

1997 – 2020: RATES OF PROFIT, SURPLUS VALUE & TURNOVER.

On September 30th the BEA released its latest 'GDP-by-industry, KLEMS, Composition of Gross Output by Industry' Tables enabling all the rates to be estimated. Although the BEA does produce a pre-1997 KLEMS table, it is not compatible with the current series, which means we are restricted to current series beginning in 1997. Fortunately this period covers most of the era of globalization.

There are three accompanying spreadsheets in which the reader can find the data and calculations yielding the numerous graphs found in this article. All the ancillary Tables such as depreciation and so on are referenced at the end of the article.

Methodologies.

The formula for the rate of turnover is: $GO/GVA + (GO - GVA)/GVA$ where GO stands for Gross Output and GVA for Gross Value Added. Both GO and GVA is found in the Composition of Gross Output Table.

Two rates of profit are used. Net surplus divided by circulating plus fixed capital, and pre-tax profits divided by circulating plus fixed capital. The net surplus is obtained by subtracting depreciation from the gross surplus found in the Composition of Output Table. Circulating capital is obtained by deducting the net surplus from Gross Output then dividing the result by the number of annual turnovers.

The rate of exploitation is obtained by dividing the annual net surplus by annual compensation. In turnover terms this implies an annual turnover of 1. The rate of surplus value on the other hand includes turnovers which average about 4 annually. By dividing annual compensation by turnovers variable capital is obtained, which having been reduced ensures that the rate of surplus value is many times larger than the rate of exploitation, as well as being much more volatile. Thus this article therefore does not confuse annual compensation with variable capital as is the usual case.

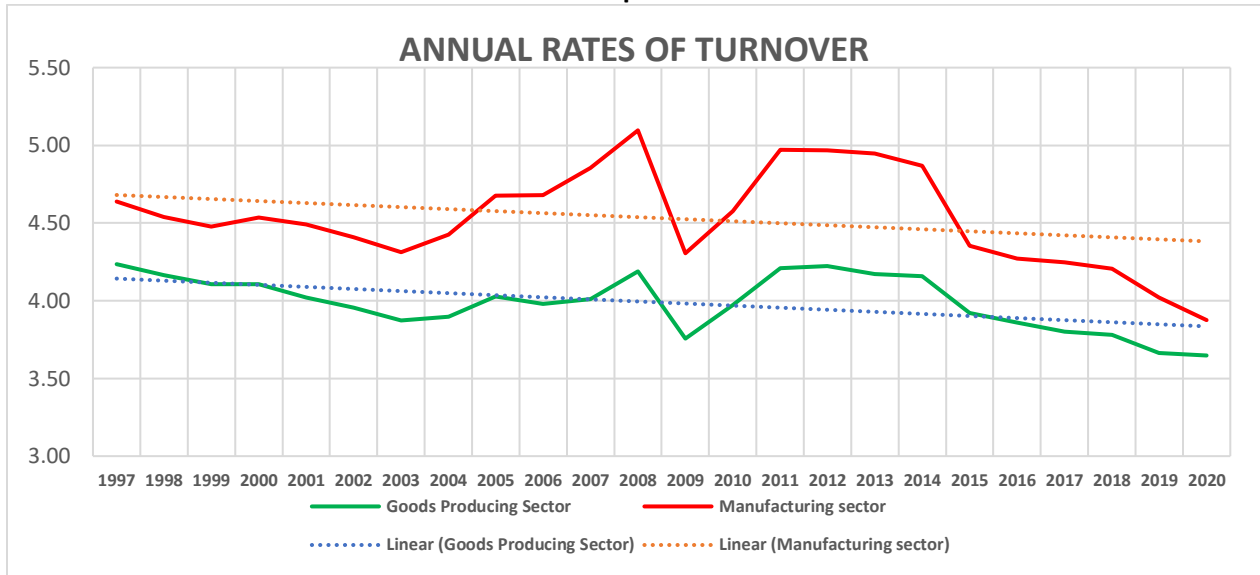
The value composition of capital is obtained by dividing the fixed capital by variable capital which yields a ratio well above a thousand percent rather than the mid-hundreds when annual compensation is used.

The rate of turnover.

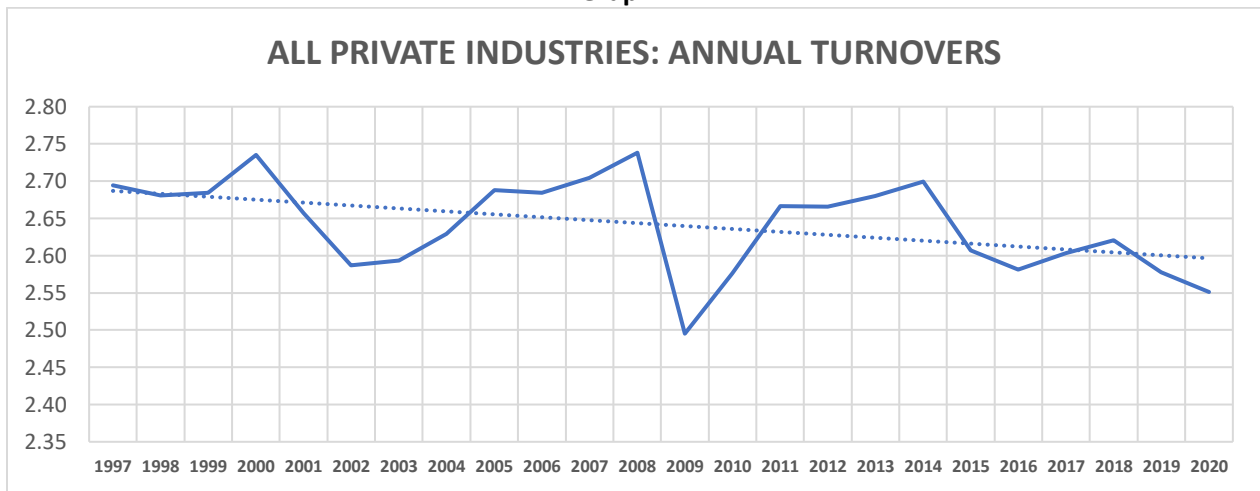
The turnovers are plotted in four graphs below. During these 24 years there were two peaks, at the beginning of 2008, and during the years 2013 and 2014. For our purposes, we note there has been a more or less continuous fall in the rate of turnover since 2013-4. The exception being retail, but we will have cause to examine this trend in a later posting. A fall in turnover means it takes longer to realize profits regardless of changes to the production period itself which may be falling. Thus there can be no doubt that there is a strong association between changes to the rate of turnover and to the rate of profit. A falling rate of turnover is always associated with a falling rate of profit as we shall see later.

I have included a whole industry rate of turnover. The specific reason is to compare it to the 'Business Sales to Inventory' ratio. The sales to inventory ratio is the best proxy we have for the production period. This ratio indicates how many times a year inventory turns over. The reason for including this ratio has to do with 2020 which is an anomalous year because the data is confounded by the pandemic. By comparing Graphs 2 and 3 some determination can be made as to whether the slowdown in the rate of turnovers was actual or statistical because GVA was inflated by Covid subsidies. To understand why this is so please go to Note 1 at the end which provides a simple arithmetical explanation.

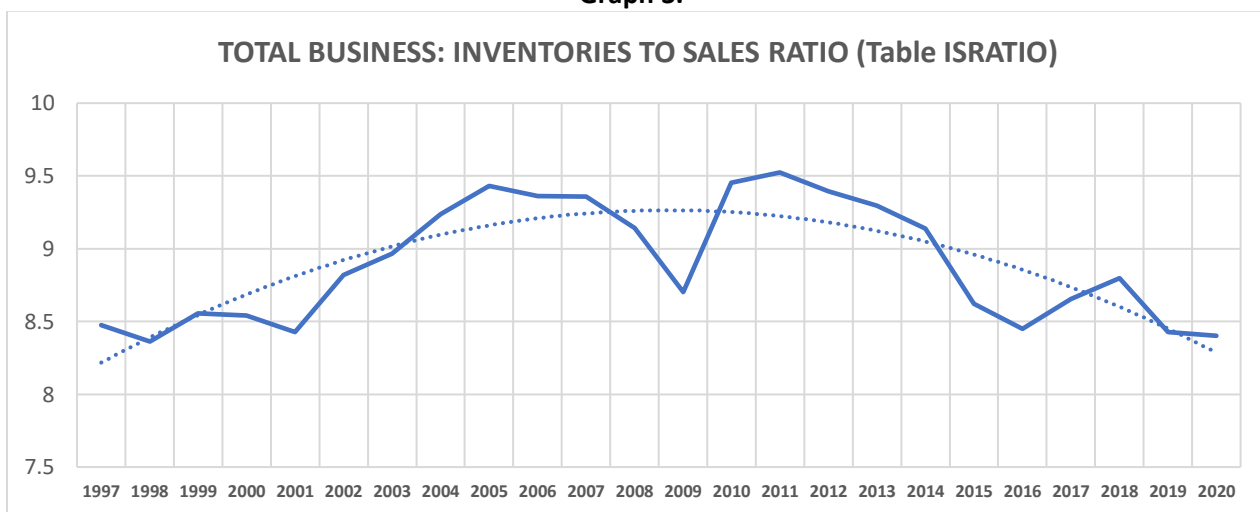
Graph 1.



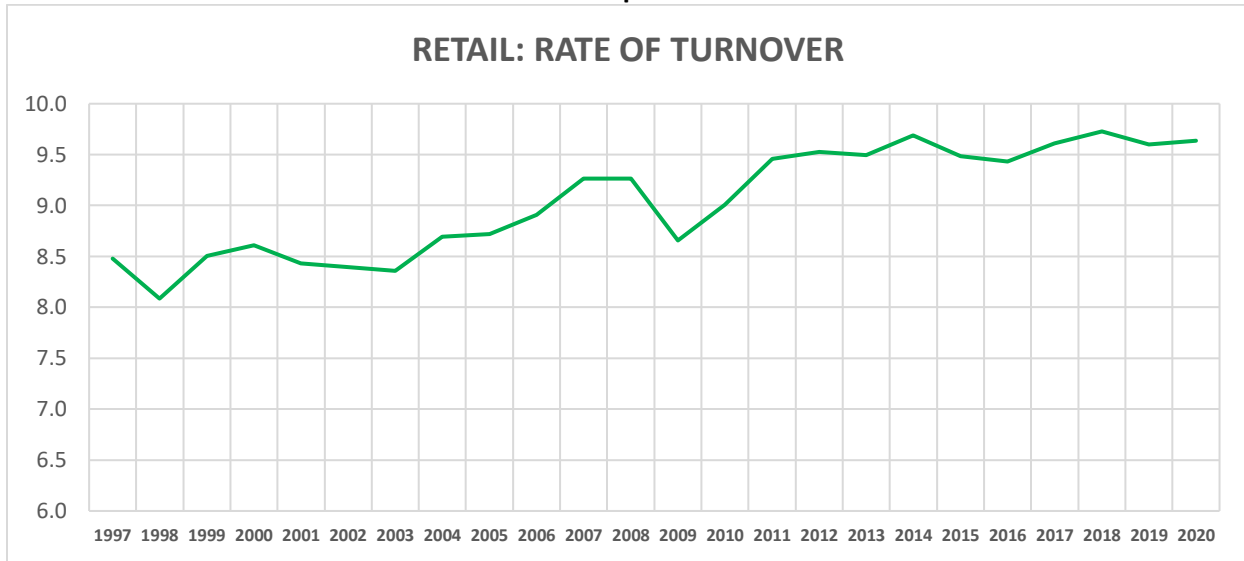
Graph 2.



Graph 3.



Graph 4.



There is a degree of symmetry between Graphs 2 and 3, and indeed I have used it previously to confirm the rate of turnover. One of the reasons for discrepancies is that Total Business comprises Manufacturing, Wholesale and Retail Sales and as we see with Graph 4, Retail turnover seems to buck the trend by not falling. Whereas the overall turnover rate fell from 2014 (Graph 2), Retail continued to edge up. If we were to compare only manufacturing, previously done, the symmetry is closer. (As I showed in a previous post *Bankers Bottle It*, capital gains particularly from the Stock Markets have buoyed up retail sales which in turn has driven GDP growth.)

The rate of surplus value

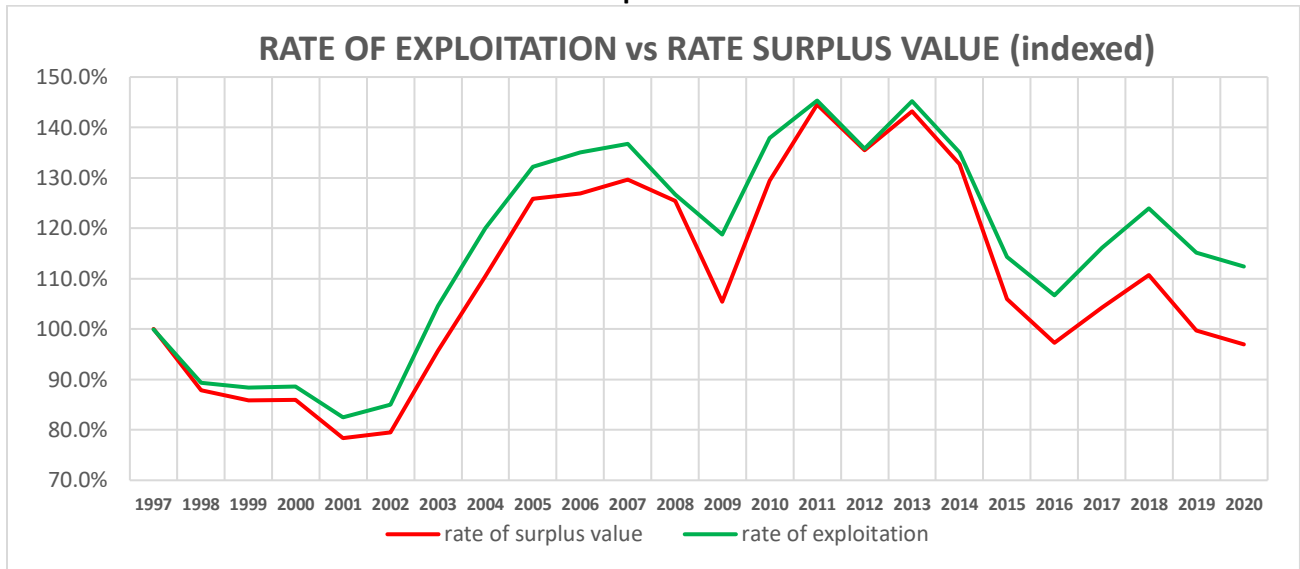
We note two things. Firstly, how much greater the rate of surplus value is because it is really the rate of exploitation times turnover. Secondly, we note how much more volatile the rate of surplus value is because it includes turnovers which accelerate and decelerate depending of the phasing of the business cycle.

Graph 5.



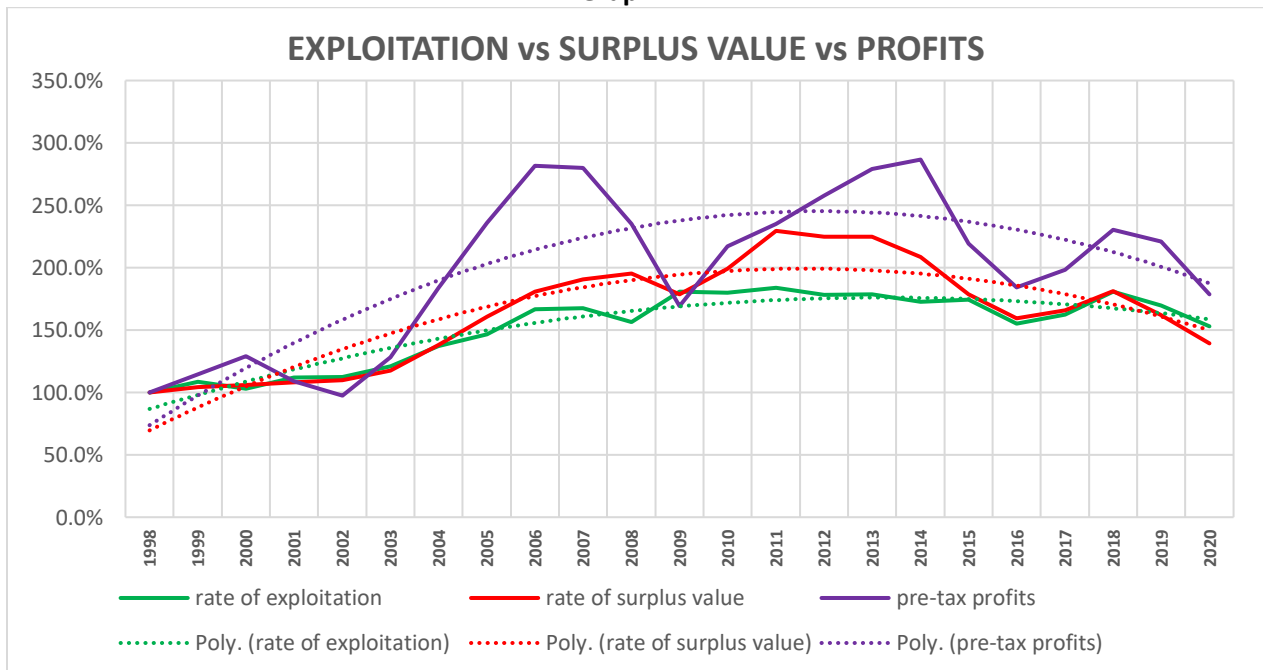
In order to bring out the differences in volatility Graph 6 shows the relative motion between the two because both have been indexed excising their absolute differences. Towards the end of the business cycle we note how they merge as turnover accelerates while in the recessionary phase they move apart as turnover decelerates.

Graph 6.



This divergence has profound consequences for the production of surplus value and therefore of profit as shown below covering the non-durable manufacturing sector. Again two things are to be noted. The trend line for surplus value (red) is closer to the trend line for profits (blue). Secondly, only when the red graph rises above the green graph do profits rise, and vice versa, when the red graph falls faster or falls below the green, the mass of profits decline.

Graph 7.

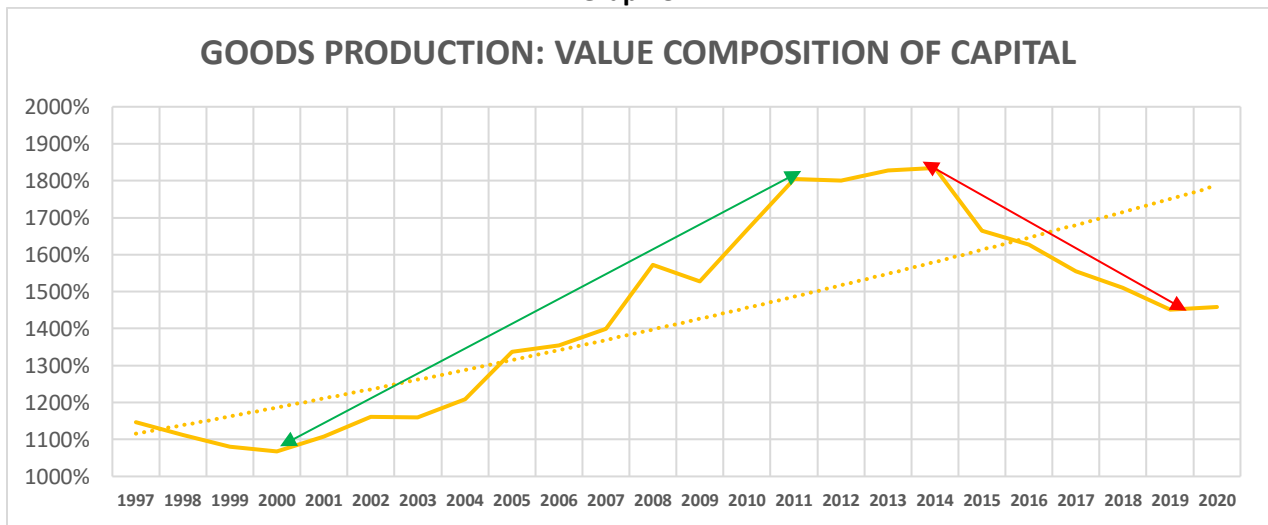


Here then lies the importance of the association between the rate of profit and the rate of surplus value. Turnover is like a multiplier. When it rises it increases the rate of surplus value faster than the rate of exploitation which boosts profits because it takes less time to realize them, and when it decelerates the opposite happens, the production of profits falls. Though Marx lived before the advent of the System National Accounts which alone could demonstrate this association, his assumptions were accurate.

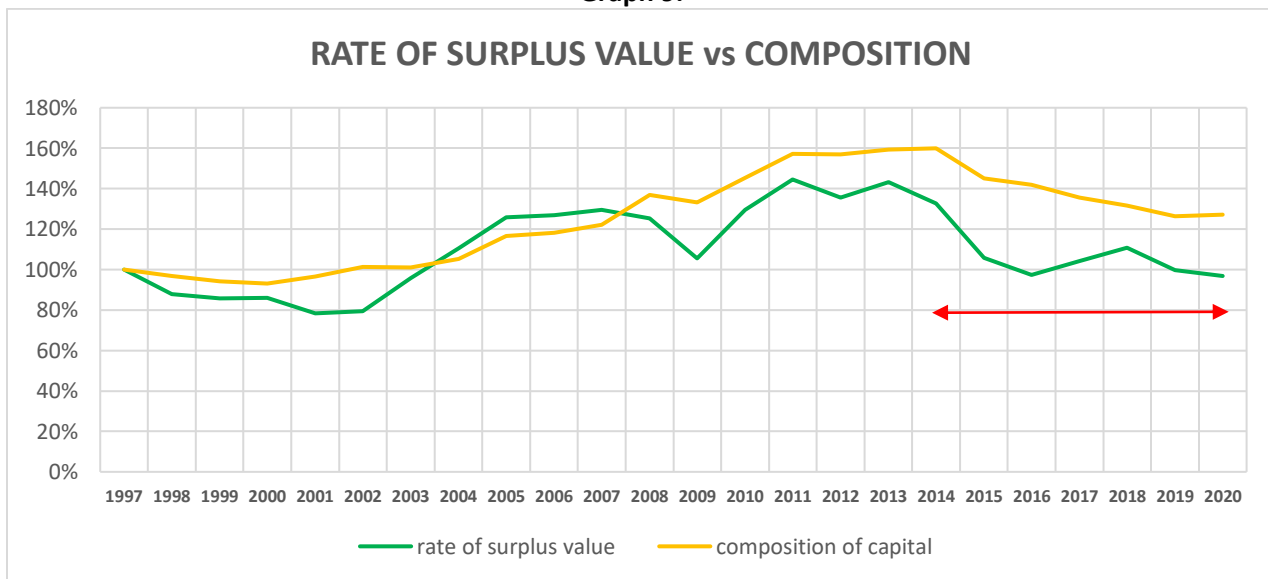
The value composition of capital.

Between 2001 and 2014 the expected increase in the composition of capital is found driven by labour saving investment. Although this process is interrupted by the Financial Crash in 2008, the fall in the composition of capital occurs only post-2014. The surprising fall post 2014 is associated with the fall in the rate of profit which not only reduced fixed investment but decelerated turnovers which increased the need for more variable capital as circulation periods grew from 87 days (2014) to 100 days on average.

Graph 8.



Graph 9.



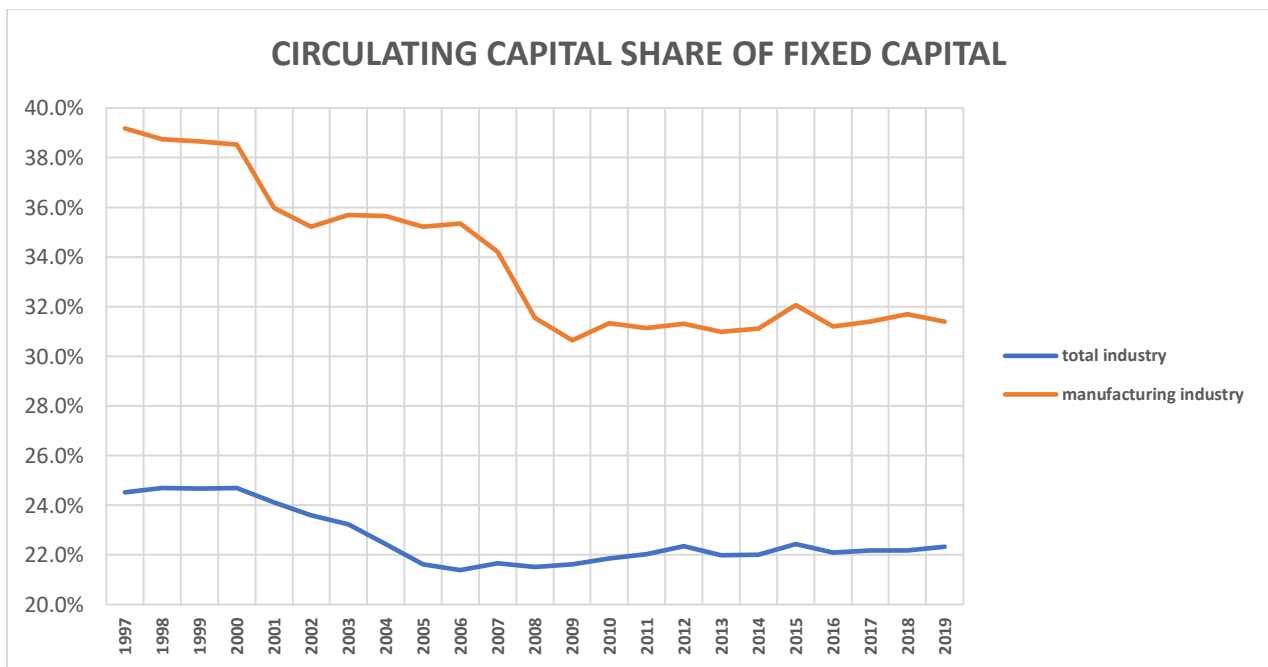
It is often argued whether it was the chicken or egg which came first, or in this case, did the fall in the rate of profit precede the fall investment or did the fall in investment lead to less profits being produced. The simple case looks at the chronological order, and both Michael Roberts and I have produced irrefutable evidence which shows that it is the fall in the rate of profit which precedes the fall in the rate of investment and not the other way around.

However, this may be asking the wrong question. The more profound question as addressed by the above graph, is whether an investment which leads to a rise in the rate of surplus value but one insufficient to overcome the rise in the composition of capital, will endure? It cannot. The arrows point to this phenomenon. However it is wrong to say that no investment took place during this time. There was relatively less investment in fixed capital and relatively more in circulating capital as more workers were employed. Nipa Table 6.9D shows the total number of hours in Non-Farm Business rose by 11.6% between 2013 and 2019 while in manufacturing it rose by 5.2%.

The period covered by the arrow is a period when employers were sweating their capital. They applied more workers to the existing means of production by lengthening and increasing shifts. Thus this period is also associated with a deceleration in productivity and a loss of competitiveness. In the non-farm business sector productivity rose by 2.6% p.a. in the seven year period ended 2008 compared to only 1.4% in the seven year period ended 2019. (Source: *Nonfarm Business Sector: Labor Productivity (Output per Hour) for All Employed Persons (OPHNFB)*)

Changes to the ratio of fixed to circulating capital can be seen below. We note the expected fall up to the Financial Crash because fixed investment was more vigorous and thereafter an unusual rise in the proportion of circulating capital. This is another expression of the fall in the composition of capital (Graph 8) between 2014 and 2019 representing the Goods Producing Sector where manufacturing is by far the largest component.

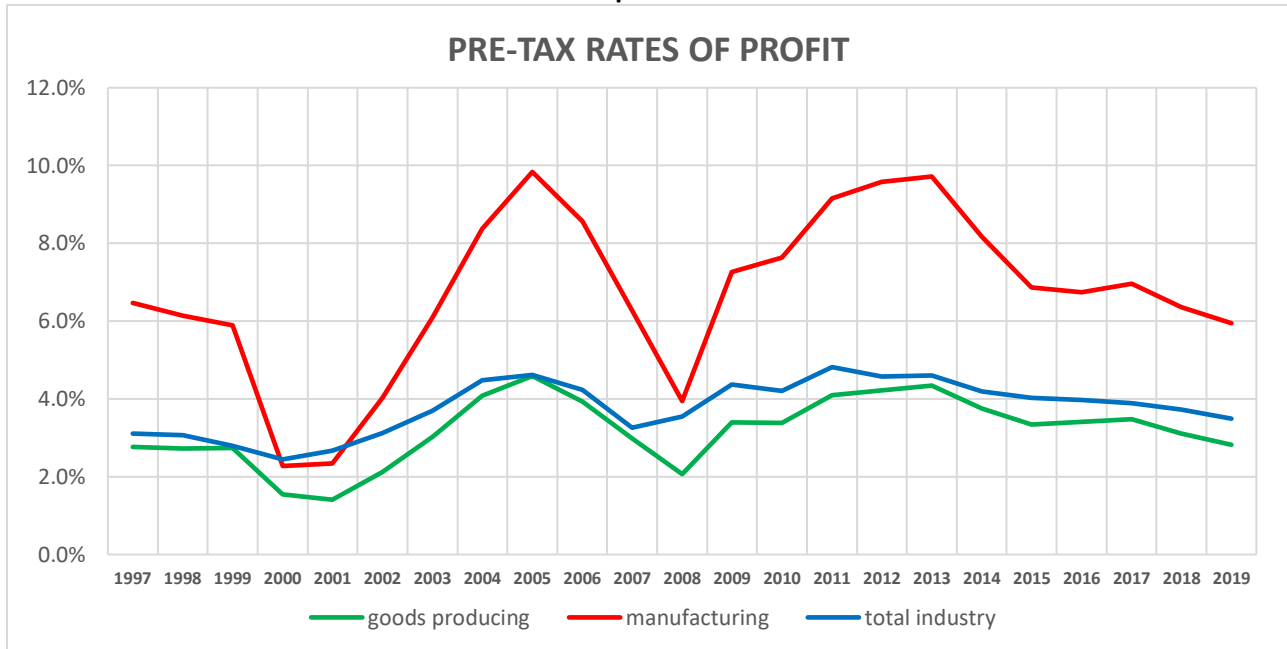
Graph 10.



The rate of profit.

Graph 9 gave the game away. A fall in the rate of surplus value relative to the composition of capital is fatal for the rate of profit as shown in Graph 11 below. In all cases the rates peaked in 2013 and then fell in subsequent years. Previously I located the pivotal year to be 2014 but revisions to the data put it now at 2013 which I shall use henceforth. Interestingly this earlier date makes the fall more proximate to the fall in China's rate of profit. In the case of all industry the fall from its peak of 4.8% to 3.5% represents a fall of twenty seven percent. In the case of manufacturing, the fall of thirty nine percent is even greater.

Graph 11.

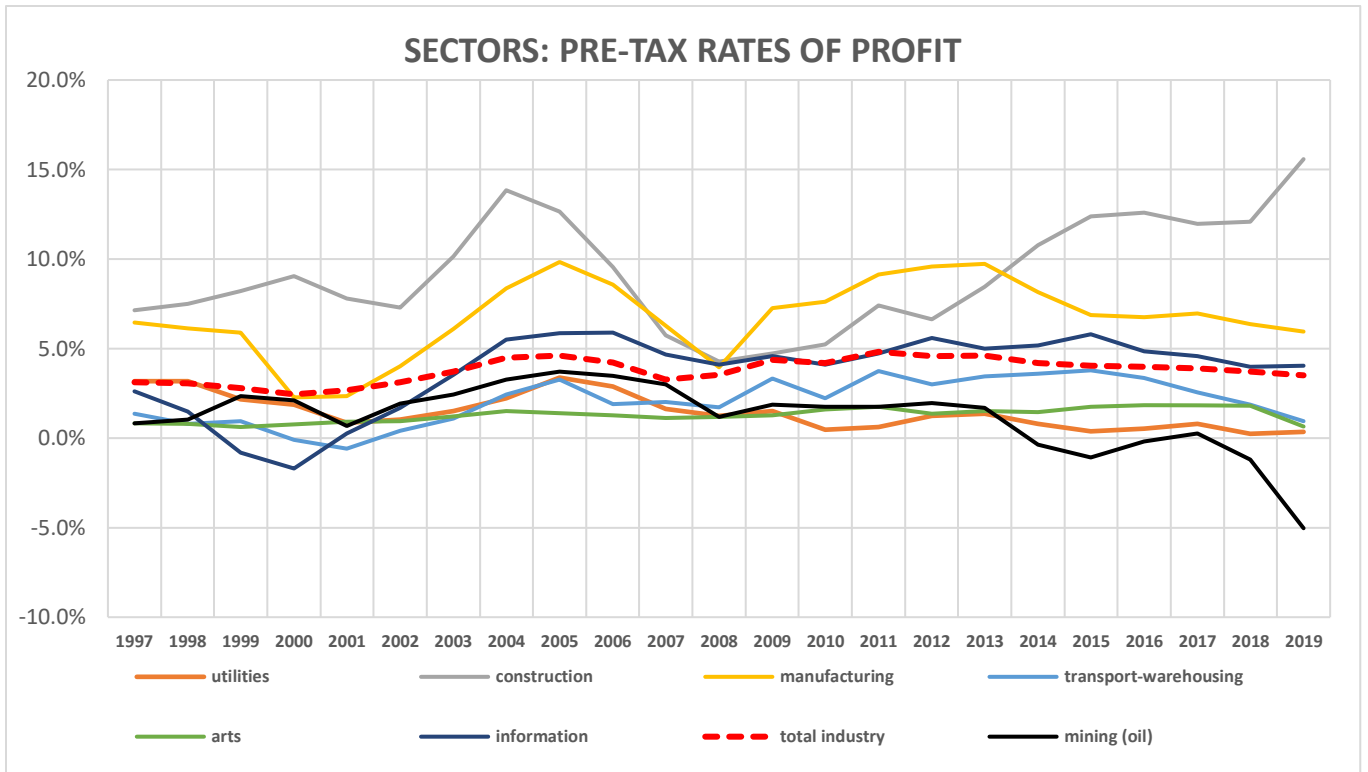


It is worth mentioning that actual rates of profit below 4% barely covers the cost of capital currently at 3.25% (bank prime loan rates), which explains why Central Banks have been holding down interest rates as they seek to pump life into production now that profits are failing. I have excluded 2020 as the rate of profit is distorted by COVID subsidies. This issue will be revisited once the BEA releases third quarter corporate profits later this month.

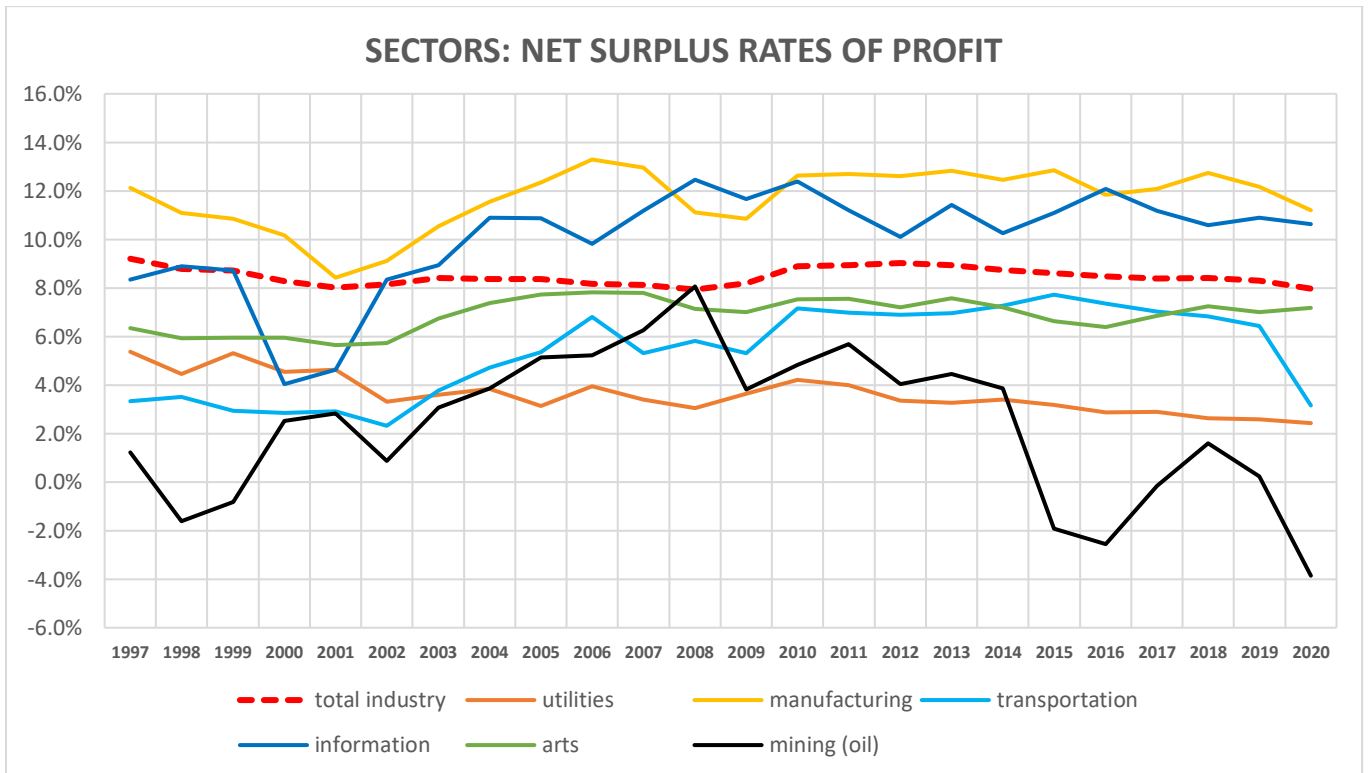
The equalization of the rate of profit between industries and sectors.

This is a controversial subject despite it being identified by Smith, Ricardo and Marx. Until the turnover formula was revealed no determination could be made. With a large part of capital missing, in this case the circulating component, trying to establish connections was like trying to explain ocean tides while ignoring the moon because its distance was unknown at first. Certainly fixed capital is the planet, but circulating capital is its largest satellite. In the four graphs below, I have provided the largest graphs I could so the relief in each graph is magnified allowing a determination as to whether equalization is evident. Two classes of graphs are presented. Those between sectors and those within the manufacturing sector. I have also provided rates of profit based on the net surplus and pre-tax rates of profit. The latter are the more important as it is this rate that prompts investment flows. The reader will find quite significant variations in movements and bunching when viewing the rates as either net surplus or pre-tax.

Graph 12.

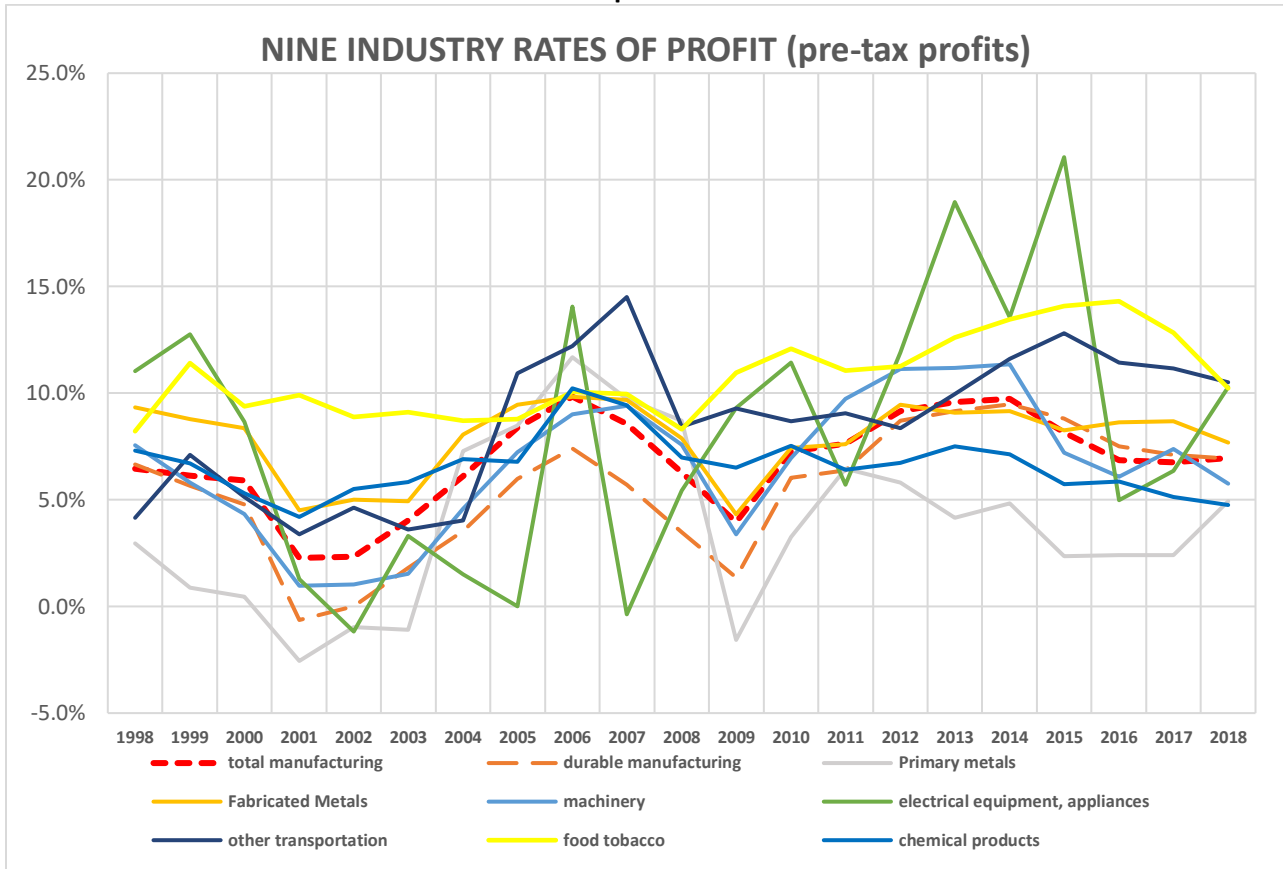


Graph 13.

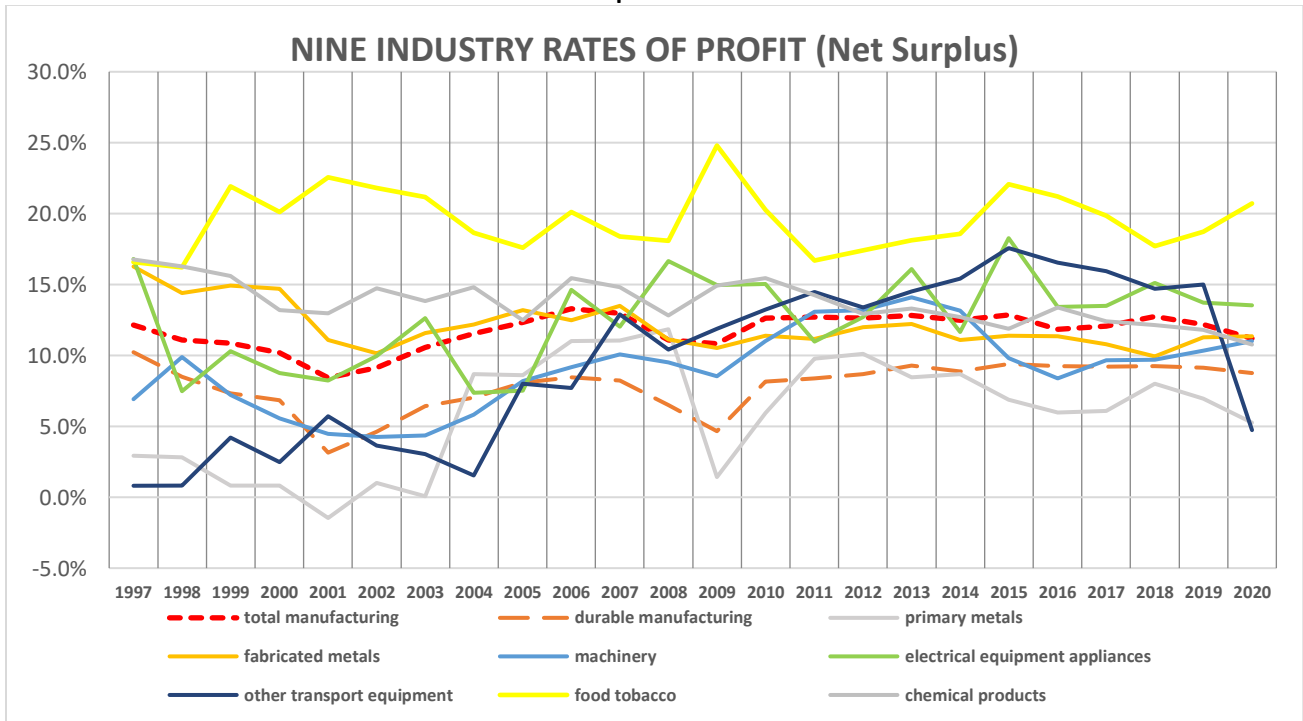


(Construction is omitted as its rate is so high it would have compressed all the other rates graphically.)

Graph 14.



Graph 15.



Beginning with Graph 12, five out of the eight sectors lie over time within the 2% band either side of the total sector average of around 4%. With the net surplus (Graph 13) not only are magnitudes larger but so too volatility. However most of the industries weave in and out within a band 4% distant from the 8% average. Oil is here more volatile than in Graph 12 where it lay more closely banded to the average rate of profit.

As expected, within manufacturing itself the industries are more tightly grouped. I put the size of manufacturing, after accounting for its gross output and transfers of value to other sectors to be close to 30% of the commodity producing economy. Accordingly, what happens in manufacturing is important. In addition, as capital is more likely to flow between industries in manufacturing than from manufacturing to another sector, say arts, there is a tighter grouping in their rates of profit. Additionally the oscillation in profit rates crosses over the average more frequently. Even durable manufacturing, which had sat under the average, crosses over the average in 2012 in Graph 14.

There is only one exception, and that is the food industry. Here its profit rate is an outlier being consistently higher than any other industry within the sector. The Food and Beverage and Tobacco product sector is host to world leading corporations such as Kellogg's, General Foods, Kraft Heinz, British American Tobacco and so on, and is also subject to less international competition. Other than that it is Graph 14 and Graph 15 that demonstrates the equalization of the rate of profit is alive and well.

In addition as Marx posed, why do the rates of profit sit at a particular point and not another? Why for example in Graph 12, does no sector other than construction fueled by speculation, rise above 10%. Why not 20%? What is anchoring it to <10%? It took Marx's theory of surplus value to answer that.

Conclusion.

Whatever the metric, be it the rate of turnover, the rate of surplus value and most importantly, the rate of profit, US capital entered the pandemic in a fragile state. If it escaped a recession in 2015 and 2019 that was courtesy of low interest rates. Has the pandemic and infusion of COVID funds refreshed the prospects of US capital, well the imminent post on Q3 profits will begin to answer that.

REFERENCES:

Depreciation. Table 3.4ESI. Current-Cost Depreciation of Private Fixed Assets by Industry

Fixed Assets. Table 3.1ESI. Current-Cost Net Stock of Private Fixed Assets by Industry

Pre-Tax Profits. NIPA Table 6.17D. Corporate Profits Before Tax by Industry

Note 1. The turnover formula reveals the number of sales and therefore by implication the number of turnovers of capital, because the start and end of the circuit is marked by a sale. In 2012 there was an international revision to the System of National Accounts. Two thirds of Intellectual Property in the form of Research and Development and in-house software was converted from a cost into capital by converting it from an intermediate sale into a final sale. Obviously, R&D and in-house software is not produced for sale but to assist in developing new products and improving production. So in order to capitalize what is a cost, a sale had to be invented, an imputed (fictitious) sale. The result was that while intermediate sales were reduced, final sales were increased proportionately .

The easiest way to understand the consequences of doing this is via a simple arithmetical example. Let us assume that final sales were 1 originally, intermediate sales were 3 making gross sales equal 4. Turnover under these circumstances would have been $7 \{4/1+(4-1)/1\}$ Now let us assume that 0.5 representing I.P. is moved from intermediate to final sales. Intermediate sales would go down to 2.5 while final sales would go up to 1.5 leaving gross sales unaltered at 4. However, the rate of turnover would fall to just 4.3 $\{4/1.5+(4-1.5)/1.5\}$ Thus the effect of this incorrect revision was to slow down the rate of turnover as measured by the formula and as I.P. increases to slow it down even more. In short, it's the compilation of the data that is at fault not the formula. All the formula does is to show something is statistically remiss.

Brian Green, 18th November 2021.