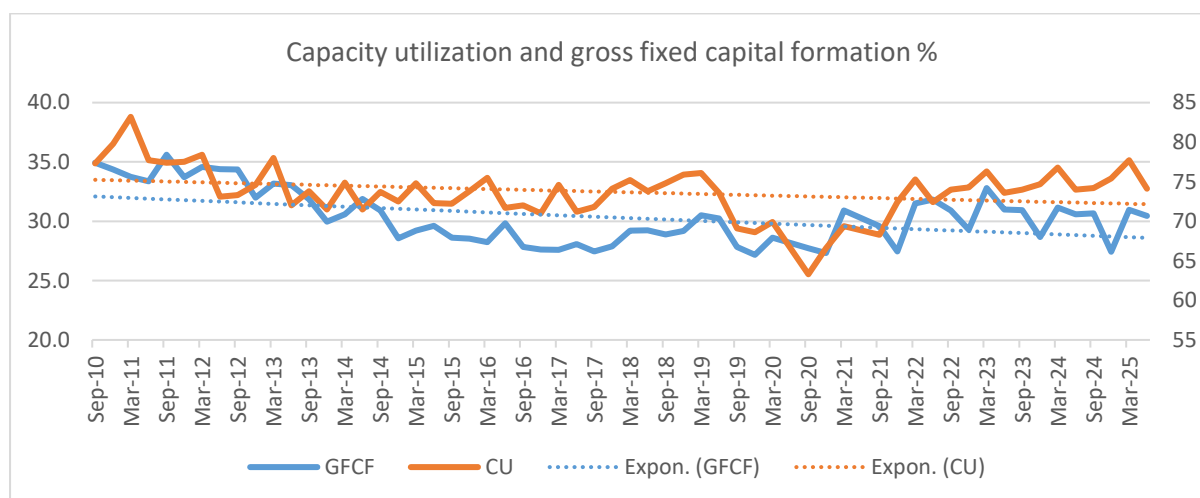


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Is there a link between capacity utilization and investment?

Capacity utilization rates are a useful indicator of potential investment in the economy as higher utilization rates are a precursor for enhanced investment. Investment in the country is denoted by the gross fixed capital formation rate. Is there a link between the two variables? As a corollary, can a call be taken on investment in the economy based on the capacity utilization rate?

To answer this question quarterly data on both the variables have been analyzed. Capacity utilization rates are provided by the RBI and ranged between 65% and 83% for the period September 2010 to June 2025. The pandemic quarters have been excluded as there were extreme numbers. For gross fixed capital formation, data on a disaggregated basis in terms of assets is provided only on an annual basis. Therefore, one cannot separate plant and machinery from buildings which is the dominant component of investment. Around 58% of total GFCF is in buildings and 32% in plant and machinery. The balance is in the form of IPR. Therefore, there is an inherent limitation here as capacity utilization refers to manufacturing which involves machinery. GFCF is much wider and scope. An analysis is still called for notwithstanding this limitation.



Source: RBI and NSO

The chart above maps the capacity utilization rates along with GFCF rates over the last 15 years or so. As can be seen, the two schedules are moving in harmony in the same direction. The coefficient of correlation was 0.58, which is quite strong.

The GFCF rate was high in March 2011 and crossed the 80% mark. This was the time when the GFCF rate was in the region of 34.5-35%. It was also the peak rate achieved in the economy that needs to be reached in the coming years too. This will bring along higher economic growth.

GFCF started moving in the downward direction subsequently and reached 30.9% in September 2014. Since then, it has been less than 30%. This rate briefly crossed the 30% threshold briefly in March and June 2019 before retreating to less than 30%. In the last 14 quarters the GFCF rate has however been above 30% in 11 of them. For this entire period the average GFCF was 30.4% with a standard deviation of 2.30.

The capacity utilization rate has averaged 73.7% over this period with standard deviation of 3.25. the deviation is high because there are quarterly patterns with a peak being achieved in March after which there is tapering down of the ratio. Post covid there has been some improvement in the average capacity utilization to 74.8%. The ratio has been above 70% for the period September 2019-September 2021. Otherwise, a rate of above 70% has been the norm. The question is how much higher should it be taken to and sustained to enable accelerated GFCF and GDP growth?

To understand this relation better the GFCF rate has been regressed on the capacity utilization rate on quarterly basis for the last 15 years with adjustments being made for the covid quarters where the numbers tended to get distorted. In this rudimentary regression the GFCF has been regressed on capacity utilization rate in the current quarter and separately for the current and preceding first and second quarters. This is to see if there are lagged effects in industry reacting to changed capacity utilization rates. This sounds logical as there would be lags between recognition of the need to invest and subsequent investment in capital.

The table below provides the results.

Regression of GFCF on -----→	CU for Qt	CU for Qt and Qt-1	CU for Qt, Qt-1 and Qt-2	CU for Qt-1 and Qt-2
Number of observations	59	58	58	55
Coefficient of determination	0.28	0.36	0.37	0.36
Standard error of estimate	1.95	1.82	1.77	1.79
Intercept	6.23 (1.21)	1.36 (0.26)	-0.37 (-0.07)	1.10 (0.20)
Coefficient of Qt	0.33 (4.71)	0.16 (1.92)	0.11 (1.28)	0.21 (2.45)
Coefficient of Qt		0.23 (2.73)	0.15 (1.66)	0.19 (2.19)
Coefficient of Qt			0.15 (1.76)	

Figures in brackets are t-ratios and those shaded are significant

CU: capacity utilization

GFCF: Gross fixed capital formation

Qt: Current quarter Qt-1 is preceding quarter and Qt-2 is preceding second quarter

Coefficient of determination: proportion of variation in GFCF that can be explained by the independent variables which is CU in different time periods

The results are quite interesting.

- The coefficient of determination varies between 0.28-0.37 for the four equations. This is expected as GFCF is much larger than plant and machinery which in turn is what is influenced by capacity utilization rates. Hence prima facie, a high coefficient is not to be expected as the building component is not affected by capacity utilization rates.

- When GFCF is regressed on capacity utilization with lags of 1 and 2 quarters (the fifth column), both the coefficients are significant. This may be considered to be the strongest relation between these two variables.
- In case the current and lagged quarter variable are considered, the lagged quarter is significant while the current quarter is not.
- When the current quarter and the preceding two lagged quarters are used in the model, none of the coefficients are significant.

While these relations may not be most appropriate for making forecasts, using various scenarios for the explanatory variable, and adjusting for the standard error of the estimate which varies between 1.77 and 1.95, it can be said that capacity utilization rates need to be maintained in the range of 79-80% for three successive quarters to reach a GFCF rate of 34-35%. In the absence of such utilization rates, manufacturing will not be able to push the needle and there will be greater dependence on construction activity to drive GFCF.

Such investment must be driven by the private sector as there are limits to which government capex can push the envelope. The GFCF in value terms was Rs 99 lakh crore in FY25 and with overall capex of centre and states to be around Rs 22-23 lakh crore this year, the balance must be come from the private sector.

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For further details about this publication, please contact:

Economics Research Department
Bank of Baroda
chief.economist@bankofbaroda.com