How Far Can We Push This Thing?

Some Optimistic Reflections on the Potential for Economic Experimentation

By Philip Pilkington

For the past two decades at least, economists and policymakers have underestimated the capacity to which the economy can be pushed. They seem to have been consistently fighting the last battle – the last battle being the fight against inflation the 1970s and 1980s. Inflationphobia reigns everywhere supreme. At the same time, the economy has become more fragile and prone to recessionary and deflationary dynamics. Today we see high rates of employment but low rates of productivity growth. Many have explained this as some sort of underlying structural shift in technology, or something similar. In fact, productivity is a residual measure – it simply measures output over labour force. For this reason, all it can really tell us is that output is mediocre given the amount of the labour force employed. We take a different tack when estimating potential economic capacity and fiscal space. We focus on a real variable derived from actual survey data, not a residual; namely, the rate of capacity utilisation. We hypothesise that the real limit on the economy is the rate of utilisation. We then derive estimates of both potential GDP and fiscal space from this framework. Finally, we consider whether there is a risk of runaway inflation if we engage in fiscal experimentation. We find that there is ample fiscal space currently available and that there is little chance that experimentation will lead to runaway inflation.

Let's Talk About Potential Output

Economists generally think about the growth capacity of the economy in a very crude way. They just take a trend estimate of past average GDP growth and project this forward. Here is economist William Gavin at the Federal Reserve of St Louis on the measurement[1].

> [Economists] estimate potential GDP by constructing measures of the trend in actual GDP that smooth out business cycle fluctuations. Looking back in time, potential output is relatively easy to measure because we have reliable methods to extract smooth trends from historical data. However, measuring potential output in real time is more difficult because only past data are available to estimate the trend.

The problem with this is obvious. It assumes that the economy generally operates at full capacity. It is effectively taken on faith that capitalist economies generally utilise all available resources and that there is no spare capacity that can be brought online by government. This belief is often justified – when it is justified – by reference to marginalist economic theory.

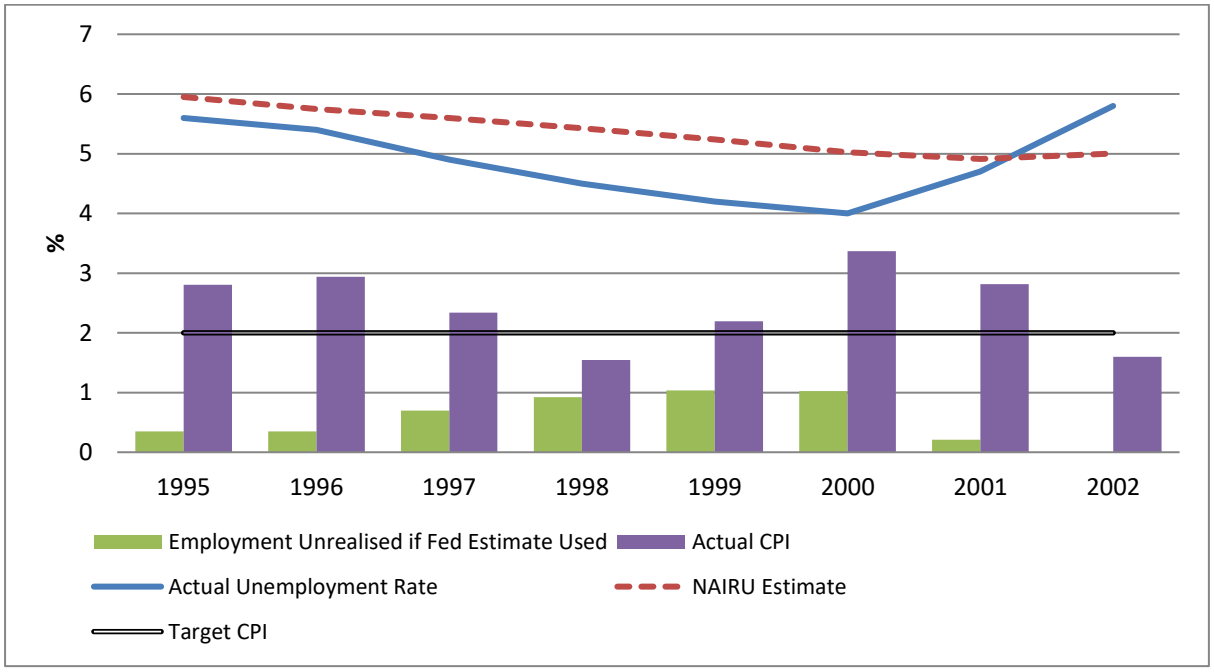
[1] https://research.stlouisfed.org/publications/economic-synopses/2012/04/20/what-is-potential-gdp-and-why-does-it-matter/

Yet empirical observation rarely bears this out. Governments often increase aggregate demand when the economy is operating at full employment – this especially the case when there is a major war (WWII, Vietnam, Iraq etc). Sometimes this gives rise to inflation (WWII) while sometimes it does not (Iraq). However, it always results in an increase in nominal GDP that outstrips the rise in inflation. That is, it always results in an increase in real GDP growth.

This means that there is probably substantial spare capacity built into capitalist economies. When we give this some consideration, it makes sense. Factories do not – in contrast to marginalist theory – operate at full capacity in normal times. This is because sensible engineers build in spare capacity in case they are faced with an increase in demand for their products. They effectively build in a 'margin of safety' that allows them to increase output when demand increases.

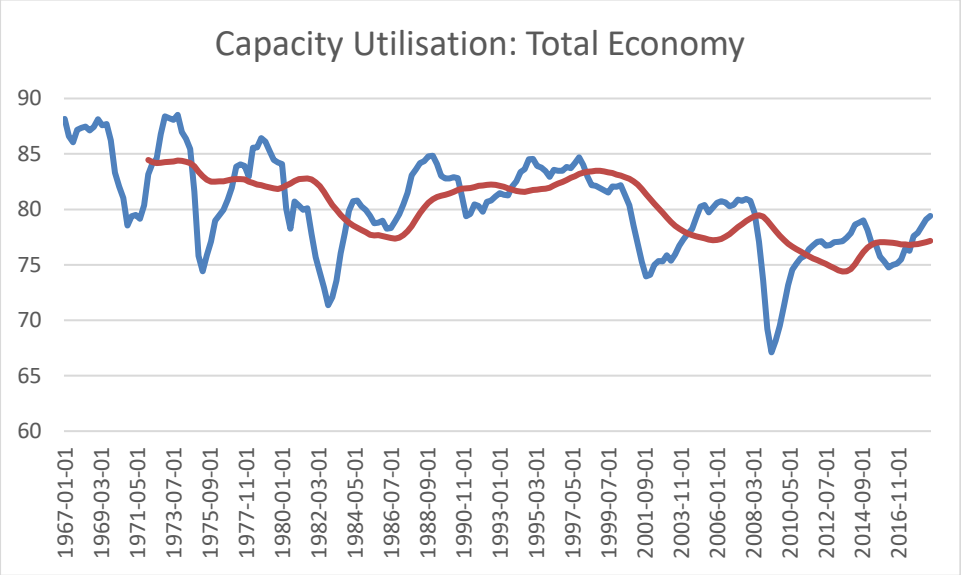
For this reason, we need a more direct method of measuring potential GDP. One technique that is sometimes used is to look at the amount of spare labour in the economy. This is the approach of the Non-Accelerating Inflation Rate of Unemployment (NAIRU). This assumes that past a certain level of unemployment additional spending in the economy will generate inflation with no increase in real output.

In theory, this approach is problematic for a very simple reason: labour can be utilised at different rates. Even if every available worker is employed he may be (a) working less hours than he could be or (b) working at a lower level of intensity than he could be. In practice, this approach is problematic simply because it does not work. The chart below lays out the estimated NAIRU level, the actual unemployment rate and inflation.



As we can see, actual unemployment has often fallen lower than the estimated NAIRU rate with no serious inflationary pressure. Indeed, in 1998 the actual unemployment rate was around 1% below the NAIRU estimate and inflation was substantially below the Fed's arbitrary target inflation rate of 2%.

We propose a much more intuitive method of estimating potential output. We believe that the true constraint on economic growth at any moment in time is the utilisation rate of plant and machine. The great thing about this is that good statistics on plant and machine utilisation are readily available. They are laid out in the chart below together with a 5 year moving average.



What immediately stands out about this chart is that capacity utilisation seems to have fallen substantially since around 1980. The US economy seems to have been operating consistently below spare capacity after this. This trend became even more pronounced after around 1999. We would argue that this is due to the fact that economists and central bankers became increasingly obsessed with managing inflation in this period and were willing to use monetary policy to squash economic growth.

And Now For Some Estimations

The first step in forming our estimate is to get a sense of how sensitive real GDP growth is to our capacity utilisation measure. This will give us some idea of how much extra output might be cranked out if we push the new capacity online through an increase in aggregate demand. Let us start by running a linear regression on real GDP and capacity utilisation. The results are laid out below.

Model 1: OLS, using observations 1-208
Dependent variable: RealGDP

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	−18.6138	2.4245	−7.6774	<0.0001	***
CapacityUtilisation	0.266908	0.0301652	8.8482	<0.0001	***

Mean dependent var	2.809566	S.D. dependent var	2.130981
Sum squared resid	681.1365	S.E. of regression	1.818375
R-squared	0.275390	Adjusted R-squared	0.271872
F(1, 206)	78.29074	P-value(F)	4.07e-16
Log-likelihood	−418.5066	Akaike criterion	841.0132
Schwarz criterion	847.6882	Hannan-Quinn	843.7122

As we can see, our method is robust. The regression registers statistically significant results with a p-value far below 0.01. It also yields a solid R^2 of 0.275. However, most importantly from our perspective is the regression coefficient or slope which clocks in at 0.267. This implies that, given our full sample estimate, an increase in capacity utilisation of 1% will give rise to an additional 0.267% of real GDP growth.

This is an interesting starting point. Let us, however, run a more sophisticated analysis.

Full Sample SLOPE	0.266908
2018 5y Rolling SLOPE	0.323865
Full Sample RSQ	0.27539

Here we had added in the slope between the two variables from the past five years. This gives us a more immediate snapshot of how sensitive real GDP growth is to changes in capacity utilisation in the recent past – rather than over the full sample from 1967 which, as we have seen, has multiple regimes or structural breaks in the data. What we find is that real output growth is more sensitive to changes in capacity utilisation than it has been in the past. This fits with the idea that in the recent past the economy has been operating with more slack than is typical.

Next, we will try to work out how much additional capacity utilisation there is available to be brought online. This is laid out in the table below.

	Data	**CapUtil Space**
Full Sample SLOPE	0.266908	
2018 5y Rolling SLOPE	0.323865	
Full Sample RSQ	0.27539	
CapUtil Full Sample Avg	80.26509	1.54731266
CapUtil 1966-79 Avg	83.8337	5.115925
CapUtil Maximum	88.5256	9.807825
CapUtil 2018	78.71778	
RGDP 2018	2.882678	

As we can see, we have made a variety of assumptions about how high capacity utilisation can be pushed. We see no reason why capacity utilisation cannot be pushed right to its historical maximum, implying that in 2018 there was around 9.8% of spare capacity utilisation available to be used. If the reader wants to be more conservative and use more modest estimates, we have laid out additional options for them – specifically a full sample average (which we would strongly suggest not using due to structural breaks in the data) and the average capacity utilisation in the period when capacity utilisation was high (1967-1979).

We can now provide potential GDP estimates. These can be seen in the table below.

	Data	**CapUtil Space**	**Potential Additional GDP Full Sample SLOPE**	**Potential Additional GDP 2018 5y Rolling Slope**	**Potential GDP Full Sample SLOPE**	**Potential GDP 2018 5y Rolling SLOPE**
Full Sample SLOPE	0.27					
2018 5y Rolling SLOPE	0.32					
Full Sample RSQ	0.28					
CapUtil Full Sample Avg	80.27	1.55	0.41	0.50	3.30	3.38
CapUtil 1966-79 Avg	83.83	5.12	1.37	1.66	4.25	4.54
CapUtil Maximum	88.53	9.81	2.62	3.18	5.50	6.06
CapUtil 2018	78.72					
RGDP 2018	2.88					

As we can see, as of 2018 potential GDP growth is anywhere between 3.3% and 6%, depending on what assumptions are made. Given that actual GDP growth was around 2.9%, this meant that additional potential GDP growth was anywhere between 0.4% and 3.2%.

Readers can choose their own specifications. We believe that the high-end estimates are perfectly reasonable, however. As we have already discussed, we see no reason why capacity utilisation cannot be pushed today to its highest historical level of 88.5%. In addition to this, we believe that using the 5y slope is more representative of our present situation than is the full sample slope.

While it is more theoretically difficult[2], we can now use these potential GDP estimates to estimate the structural fiscal space available to the government. The only additional information we need is a fiscal multiplier. This will tell us how much spending growth an additional x% increase in the fiscal deficit will create. So long as this falls within our potential GDP estimate, this should result in additional real GDP growth and not simply inflation.

We do not particularly trust estimates of fiscal multipliers, as they are notoriously messy to estimate. For this reason, we will simply provide four multiplier estimates that we think reasonable (1, 1.2, 1.4, 1.6). We would also note that we would expect the fiscal multiplier to be lower at a time of higher output growth (i.e. at full employment). This for the simple reason that as income rises the propensity to save probably rises too – if you have more money you are likely to save more of that money than if you have less.

The results are laid out in the table below[3].

[2] So far, we have made a minimum of assumptions. When we try to estimate fiscal space, we have to introduce additional assumptions. The more assumptions made, the more points of potential failure.

[3] Note that these are attempts to estimate *structural* fiscal space – that is, we are trying to understand how much the fiscal deficit can be increased semi-permanently. This is in contrast to cyclical estimates. When a cyclical expansion of the fiscal deficit is need – say, in a recession – this can be added on top of the structural deficit. Our estimate is thus useful for permanent budgeting rather than for evaluating, say, fiscal stimulus programs.

	Potential Additional GDP Full Sample SLOPE	Potential Additional GDP 2018 5y Rolling Slope
CapUtil Full Sample Avg	0.41	0.50
CapUtil 1966-79 Avg	1.37	1.66
CapUtil Maximum	2.62	3.18
	Fiscal Space as % of GDP Full Sample SLOPE	**Fiscal Space as % of GDP 2018 5y Rolling Slope**
Multiplier = 1		
CapUtil Full Sample Avg	0.41	0.50
CapUtil 1966-79 Avg	1.37	1.66
CapUtil Maximum	2.62	3.18
Multiplier = 1.2		
CapUtil Full Sample Avg	0.34	0.42
CapUtil 1966-79 Avg	1.14	1.38
CapUtil Maximum	2.18	2.65
Multiplier = 1.4		
CapUtil Full Sample Avg	0.29	0.36
CapUtil 1966-79 Avg	0.98	1.18
CapUtil Maximum	1.87	2.27
Multiplier = 1.6		
CapUtil Full Sample Avg	0.26	0.31
CapUtil 1966-79 Avg	0.85	1.04
CapUtil Maximum	1.64	1.99

As we can see, the available fiscal space in 2018 is anywhere between 0.26% of GDP and 3.2% of GDP.

What do we think reasonable? Given that the economy is operating at close to full employment and income growth is steady, we would expect the propensity to save to be quite high. A fiscal multiplier of around 1.2 seems reasonable to us. Given our previously stated favoured assumption, this gives us fiscal space to the tune of 2.65% of GDP. Running additional structural deficits of around this magnitude will probably push real economic growth in the US up to around 5-6%[4].

[4] Applying Okun's law which states that for every 2% increase in economic growth we will see a 1% reduction in the unemployment rate, this is equivalent to assuming that the unemployment falls 1.3% to a level of 2.5%. It should be noted, however, that this need not happen. Given our model it is theoretically possible that capacity utilisation can be increased without increasing the supply of labour. That said, if this fiscal space is ever used it will be interesting to see if the unemployment rate does fall by around 1.3% in order to man the extra capacity being brought online.

The Threat of Runaway Inflation

When experimenting with an economy that is operating at relatively high rates of unemployment, it is a good idea to consider whether there is a chance of runaway inflation. That could either mean inflation that gets caught in the system – i.e. a higher rate of inflation that remains year after year – or inflation that grows exponentially. The former is the province of hyperinflation and typically only takes place in very extreme scenarios. For this reason, we are really interested in the prospect of a permanently higher rate of inflation.

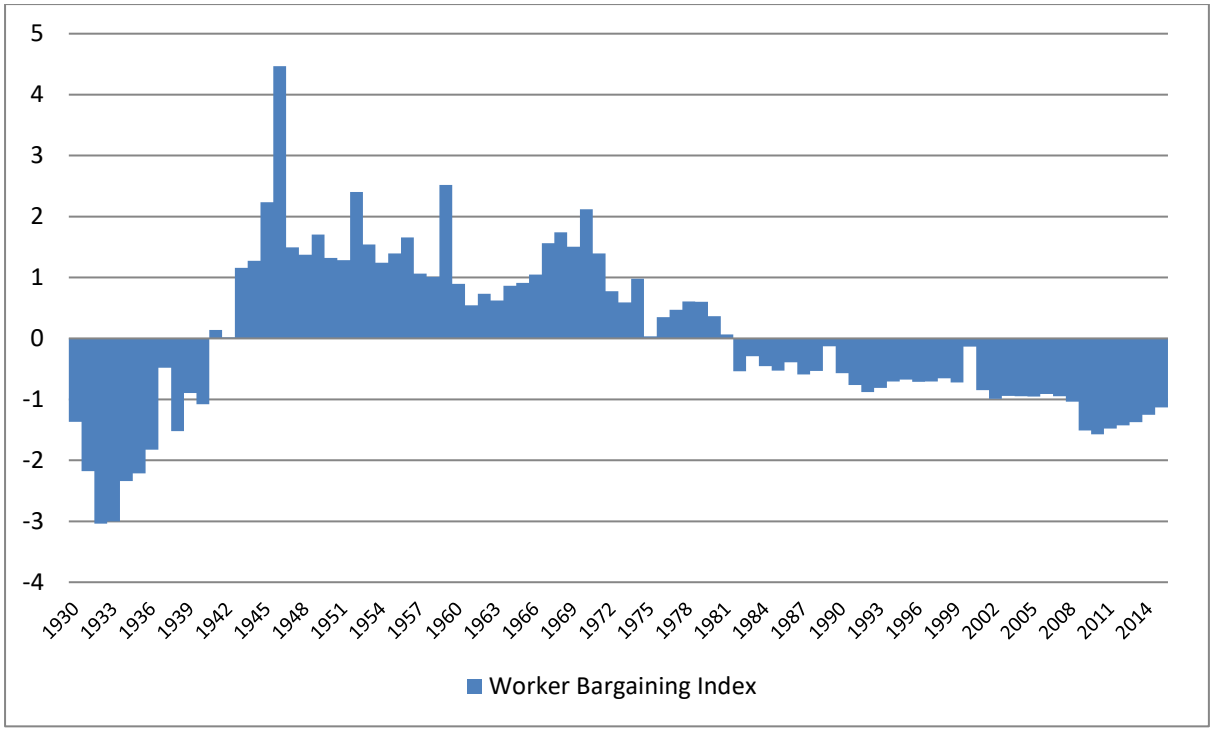
When we increase aggregate demand in the economy in a structural manner – i.e. if we increase fiscal deficits, say, from its current level of 3.8% of GDP to, say, 8.8% of GDP – we should only see a once-off increase in prices. The spending increase does not grow in this example, so the impact on prices can only be once-off. In order to see inflation rise continuously, we would need to increase fiscal expenditure continuously.

The other way that inflation might get caught in the system is if workers bid up their wages to maintain their purchasing power in the face of inflation. Imagine that wages and inflation are both growing at 2% a year and so real wages are constant. Now imagine that, due to an increase in the fiscal deficit, inflation rises to 4% in a given year. If workers then try to raise their wages to 4% growth in that year then it is conceivable that businesses will raise their prices in order to pay these new higher wages. This could result in a wage-price spiral where the higher rate of inflation gets caught in the system.

For this to happen, however, workers must have sufficient bargaining power to demand that businesses raise their wages. If they do not have enough bargaining power, then they will not be able to defend their real wages against the price increases and so will have top just accept the real wage cut that they receive[5]. While such a system is not ideal for workers, it does entail very low risk that once-off price increases will translate into permanently higher rates of inflation.

To estimate the level of bargaining power at any given moment of times we have taken three variables that we think define this bargaining power and subjected them to principle components analysis. These three variables are: the unemployment rate, the rate of unionisation of the workforce and the number of strike days lost every year (a proxy for the unions' willingness to use their power). The rate of unemployment negatively impacts worker bargaining, while the other two variables positively impact it. Our Worker Bargaining Index (WBI) can be seen below.

[5] Note that this theoretical perspective is different from the 'expectations' model of inflation popular amongst marginalist economists today. In an expectations-based model it is simply assumed that, when workers see their wages fall in the face of inflation, they will increase their nominal wages accordingly to maintain their real wages. The do this because they are 'rational agents' and value their labour time in real, not nominal terms. The problem with this perspective is that it assumes away the very real power dynamics that exist in capitalist economies. To put it bluntly, workers can be as rational as they want, but if they do not have sufficient bargaining power to raise their wages and keep their real wages constant, then they will not be able to raise them.



Note that the WBI does not tell us whether there will or will not be runaway inflation; it is not calibrated to *predict* inflation and should therefore not be correlated with it. Rather it is set up to determine whether the conditions are in place to have a once-off increase in prices translate into runaway inflation.

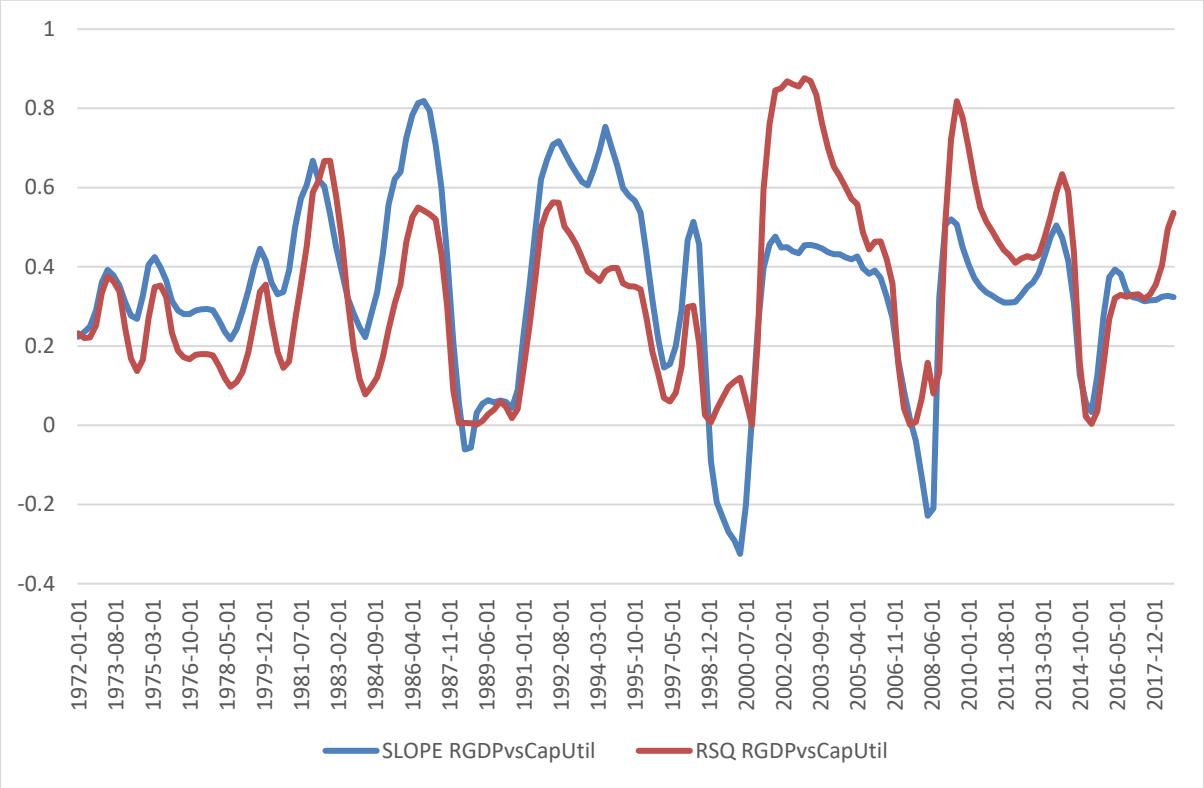
As we can see, worker bargaining power today is rather low. The only time it has been lower was in the deflationary period of the Great Depression. We think that this provides evidence that we have ample room for fiscal experiments today. The risks of an experiment turning into a general runaway inflation strike us as very low.

If once-off price increases do occur, they should simply be judged based on their impact on distribution. For example, they should be looked at in terms of how they redistribute income between debtors and creditors – which, given high levels of debt today, would probably be a net positive for the economy. If they do result in a serious erosion of wages, the easiest way to counteract this would be to tax the increased profits that result. *Not*, it should be said, at their source – i.e. revenue – as this will just be passed on to consumers as price increases. Rather the increased profits should be taxed at their point of distribution – i.e. a tax on dividends – that is then redistributed as a payroll tax cut for workers.

Given all of this and considering that the private debt burden in the US is rather large (clocking in at just over 200% of GDP), it would be reasonable to expand fiscal deficits by around 5% of GDP provided we see no evidence of sustained, rapid nominal wage growth. This should raise annual nominal GDP growth to around 10.9% of which around 6% will be real GDP growth and around 4.9% will be inflation. At current trend rates of growth in private debt, this would lower the private debt load from around 200% of GDP to around 190% of GDP.

Appendix: Rolling Regressions

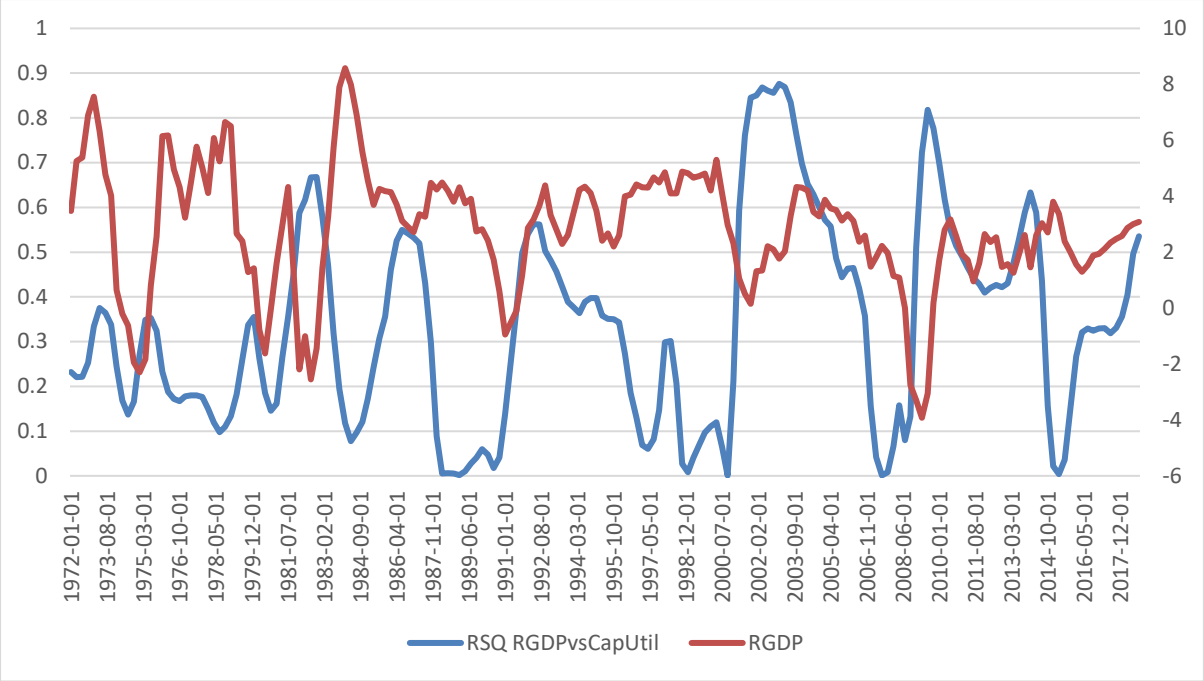
The reader might be interested in how the slope of the regression between capacity utilisation and real GDP growth behaves through time. A rolling 5y regression is laid out in the chart below – we have also included the R^2 in order to see goodness of fit.



Here two things stand out.

1. The slope and R^2 fluctuate a lot – generally together.
2. The slope is more volatile in recent years than it was in periods of higher capacity utilisation (1967-79).

Let us look at this in comparison to real GDP growth.



As we can see, the R^2/slope tends to blow out when there are changes in real GDP growth. This is intuitively reasonable as it implies that the sensitivity of real GDP growth to capacity utilisation is cyclical. It also suggests that in recent decades capacity utilisation has become more cyclical than it was in the past. This is in keeping with the idea that policymakers have been exacerbating the business cycle and lowering output in misguided attempts to control inflation.