Estimating Inflation-Economic Growth Threshold for Papua New Guinea

Non-technical summary

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A considerable amount of theoretical and empirical work has been dedicated to examining the relationship between inflation and economic growth due to its importance to monetary policy as well as broader macroeconomic policies. In particular, low inflation has widely been accepted as a vital condition for fostering economic growth. On the contrary, high inflation is viewed to be detrimental to the economy as it weighs on society's welfare, distorts the efficiency of resource allocation, increases intermediation costs, and thus restraints financial development. Furthermore, it adversely impacts on export competitiveness of a country, thus balance of payments and eventually economic growth in the longer term (Feldstein,1982; Ocran,2007; Khan and Senhadji,2001). In addition, inflation could raise the cost of capital, impact borrowing and lending behaviour, affect investment and consumption decisions and hence, restrain economic growth (Feldstein,1982).

This study re-examines the nature of this relationship between inflation and economic growth in the case of Papua New Guinea. In particular, the paper attempts to answer the following questions:

(1) Is there a threshold level of inflation that exists in PNG where inflation affects growth differently at lower and higher levels?

(2) Is the established threshold level statistically significant and different from other threshold levels?

Although related literature is vast for both developed and developing countries, the study of this important relationship is non-existent in the case of Papua New Guinea (PNG) and limited for the Pacific Island Countries (PICs). To the author's best knowledge, this study is the first for PNG and second for the Pacific Island Countries (PICs) after Jayaraman et al (2013) estimated the inflation threshold rate for Fiji. Hence, this paper aims to fill the literature gap in PNG and the Pacific Islands region.

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The paper, following Khan and Senhadji (2001), employs the threshold regression model with annual PNG data from 1980 to 2020 to test if a threshold effect exists in the relationship between inflation and real GDP growth for PNG. In so doing, the paper applied the Ordinary Least Squares (OLS) with heteroscedasticity robust standard errors as the base econometric technique with robustness checks using the Two Stage Least Squares (2SLS) to conduct the empirical analysis. Further, the paper tested the sensitivity of the model results to different data frequencies and additional explanatory variables. The estimation results from the baseline model established a threshold level of inflation at 12.0 percent for PNG. At inflation levels lower than the threshold point, the relationship between growth and inflation is unclear as it is statistically insignificant. However, at levels higher than the threshold point, inflation has a negative impact on economic growth, consistent with prior expectations. Furthermore, the paper shows that the inflation threshold is imprecise with the estimation of the confidence interval to be in the range of 4.0-16.0 percent. The robustness test of sensitivity to different econometric approach and inclusion of the additional variable support the findings of the location of inflation threshold and the results related to the parameter estimations. On the contrary, the quarterly model produces an inflation threshold estimate of 7.0 percent, an untrustworthy estimate as both the parameter estimates associated with inflation and the inflation threshold dummy were statistically insignificant.

Conclusion and policy implications

This study establishes the inflation-growth threshold for PNG to be at 12.0 percent. This means that inflation above this level is growth-hindering. However, the imprecision of this estimate suggests that growth hindering level can fall within the range of 4.0 percent – 16.0 percent. The findings provide important guide for the management of monetary policy in PNG. In particular, it would encourage the BPNG to strive to keep inflation levels below the threshold point as levels above it would have a negative effect on long-term economic growth. In addition, the BPNG can use the estimated inflation threshold as a guide when choosing an optimal or target level of inflation especially if the Bank decides to adopt an inflation-targeting monetary policy regime. Ideally, the Bank could take the inflation threshold as the target level. However, with the imprecision of the inflation threshold level, a single digit would be more appropriate. In addition, the Bank could use this as a yardstick to decide which policy goals to pursue or prioritize conditioned on the level of inflation. For example, at inflation levels lower than the inflation threshold point, both the employment and economic growth, and price stability objectives can be pursued concurrently. However, at inflation levels higher than the threshold point, policy priority should be geared towards controlling inflation as supposed to encouraging growth and employment, as the latter could have an adverse impact on long term economic growth.