

Declining capacity utilization rate

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A clue to investment is the capacity utilization (CU) rate in industry. Typically companies start investing in capital once a minimum threshold of CU level is achieved, after which it becomes necessary to invest in machinery to produce more goods. Globally, it has been observed that the CU rate needs to move towards the 80% mark for fresh investment to be invoked although extremely buoyant conditions in demand would hasten the pace.

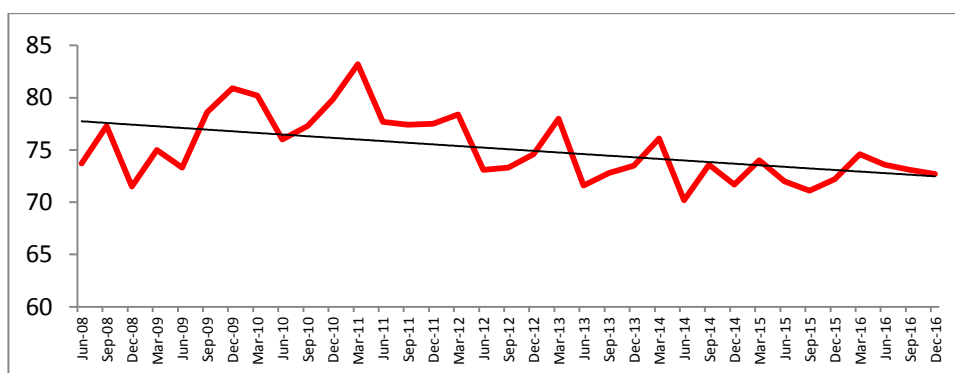
Relatively low and declining CU is one of the reasons that the investment rate in the country has been falling in the last couple of years with the CU rate remaining fairly static in the region of 71-73%.

During this period, it has been observed that the CU rate is dependent more on demand conditions rather than supply since commodity prices have been declining in this period which has thwarted any supply side shock. Further, interest rates too have been moving in the downward direction though industry has been asking for a faster pace of decline. However, it is true that the NPA issue with banks has adversely affected funding of long term projects given that there has been some concentration of distressed assets in the infrastructure space, which has affected demand for investment goods in particular.

Information on CU is not directly available and the RBI data on the same for a sample of companies over the last 8 years or so has been plotted in Graph 1 to ascertain patterns in movement. The data is for industry in general and evidently there would be some industries that would be witnessing higher rates than the others given the nature of the growth processes. Infra industries in particular would have shown better rates given the government push, while lower growth in capital goods would have kept the CU rate subdued. Consumer goods have witnessed different tendencies for both the components of durable and non-durable goods production.

The graph below shows that industry has averaged a CU rate of above 80% in 3 of the 35 quarters plotted here. The peak was in March 2011 when the CU rate was 83.2%. The rate has declined since then and showed high numbers of 78% in March 2013, 76.1% in March 2014, 74% and 74.6% respectively March 2015 and March 2016. The pattern indicates that the CU rate does tend to peak towards the fourth quarter as companies build up output to meet the yearend demand as well as targets.

The trend line, which has been extrapolated is disturbing and shows a downward movement with a fairly sharp slope. While the number for December 2016 at 72.7% is low, September 2015 witnessed a trough of 71.1%.

Graph 1: Capacity utilization- Quarter-wise: June 2008 to December 2016

Source: RBI

For the period December 2008 to December 2016, the coefficient of correlation has been calculated for various sets of variables with capacity utilization to gauge the strength of these relationships. This has been done with inventories of finished goods and work-in-process to sales ratio (FG+WIP), inventories of only finished goods to sales ratio (INV-FG), growth in the Index of Industrial Production (IIP) on year-on-year basis and Gross fixed capital formation (GFCF).

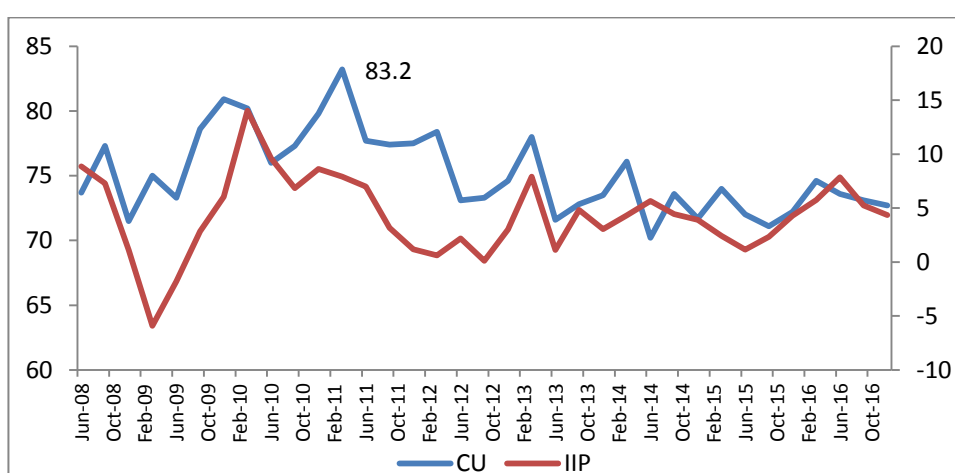
All the variables have a fairly strong relation with a coefficient of above 0.40% which is significant. Inventories go with an expected negative sign meaning thereby that lower levels of inventories are associated with higher CU rates. Higher growth in industrial production and higher rate of capital formation correlate directly with CU.

Table 1: Coefficient of correlation matrix

	Inventories: FG+WIP	INV-FG	IIP(yoy)	GFCF
Dec-2008-16	-0.44452	-0.57956	0.432363	0.468662

Source: CARE's estimation

The close relationship between CU and IIP has been established in the graph below where the two variables move in a similar frame. Hence, a prerequisite for higher CU would be that industry should be growing at a faster rate.

Graph 2: Capacity utilization and Industrial growth

Source: RBI, CSO

A simple regression exercise has been carried out between these variables and the one which maps CU with inventories of finished goods and IIP growth yield the best results. The results are plotted below.

Table 2: Results from regression analysis

Heading	Number	t-stat
Observations	33	
Multiple R	0.657635	
R Square	0.432484	
Adjusted R Square	0.39465	
Intercept	86.1382	24.22935
INV-FG	-0.67307	-3.60279
IIP-YOY	0.279864	2.259747
Random simulations		
INV 20%, IIP6%	74.35	
INV 18%, IIP6%	75.07	
INV 18%, IIP7%	75.98	
INV 18%, IIP8%	76.26	
INV 15%, IIP8%	78.28	

Source: CARE's estimation

The regression equation depicts the following:

1. These two variables explain around 43% of the changes in the CU rate.
2. The coefficient of inventories/sales is -0.67 (statistically significant negative relationship with CU) and that of IIP growth is 0.28 (statistically significant positive relationship with CU).
3. The random simulations put in various numbers for the ratio of inventories to sales ranging from 15-20% along with growth in industrial production to derive relevant numbers for the CU rate. In short, growth has to move towards the 8% mark with inventory levels also reducing for this CU rate to climb, which is a precondition for investment to pick-up from industry.

Concluding remarks

Capacity utilization is definitely the key to understanding the slow rate of capital formation in the country as industry accounts for a substantial part of the investment process. Direct investment in infrastructure would also finally mean higher demand for infra based products like steel, cement, machinery etc, which should lead to an improvement in this ratio. The last three years have witnessed virtual stagnation in investment as industry has spare capacity to meet any increase in demand which is presently restricted to specific industries and is not all pervasive. The high CU rates were invariably associated with high industrial growth and gross fixed capital formation on a contemporaneous basis, which emphasizes the relationship.

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