

## THE KITCHIN CYCLE: TWO HALVES OF THE SAME INDUSTRIAL CYCLE.

The Kitchin cycle always reminds me of a mountaineering analogy. To climb a mountain and return back to base, a mountaineer needs to ascend one slope and descend the same or another slope. But two slopes don't make two mountains, they belong to the same mountain. The business or industrial cycle as Marx described it usually lasts about 90 months. The Kitchin cycle lasts roughly half or 41 months. The Kitchin cycle therefore is about 50% as long as the industrial cycle itself. This is no coincidence. The industrial cycle has the shape of sine wave, or physically, that of a range of mountains. It therefore has an up slope and a down slope which is represented by the Kitchin cycles. Each Kitchin cycle is therefore one half of the whole industrial cycle.

Marx divided the up-slope into three phases: rising animation, prosperity and over-production. He then divided the down slope into three phases as well: crash, stagnation and inactivity. The two turning points are thus over-production and inactivity, the former representing the peak and the latter the valley floor. The cycle does not rise nor fall below these two points. Generally, the turning points occur earlier, towards the end of the period of over-production and inactivity when turnovers stop growing or start rising. For example, the period of over-production is synonymous with the rise in inventories relative to sales, inventories are growing while sales are slowing.

During the up-phases, the circulation of fluid capital which includes inventories, accelerates because of rising investment. At the top of the up-phase as investment decelerates, so the circulation of fluid capital slows down. Production is still increasing but it is taking longer to sell or be paid for once sold. This is the period of over-production. It is the period where more credit is needed but not found, or if found, it is usually at exorbitant interest rates.

The crash which ensues begins with the chain of credit shattering because circulation now begins to stutter. The metabolism of capitalism has become constipated and needs to be cleared. The metabolism is cleared once the period of circulation starts accelerating once more. This usually coincides with stocks falling to normal or below normal levels relative to sales.

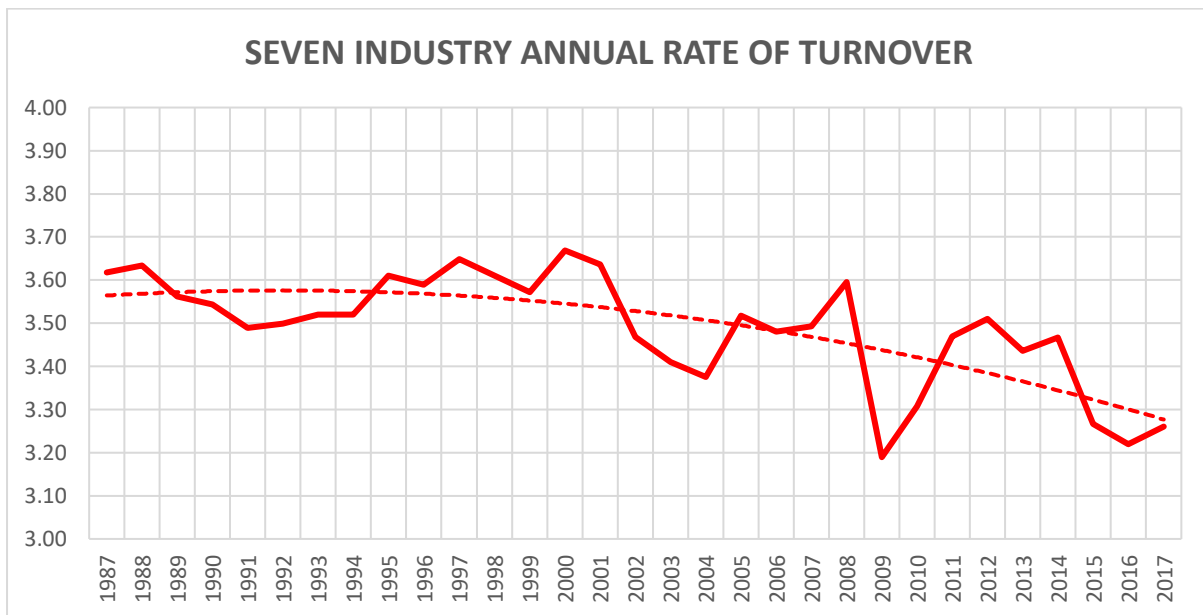
It is now possible to calculate the changing tempo of fluid capital with sufficient accuracy. The formula to measure this rate is:  $GO/GVA+(GO-GVA)/GVA$  where GO stands for Gross Output and GVA stands for Gross Value Added, or what is the same thing the value of total sales versus the value of final sales.

If the above hypothesis relating to the tempo of circulating capital is correct, there should be a peak and a trough to the turnover of fluid capital which marks its most rapid annual rate and its least rapid rate. Furthermore, they should occur within a cycle. To test the hypothesis a graph from a previous posting has been reproduced. It covers 4 industrial cycles covering 30 years, or more accurately, a 28-year period when measured from peak to trough, namely 1988 to 2016. In months this is equivalent to 336 months. Given the average duration of 41 months per Kitchin cycle, we could therefore expect 8 peaks and troughs yielding 7 complete Kitchin cycles and one new emerging cycle.

1. 1988 – 1991 down
2. 1991 – 1997 up
3. 1997 – 2004 down
4. 2004 – 2008 up
5. 2008 – 2009 down
6. 2009 – 2012 up
7. 2012 – 2016 down
8. 2016+

The graph below confirms the hypothesis as it yields the requisite number of peaks and troughs which represents the onset and conclusion of the 8 expected Kitchin cycles.

**Graph 1.**



(Agriculture forestry fishing and hunting, mining, utilities, construction, manufacturing, information, arts entertainment recreation accommodation and food.)

Of course, each industrial and each Kitchin cycle varies, either falling short or extending beyond 8 years in the case of the industrial cycle and 41 months in the case of the Kitchin cycle. But on balance they were close enough to confirm the hypothesis for the cycle, which is essentially an inventory cycle, first identified in the 1920s by the English statistician Joseph Kitchin.

The important point to note of course is that contained within this period there have been four industrial cycles marked by four recessions. The recession of 1991, 2001, 2008 and 2016. The last one is of course disputed which is why I called it a “pseudo recession”. The final quarter of 2015 and the first quarter of 2016 yielded GDP growth of 0.5%. While that looks positive that figure is actually noisy because it includes imputations and a fiscal deficit which grew by over \$200 billion. In any case the fall in turnovers of 8% at the time was equal to that after 2000 and greater than that after 1988.

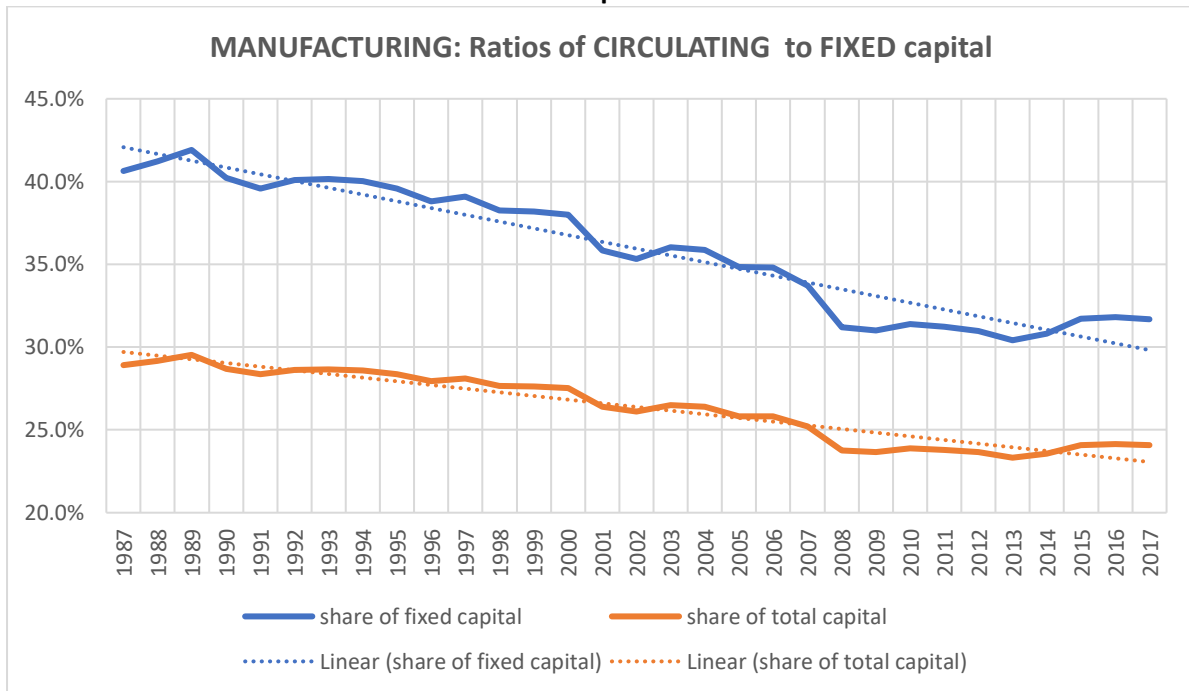
We can therefore see that the Kitchin cycle is not an actual cycle but the up-phase and the down-phase of the industrial cycle. This does not mean it should be ignored. What it does mean is that it concludes with the actual bi-directional reversal of trend in the rate of turnover of fluid capital. Now that we can analyse the rate of turnover, observations based on the Kitchin cycle have become redundant. In conclusion, it is worth repeating that each Kitchin cycle represents one half of the industrial cycle and thus does not exist independently.

**The relation between fluid and fixed capital.**

In Chapter 4, of the compilation *WORLD IN CRISIS, A GLOBAL ANALYSIS OF MARX’S LAW OF PROFITABILITY* edited by G Carchedi and M Roberts, Esteban E Maito provides an eloquent and accurate account of the Marxian Law of the long term tendential fall in the rate of profit. In the Chapter, Maito also correctly surmises that over time circulating capital should fall in comparison to fixed capital because the bulk of investment takes the form of fixed means of production and distribution.

Until the turnover formula was derived this relation could not be confirmed systematically nor could the changing relation between fluid and fixed capital be determined. In the graph below, based on the data for US manufacturing covering 1987 to 2017, that shifting relationship is shown. Over these thirty years compared to fixed capital, fluid capital has shrunk by about ten percent or just under a quarter in relative terms, and, compared to total capital by 5% or around a fifth in relative terms.

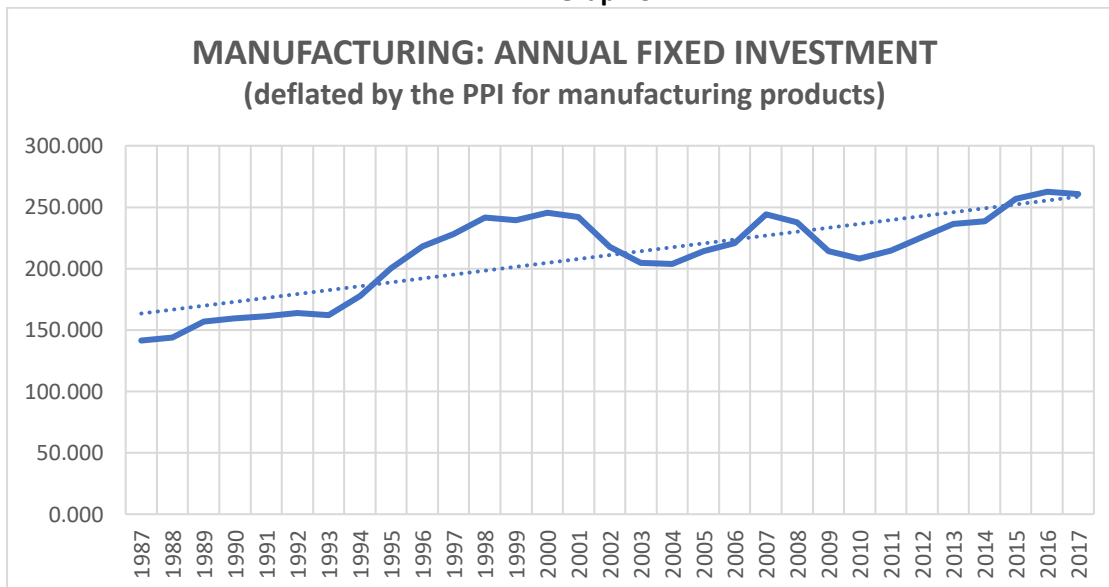
**Graph 2.**



(Source: See attached spreadsheet "COMPARING CIRCULATING TO FIXED CAPITAL 1987 – 2017")

What is interesting is that most of the fall occurred in the 20 years up to 2008. Since then there has been a plateauing in the trend. If anything, there has been a slight rise since 2015. There are two explanations. One relating to the period from 2008 and the other from 2015. The primary reason the weight of circulating capital fell from 1987 up to 2008 was the rise in fixed investment. The movement in fixed investment is described by Graph 3 below.

**Graph 3.**



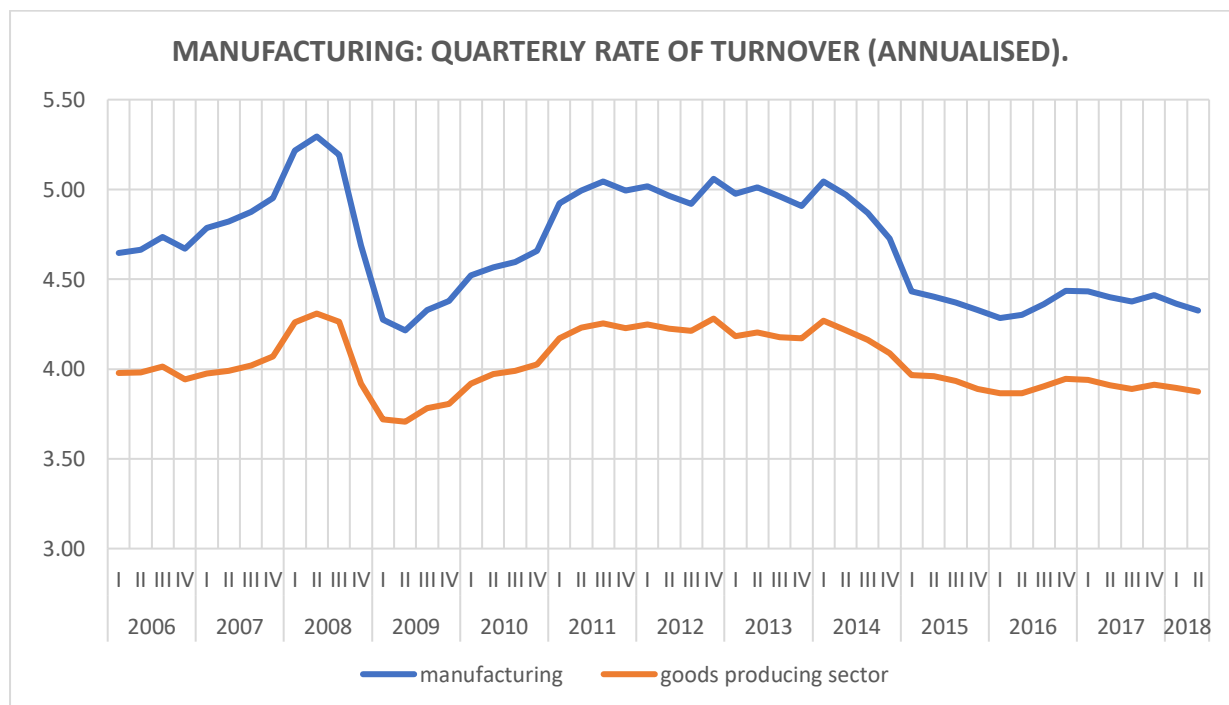
The above graph is deflated by the Producer Price Index of Manufactured goods. Theoretically this should provide the volume of fixed investment over these thirty years. However, it should be borne in mind that many of the means of production are not sourced in the USA itself but abroad, and this constitutes a confounding factor.

Turning to Graph 2. Half the fall in the ratio of fluid to fixed capital takes place in the period 1993 to 2000 which coincides with a sharp increase in the rate of fixed investment up to the recession of 2000. The next leg of the drop occurs in the period leading up to 2007.

However once investment revives again after 2010, the correlation breaks down. There is no longer a fall in the ratio of fluid to fixed capital except in 2013.

To understand why this breakdown occurs, we need to examine the rate of turnover. Graph 4 provides finer detail as it reveals changes to turnover on a quarterly basis. The graph shows that between the second quarter in 2011 and the second quarter of 2014, for three years, the rate of turnover hovered around an annualised rate of 5. It then fell by more than half a turnover to sit around the 4.3 level. In days the turnover period increased from 73 days to 85 days to valorise capital. This extra 12 days from the paying out of money to purchase labour power, materials and power to recouping money through the sale and payment of the goods produced, required additional capital.

**Graph 4.**



This extra 12 days represents a large increase in fluid capital to finance the extra days. Thus, we find the plateauing and even increase in the share of fluid capital in terms of total capital.

This change in turnover post 2014 has modified the general law which governs the relation between fluid and fixed capital. The purpose of investment is to increase the productivity of labour allowing each worker to produce more unpaid labour for their employer. This takes two forms, to maximise the means of production each worker works with (machinery, equipment, software and structures) while minimising the amount of materials they need to work with (just in time, or lean production methods) Thus, investment has two prongs. To minimise the production period and to minimise the circulating period.

Both the production and circulating period share this in common, technically they can only be reduced through the application of fixed investment. In the sphere of production this represents new, improved and increased volumes of machinery, equipment, structures etc. In the sphere of circulating capital, higher quality materials, more efficient ordering, speedier and more streamlined means for moving product, enhanced lines of communication and means of payment. Therefore generally, an increase in fixed investment is associated with a reduction in the period of production and circulation, or what is the same thing, the annual rate of turnover of fluid capital.

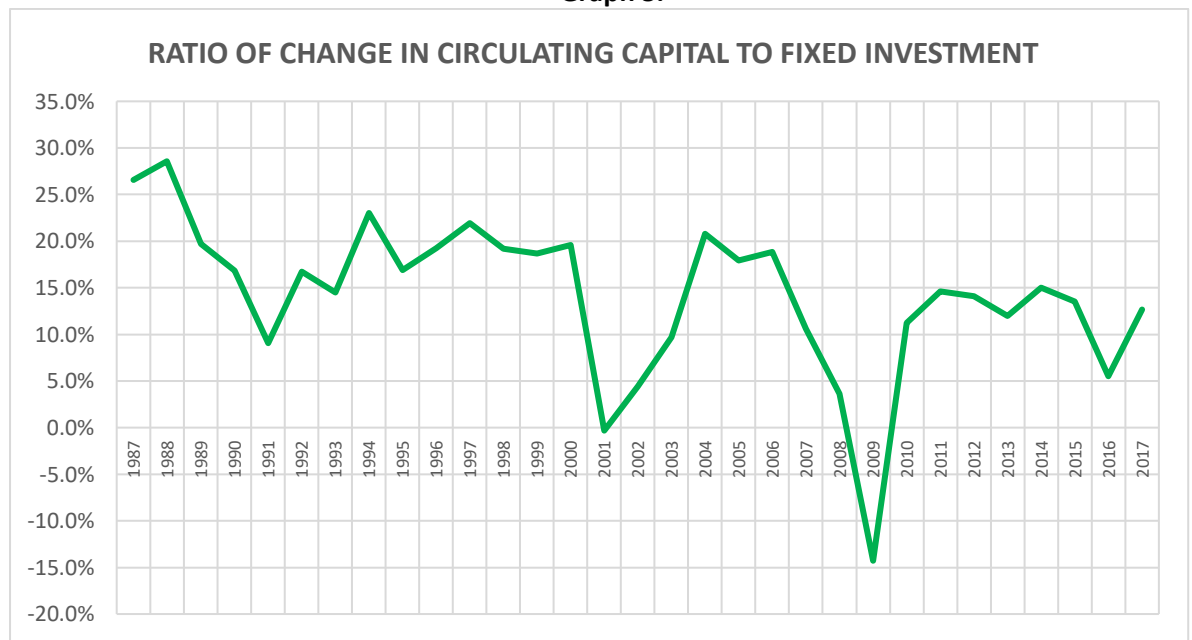
There is an obverse to this general law. Just as fixed investment increases productivity and thus enhances the rate of turnover of fluid capital, it has the potential to slow down this turnover as well, by its effect on overall economic conditions. This paradox is brought about because the motive of production is profit. Fixed investment responds to a rising rate of profit and it falls in response to a slowing down and reversal in the rate of profit.

When the rate of investment subsides for this reason, two things happen. Firstly, and **technically**, less is invested in speeding up circulation. Secondly, and **economically**, there is less demand in the economy, market conditions begin to deteriorate, and, it takes longer than is technically necessary to sell what has been produced. At this point the paradox takes hold. While the amount of fixed investment falls, the amount of fluid capital rises in order to pay for the additional days of circulation.

Thus, while fixed investment plays the primary role in determining the movement in the rate of profit, fluid capital plays a mediating role. In the up-phase, as the rate of turnover rises, so circulating capital is relatively reduced by this acceleration. The effect on the mass of capital is to slow down its rise. At the point of recession, the sudden rise in fluid capital due to its immobilisation, compounds the fall in the rate of profit. Towards the end of the period of inactivity, when the rate of turnover starts to accelerate once more, the mass of fluid capital shrinks helping raise the rate of profit and encouraging investment

As the final graph below demonstrates, changes to fluid capital are highly significant as variations of over 30% are not unusual relative to changes in fixed investment. In sum, fluid capital is significantly more volatile than fixed investment.

**Graph 5.**

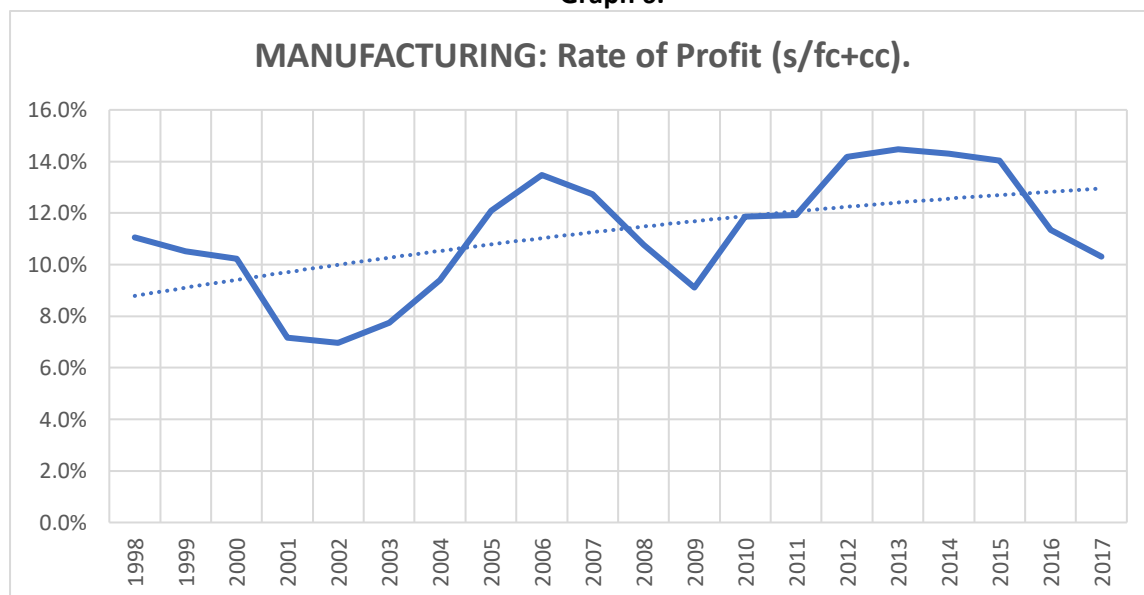


(Source: See previous article. Non-financial corporate sector.)

Of course, the general explanation does not deal with the relation between fluid and fixed capital post 2008. This is a very intriguing phenomenon. It may be as simple as the deflated figures for fixed investment providing a misleading picture as to the extent of fixed investment. This is consistent with the weak recovery since 2008 which implies weak investment. There could be a mid-way explanation, namely that with new and more involved use-values, particularly the time taken to develop software, the production period is elongating. Or, more complexly, we could be witnessing the consequences of a shift towards immaterial production, more software rather than hardware so to speak.

The author has come to no determination on this question as much more data is needed. Whatever the case, the deceleration in the rate of turnover, most noticeable in manufacturing itself, has impacted the rate of surplus value, which explains why the rate of profit, post-2014 is so subdued. The rate fell by 4.2% since 2013 compared to 4.4% between 2006 and 2009.

**Graph 6.**



**Conclusion.**

The Kitchin cycle is based on empirical research. It concerns itself with two variables and the information that flows from this. These two variables are output and stocks. A relative rise in stocks, when it becomes systemic, will influence output negatively and a relative fall in stocks, on the other side, will influence output positively. Of course, the Kitchin Cycle cannot explain why stocks, considered adequate one day, should be considered excessive the next. It is all about physical variables, therefore superficial. In terms of weather forecasting it is the equivalent of saying temperatures will rise during the day and fall at night, without explaining why there is day and night in the first place.

Only the Marxian understanding of the social factors shaping the rate of profit through alterations to the composition of capital can explain these anomalies. However, what the Kitchin Cycle does confirm is the turnover formula, because while the cycle and the turnover periods may not coincide precisely, a rise in the stock to output ratio implies a deceleration in the rate of turnover while a fall in the stock to output ratio implies an acceleration. Thus, the two halves of the Kitchin cycle fold neatly into the alternating movement in the rate of turnover influenced by and bearing on the rate of profit.

Brian Green, January 2019