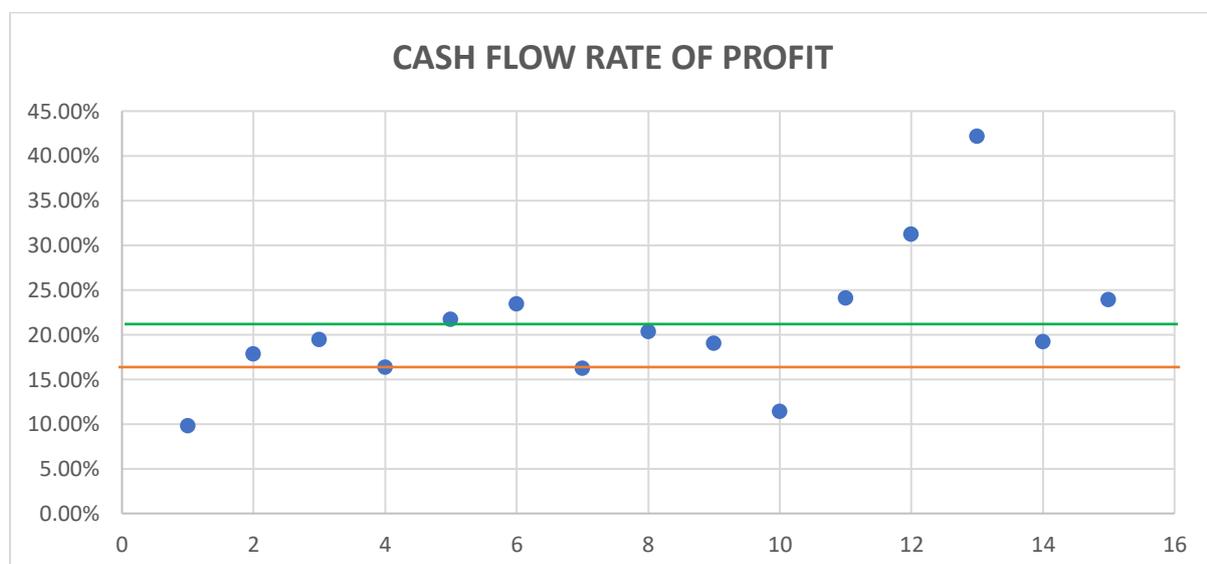
It is not possible to obtain the actual compositions of capital from the tables I have prepared because inventories are not included. The value composition of capital is obtained by dividing annual compensation by turnover to arrive at variable capital which is then divided by fixed capital + inventories to yield the rate of profit. There are a number of postings on this site which compare different ways of measuring profitability, notably the posting which compares the outcomes using 3 different methodologies. <https://theplanningmotivedotcom.files.wordpress.com/2018/09/three-rates-of-profit-in-three-countries-pdf.pdf> Readers may feel this omission is a weakness of this posting, but my concern is to compare rates of profit in their most concrete setting, and that means dividing profit by circulating and fixed capital.

Why so many rates of profit.

Three rates of profit and the rate of return are compared. Each rate provides useful insights into the equalisation process. The first and largest rate of profit is gross output divided by total capital (fixed plus circulating). I have called this rate, the cash flow rate of profit and it is similar to EBIDTA divided by capital. EBIDTA stands for earnings before interest, depreciation, taxes and amortisation. Analysts in the City of London and Wall Street for example use it to compile the cash generated by businesses.

This cash should not be confused with surplus cash resulting from the production of surplus value. To obtain surplus cash we would have to deduct depreciation or amortisation from the new cash generated. EBIDTA is a widespread metric and one used to diagnose the underlying health of a business. so it is worth investigating. The numbering system on the horizontal axis of Graph 2 corresponds to the industry numbering used under the heading “The industries selected”, above.

Graph 2.



(See spreadsheet: AVERAGE equalisation of profit spreadsheet & Table 1.14 equalisation of corporate profit.)
Green axis = rate for 15 industries and brown = rate for the non-financial corporate sector.)

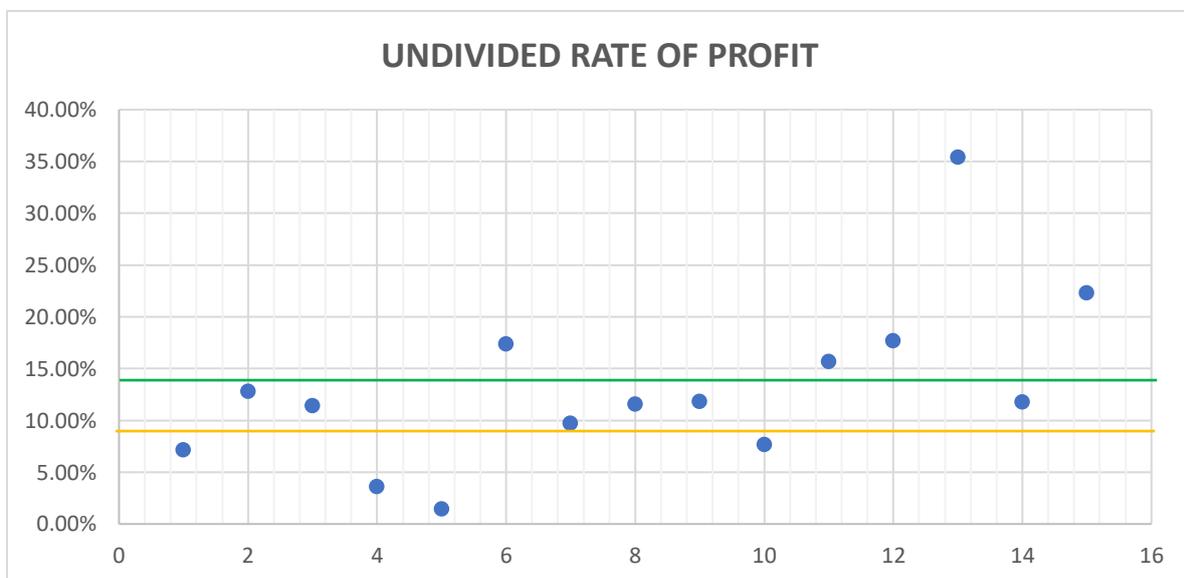
The standard deviation of 7.8% is a third of the average rate of profit for the 15 industries.

All data is based on the average for the five years 2011 to 2015. The brown line represents the average rate of profit found in the non-financial corporate sector over the same period. The green line represents the average rate of profit for the 15 industries. The band between the two provides the base line to compare all 15 industries. If we assume a difference of 20% on either side of the band then 11 industries congregate along the average axes.

There are 3 outliers, the oil and gas industry, publishing and data processing. The oil and gas industry has the highest composition of capital while publishing and data processing have below average compositions. This does not represent a breakdown in the movement of capital from industries with lower profitability to industries with higher, because when we examine the enterprise rate of profit later, this lower composition of capital does not necessarily translate into a higher rate of profit.

The next rate of profit is the undivided rate of profit. It consists of the net surplus divided by total capital and its results are found in Graph 3. The difference between Graphs 3 and 2 is that depreciation is excluded from Graph 3. The net surplus profit figure is commonly used by Marxists when calculating the rate of profit as it corresponds to Marx's formula $s/c+v$ where s equals surplus value.

Graph 3.



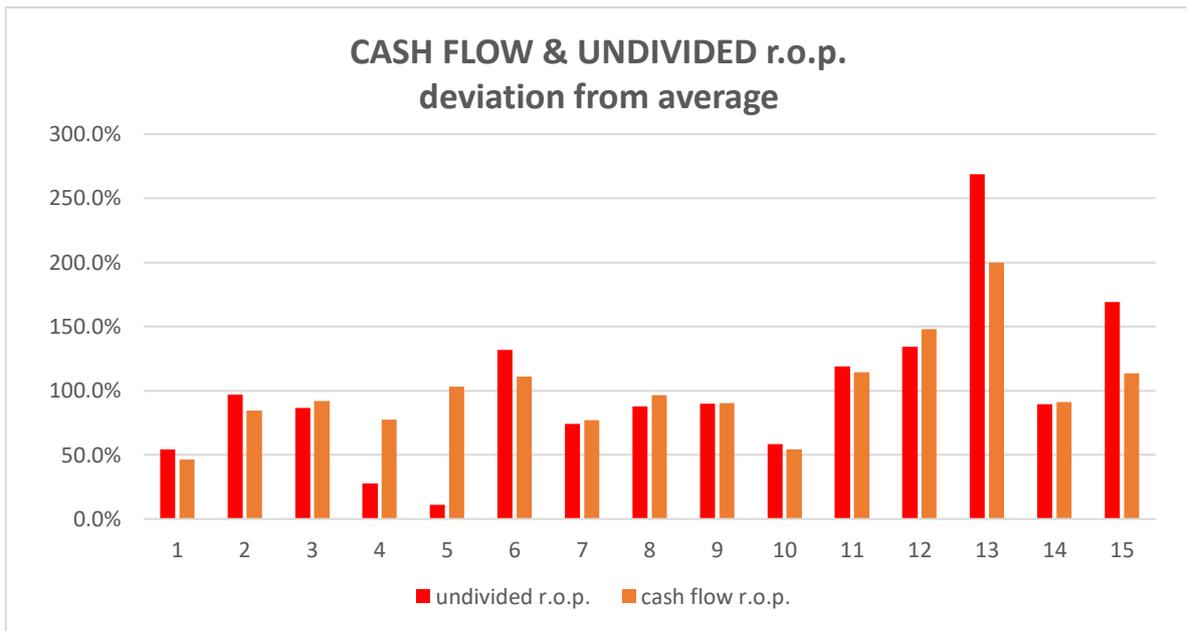
(Source: as for Graph 1.)

The standard deviation of 8.2% is 62% of the average rate of profit for the 15 industries.

Here we find 9 of the 15 industries proximate to the average rates of profit. This represents two-thirds of industries. A further 2 are just outside the band. We now have four outliers. Some industries change position. The oil and gas industry, a previous outlier is now one of the industries proximate to the rate of profit. Paper Products which was bang on the rate in Graph 2 is now an outlier. 13 remains an outlier as does 15. Once again there is a concentration of profit rates around the average rate of profit.

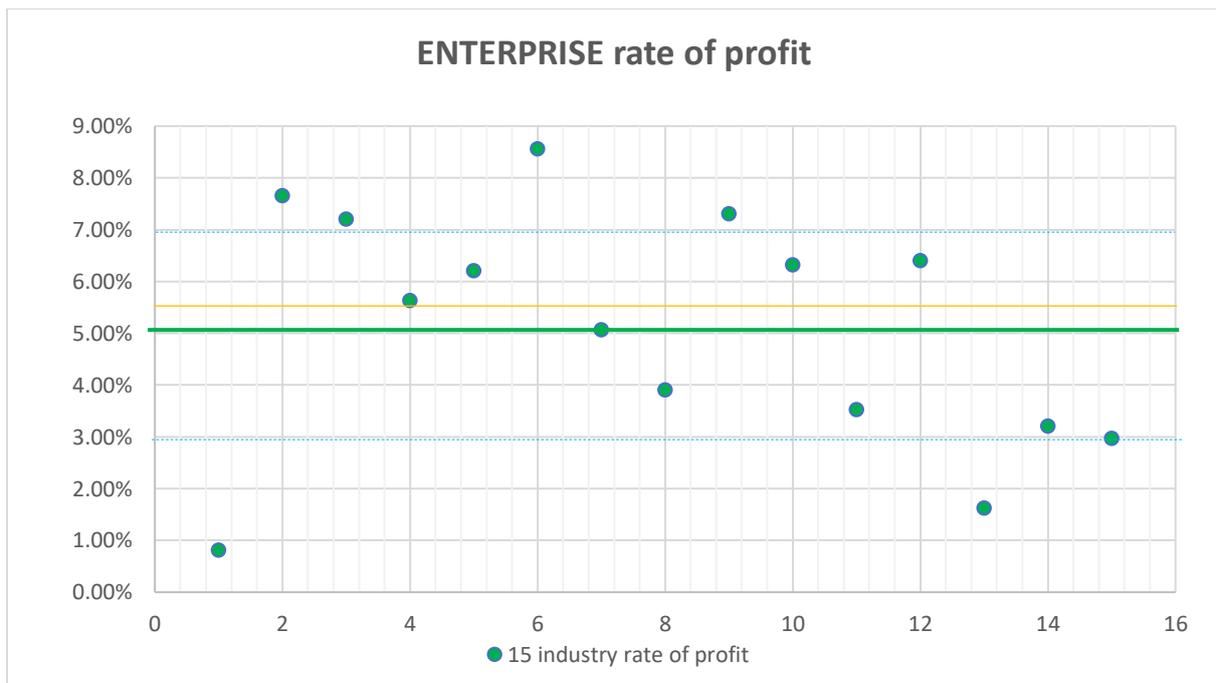
As we descend down the ladder of rates we will find the correlations loosen somewhat. Graph 4 below compares the dispersion of the rate of profit when measured by cash flow or by undivided surplus. What is important in this graph is how many industries are located adjacent to the 100% axis.

Graph 4.



The third rate of profit is the most important. It is the enterprise rate of profit. It is the rate that tends to trigger investment decisions. This is the after-tax rate of profit, the one that informs investors how much profit they are left with after dividing up the gross profit with other claimants such as the banks (interest) and the state (taxes). It is the divided profit figure, the one that belongs to the firm.

Graph 5.



The standard deviation of 2.3% is equal to 45% of the average rate of profit for the 15 industries.

We now find a narrowing of the band. Simultaneously we find a greater dispersion. If we were to assume a 2% or a 2-point deviation from the band, then only 9 industries congregate in this range. There are 2 close to the zone and 4 outliers. The first is the oil and gas industry which has moved from

proximate to outlier. The same is the case with fabricated metals, so too with food & beverages, paper products and data processing. Data processing is the most interesting. From being well above the average in the first two measures of profitability it has now plunged to a below average enterprise rate of profit. This can only be due to write offs of good will and associated matters as this industry was in the process of consolidation.

The narrowing of the band between the rate found in the corporate world and the rate found for the 15 industries, both of which represent around a third of the entire economy is evidence that the data is robust and powerful enough to model the economy as a whole.

The final rate of “profit” is the crude rate of return which should no longer be used. The average rate of return at 7.6% for the 15 industries over 5 years is 50% higher than the rate of profit of 5.1%. Both are based on the same after-tax figures but in the case of the rate of return only fixed capital is used. Why Marxist scholars choose to continue to use the rate of return which is 2.5% distant from the rate of profit evades explanation. The 2.5% difference in many countries, but not the USA, is greater than the bank rate itself.

Most interestingly, we find the band is inverted. It is now the case that the rate of return for the 15 industries is higher than for corporate business.

Graph 6.



The standard deviation of 3.5% is equal to 46% of the average rate for the 15 industries.

In this graph we use a deviation of 3 rather than 2 because of the higher rate of return. This applies equivalence. Once again 8 or a majority of industries lies within the zone, 2 are close and 4 are distant.

Conclusion.

In the discussion that follows will focus only on the key enterprise rate of profit. The rate of return is disregarded especially when it is based on the net surplus divided by fixed capital, a metric as wildly inaccurate as it is often misused.

The first thing to note is that the concrete rate of profit for 2011 – 2015 was lower than generally understood, standing at between 5 and 6%. This was less than 2% higher than the prime lending rate at the time. The low average rate of profit creates stickiness in the movement of capital between industries because the rewards are compressed. The rewards for investing between different industries is in the main under 4% which does not cover risk. Instead it explains the behaviour of boards, who after all personify the needs of capital, focused as they are on spinning off divisions to concentrate on core activities, or engaging in a wave of mergers and acquisitions, as well as the orgy of share buy backs and it explains the lack of investment. It also encourages the use of non-GAAP profit headlines to flatter underlying profitability through a maze of adjustments.

Secondly, it would have been wrong to anticipate every industry sharing the same average rate of profit. Certainly, Marx and Engels did not expect it. There are a number of reasons for rates to diverge. Firstly, the question of scale and the price paid for acquiring it (the issue of unicorns). Secondly the barriers produced by Intellectual Property rights which today is the main source of monopoly profits. Thirdly historically low rates of capacity utilisation. Fourthly elevated and complex techniques which boost start up and teething costs.

The third point concerning capacity utilisation is critical and deserves a deeper understanding. In industries with below average compositions, what the capitalists refer to as “labour intensive” industries, a fall in capacity generally means sacking workers to reduce costs. Thus, this change in capacity need not be accompanied by extreme price volatility. But in above average composition industries, like oil and gas, a fall in capacity utilisation cannot be offset by wage costs as employees are shown the door. The main cost is on the constant capital side not the variable capital size. These industries rely critically on capacity which is why even a small fall in demand is met by an oversized fall in prices and critically profits. Thus, in the global oil industry even a mere 1% imbalance between demand and supply can see a movement of \$10 in the price of a barrel of oil.

Despite all these pushes and pulls on the rate of profit, between half and two thirds of industries have a profit rate that is proximate to the average rate of profit. In the case of the enterprise rate of profit, 53% of industries are clustered in a zone adjacent to the average rate of profit whether measured by the fifteen industries or by the rate of profit for corporate non-financial business. Thus, although the clustering is not tight, neither is the scattering of the order suggesting no equalisation process is in play. The actual result is closer to a tight clustering showing that the equalisation of the rate of profit is real.

Attached worksheets.

Table 1.14	Equalisation of corporate profit (average rate of corporate profit 2011 -2015)
2011-15	AVERAGE equalisation of profit worksheet (all graphs)
2011	equalisation of profit worksheet (for sources)
2012	equalisation of profit worksheet
2013	equalisation of profit worksheet
2014	equalisation of profit worksheet
2015	equalisation of profit worksheet

Brian Green, April 2019.