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Doctoral thesis: The Empirics of Deflation and Economic Growth

## **Abstract**

This doctoral thesis deals with the relationship between deflation and economic growth. Existing empirical research has focused on the simple link between price growth and GDP growth or introduced narrower price measures as control variables. The goal of the present work is to account for shifts in both demand and supply, so that the effect of price inflation on growth as such could be separated from effects of changes in certain elements of nominal demand and supply.

The work takes two general approaches. First, I use a large macroeconomic panel data set of 20 countries over approximately 140 years to explore long-run and short-run effects of inflation on output growth, after controlling for money supply growth as a demand shifter and oil price growth as a proxy for shifts in supply. In doing so, I use a range of methods such as the vector error-correction model, autoregressive distributed lag model and the fixed effects panel model. Second, I propose a new approach that uses disaggregated sector data from national accounts on output, prices and other variables to explore the link between quantity produced and sector inflation rates. The advantage of the data set is that it is rich in modern-day observations of sector price deflation which are unavailable at the aggregate level. A natural drawback of the sector approach is that it has implications rather for theory than for policy.

There are several important sets of results. First, on the macroeconomic level, various methods do not find general evidence of a positive effect of inflation on growth, be it in the long or short run. Controlling for demand and supply factors yields a slightly negative and statistically significant contemporaneous effect of inflation on growth, which was not shown by other studies that did not use the present control variables. The only exception to this is the Great Depression which shows a positive and significant link between inflation and growth even after controlling for money supply growth and oil price growth. This suggests that there might be circumstances in which price deflation as such is linked to recession, although these appear to be very rare.

Second, on the sector level, there does not seem to be general evidence that price growth leads to higher growth of quantity demanded, after controlling for potential simultaneity with supply factors. This holds across several specifications and samples, although the link is restricted to a contemporaneous one.

Third, robust nonparametric methods applied to sector data show that sector deflation and below-average inflation may be linked to productivity improvements. This approach also shows that productivity can be analyzed as efficiency and that its link to prices can be studied with efficiency-score methods.

Overall, the results extend the current understanding of the link between deflation and growth and suggest new room for empirical research.