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Evidence on the functional form of inflation and output growth variability relationship in European economies



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ABSTRACT

A bulk of literature reports positive and significant link between inflation and relative price variability (RPV). Monetarists hold that this positive connection between the two variables exerts huge welfare consequences due to the fact that a high RPV increases output dispersion among firms. Some recent studies, however, show that the inflation–RPV nexus is neither linear nor stable over-time and thereby the inflation effects on output dispersion, appearing through this channel, should be minor. To address these ambiguities, this study directly tests the effect of inflation on output growth variability using a large panel of 25 developed and emerging European economies. Moreover, we also probe into the functional form of this nexus by employing a panel smooth transition regression model. Our results support a nonlinear relationship between the two variables and advance certain inflation thresholds below which inflation appeases the sectoral output growth variability and above this level it aggravates the later.

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1. Introduction

An overwhelming majority of empirical work, starting from Mills (1927), shows positive and robust relationship between inflation and relative price variability (RPV, hereafter).¹ Monetarists argue that this strong positive connection between the two variables implies significant welfare implications of any positive inflation rate. This is because investors, being less informed, consider the upward price changes as real ones and promptly respond them by increasing their production. However, as soon as they take into account the overall price increase in factors and output markets; they revert back to their initial output level (Lucas, 1973). Consequently, a higher RPV, due to inflation, translates into a higher volatility in factors and output markets. A monetary policy aimed for lower output growth volatility should, therefore, adopt an inflation rate that minimizes the RPV.

Nevertheless, two important developments of the recent literature question the credibility of this line of reasoning. First, there exist some studies, starting from Parsley (1996) to the recent work of Choi (2010), that show a lack of robust relationship between inflation and the RPV. Naturally, if the inflation–RPV nexus is not robust, then the transmission of adverse inflation effects from RPV to output growth volatility should also be a matter of no concern. Second, some other studies on the inflation–RPV relationship contradict the linear functional form of this relationship, assumed by the monetarists. The examples include Fielding and Mizen (2008) and Nautz and Scharff (2012), showing a nonlinear functional form of this nexus. This nonlinear profile of the inflation–RPV relationship calls for a positive inflation rate to minimize the RPV. On this second development, if the inflation and RPV are nonlinearly connected with each another, then the linear functional form of the inflation–output growth variability nexus, used by the previous empirical studies (see Iscan and Osberg, 1998), should also be tested for its validity.

Theoretically, the effects of inflation on output growth variability can take any dimension. The proponents of misperception theory advocate a positive connection between the two variables; as mentioned earlier. By contrast, Taylor's (1979) stability trade-off advances an adverse relationship due to the fact that central banks' ambitious attempts to control the inflation uncertainty, by reducing the average inflation rate, may result in a higher real uncertainty (see also Fuhrer, 1997; Clarida et al., 1999). The empirical substantiation to both of these opposing possibilities is restricted to macro level indicators of output uncertainty. In the existing empirical literature, a consensus view does not prevail as the results support all the possibilities of positive, negative and insignificant relationship between the two variables. As an illustration, Okun (1971) uses the data of 17 OECD countries and tests whether high-inflation countries observe a high and variable output growth. The correlation results of the study do not show any systematic link between inflation and output growth variability for most of the selected economies. Karanasos and Kim (2005) complement these findings for a long data set over 1957–2000 of the three largest economies; the U.S, Japan and Germany (see also Fountas et al., 2002). Fountas et al. (2006), on the other hand, find mix evidence for the G-7 countries. Their output growth variability, taken from bivariate-GARCH model, is not linked with inflation for the U.S, France and Canada; positively (though weakly) linked for Japan and Italy; and, negatively linked for Germany and the U.K. On the adverse relationship between the two variables, the evidence comes from the studies which support Taylor's stability trade-off hypothesis (see Cecchetti and Krause, 2001; Cecchetti and Ehrmann, 1999). Cecchetti and Krause (2001) find these results in a cross-sectional framework for 24 OECD economies over the period 1950–1971. However, the authors also note that the average inflation rate positively affects the output growth variability, supporting the misperception theory. Similarly, Hess and Morris (1996) find a positive long-run association between inflation and output growth volatility for their large sample of 68 developed and emerging economies (see also Logue and Sweeney, 1981).

As can be clearly drawn from this discussion, the exact nature of the relationship between inflation and output growth variability is not a settled issue in the empirical literature. Moreover, the direct

¹ Some frequently cited works include Sheshinski and Weiss (1977), Lucas (1973) and Fischer (1981). For recent examples see Nautz and Scharff (2005, 2012), Becker and Nautz (2012) and Choi (2010). Fielding and Mizen, (2008) present a detail survey.

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