

THE GROWTH-INFLATION NEXUS FOR THE U.S. FROM 1801 TO 2013: A SEMIPARAMETRIC APPROACH

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We study the existence of a threshold level of inflation for the U.S. economy over 1801-2013, beyond which it has a negative effect on economic growth. A combination of nonparametric (NP) and instrumental variable semiparametric (SNP-IV) methods obtain inflation thresholds for the United States. The results suggest that the relationship between growth and inflation is hump shaped –that higher levels of inflation reduce growth more compared to low inflation or deflation. The strongest result to emerge from the study consistently shows that inflation above two per cent negatively affects growth. Two additional parametric methods confirm this finding. Another important result is that high or very low levels of inflation are undesirable and are associated with lower growth - hinting that a growth maximizing value of inflation exists.

JEL classification codes: C14, E31

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I. Introduction

What rate of inflation is unfavorable for economic growth? This paper shows that inflation above two per cent reduces GDP growth. We analyse the inflation-growth trade-off in a semiparametric model using 213 years of United States GDP and inflation data. This paper contributes to the existing literature with a specific focus on the United States and avoids assumptions regarding explicit functional relationships.

The inflation-growth trade-off is interesting for various reasons. Its policy relevance relates to making decisions regarding interest rates and understanding the endogenous response of output growth to inflation. With interest rates at the zero lower bound (ZLB), it is natural to ask what rate of inflation is optimal. This is equally important when the Federal Reserve (Fed) considers the rate of inflation that reduces the probability of hitting the ZLB. However, rising inflation expectations have economic costs – a decrease in GDP growth. The literature on the inflation-growth nexus shows mixed results on the level of inflation that subtracts from economic growth. If certain rates of inflation increase growth, then one might make the argument for raising the inflation target. This is a Mundell-Tobin effect where inflation expectations shift investments away from money balances into other types of capital that have growth inducing effects.

The so-called point at which inflation has a negative effect on economic growth has policy consequences. Consequently, many studies attempt to pinpoint the exact inflation threshold. The empirical methods used are diverse and cover nonlinear functional forms (to test possible hump-shaped relationships) to linear regressions estimated over certain break points to dynamic models that are estimated over certain periods (i.e., rolling window regressions) and panel models that take account of cross-sectional heterogeneity.

The large body of research that analyses inflation thresholds imposes a functional form (see Barro 1995; Fischer 1993 and Rousseau and Wachtel 2001 as an example) – a practice that might be wrong. Our paper comes perhaps closest to Vaano and Shiavo (2007), who use nonparametric methods in a panel framework to study possible inflation thresholds. They use a panel data set that includes 85 countries from 1960 to 1999 over five year period intervals. We depart from their work by focusing on obtaining results for the U.S. using a novel data set with a much longer and recent time series. We use instrumental variable (IV) methods to control for possible endogeneity between growth and inflation in a semiparametric model. This gives us an unbiased model free from assuming a functional form that imposes a nonlinear relationship or one that assumes inherent structural breaks, i.e., we let

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