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Debt and growth: what causes what?

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The importance of public debt in the growth of an economy has been a matter of great debate recently. The debate reached its peak when it was found that the influential paper by Reinhart and Rogoff, which suggested debt over 90% of GDP is correlated to significant slowdown in growth, had many errors. In spite of this controversy, it is clear from many studies that there is a negative correlation between public debt and economic growth. Correlation, however, does not necessarily imply causation. It might be the case that slow economic growth leads to high levels of debt or there could be a third factor that has a joint effect on these two variables. There are no papers which check this direction of causality. This paper tries to fill up this gap by searching for the direction of causality between debt and growth in six major OECD countries: USA, UK, France, Germany, Japan and Australia, using quarterly data from 1980. It also considers three more variables, current account, government revenue and government consumption, since they definitely can influence both debt and growth. It uses two different econometric techniques: a) Toda and Yamamoto test for causality and b) Graph theoretic approach for causal inference. Toda and Yamamoto test is a modified version of the Granger Causality test and proved to give better results if some of the data is non-stationary. The graph theoretic approach is a new scientific approach for determining causal structure between contemporaneous variables in a straightforward manner. The result shows that, there is no clear evidence of debt causing lower growth. There are some evidence of bidirectional causation between debt and growth in UK and uni-directional causation from growth to debt in France, though the results vary in tests.

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