WHEN IS LOWER INFLATION LESS STABLE?
EVIDENCE FROM EIGHT DEVELOPING ECONOMIES

ABSTRACT

This paper investigates the relationship between inflation and inflation volatility in eight developing economies. Using monthly data for Chile, China, India, Indonesia, Korea, Poland, South Africa, and Turkey, the results show that inflation and its volatility have been positively correlated when inflation exceeds a certain value, but negatively correlated when inflation is below this threshold. The evidence also suggests that inflation volatility is minimized at inflation rates that differ across the countries, ranging from roughly 3% in South Africa to 12% in Turkey, a range which includes both the 3.5% break point predicted by the New Keynesian model of Coibion et al. (2012) and the 4% inflation target recommended by Ball (2013) and Krugman (2013), but not the (formal or informal) 2% inflation target of many central banks.

Keywords: Inflation, Inflation Volatility, Trend Inflation
JEL Classification: E31, E32

RIASSUNTO

Quando l’inflazione più bassa è meno stabile? Evidenze da otto economie in via di sviluppo

Questo lavoro studia la relazione tra livello di inflazione e volatilità dell’inflazione stessa in otto economie in via di sviluppo. Utilizzando dati mensili per Cile, Cina, India, Indonesia, Corea, Polonia, Sud Africa e Turchia, i risultati dimostrano che l’inflazione e la sua volatilità sono state positivamente correlate quando l’inflazione eccede un certo valore, ma negativamente correlate quando l’inflazione è sotto questa soglia. Inoltre vi sono evidenze che la volatilità dell’inflazione è minima a tassi di inflazione differenti da paese a paese: all’incirca il 3% in Sud Africa, il 12% in Turchia, cioè una gamma che include sia il break point del 3.5% previsto dal nuovo modello Keynesiano di Coibion et al. (2012) che il 4% raccomandato da Ball (2013) e Krugman (2013), ma non il 2%, obbiettivo (formale o informale) di inflazione di molte banche centrali.
1. **INTRODUCTION**

There is widespread consensus in macroeconomics that the level of inflation and inflation volatility are strongly and positively correlated. Originally, the positive relationship was considered mostly at higher inflation rates, as in Friedman (1977). Gradually, however, the positive correlation was extended to apply to moderate or even low inflation rates (for example, Taylor, 1981; Ball and Cecchetti, 1990; Brunner and Hess, 1993; Grier and Perry, 1998; Davis and Kanago, 1998, 2000; Daal et al., 2005; Thornton, 2007; Kiley, 2007). Despite the scarcity of theoretical explanations for this correlation\(^1\), eventually the relationship has come to be thought of as monotonic. Put simply, high inflation is generally expected to be variable inflation, while conversely low inflation is generally expected to be stable inflation.

Recently, however, Coibion et al. (2012) have presented a theoretical New Keynesian model that not only endogenously generates a relationship between the level and volatility of inflation, but also predicts that this relationship is not monotonic. In particular, their model predicts that the relationship between the level and volatility of inflation is negative at low levels of inflation, becoming positive only when inflation rises above a specific value. Coibion et al. (2012) compute that the break in the relationship occurs at annual inflation of 3.5\%. In the rest of the present paper, we refer to this as the CGW Hypothesis.

The significance of such a result for monetary policy is straightforward. Suppose that inflation and its volatility are indeed negatively related when inflation is below a certain threshold. This would then mean that if inflation falls below that threshold, raising it would make inflation *more* stable – indeed, it would mean that inflation would *have to* be raised in order to be made more stable\(^2\). The relevant policy question, therefore, is whether the threshold is considerably higher than the inflation target, in which case an increase in the inflation target will alleviate zero lower bound problems *and* reduce inflation volatility at the same time.

Using monthly data over various time periods ending in 2016M7, the paper estimates the relationship between inflation and several measures of inflation volatility for eight developing economies (Chile, China, India, Indonesia, Korea, Poland, South Africa, and Turkey) that have

---

\(^1\)Ball (1992) and Kiley (2007) provide two influential exceptions.

\(^2\)If the threshold was sufficiently high, it would strengthen the case of those who call for an increase in the inflation target to 4\%, such as and Ball (2013) and Krugman (2013).
had demonstrably different inflation experiences. First we find that, as expected, the overall correlation between inflation and its volatility is positive in each of the eight economies. Next, we ask whether the 3.5% inflation value implied by the model of Coibion et al. (2012) really marks a break point in the relationship, and we find that it appears to do so: for inflation values higher than 3.5%, the correlation between inflation and its volatility in all eight countries has been positive; while for inflation below 3.5%, the correlation is negative in each of the economies, except China. This is consistent with the CGW Hypothesis. But is 3.5% the actual break point? To answer that, we use two nonlinear techniques to estimate the break point. These techniques show that the break point differs by country, ranging roughly from 3% in South Africa to 12% in Turkey.

It is worth pointing out that similar results have been obtained by Karras (2015a, 2015b, and forthcoming) for Japan, United Kingdom, and the United States. It appears that the nonmonotonic relationship between inflation and its volatility characterizes both developed and developing economies.

Using one of the eight countries considered here as an example, the paper’s findings can be illustrated in Figure 1, a scatterplot of inflation volatility versus the level inflation in India over the period 1957-2016 (section 2 formally defines the variables). The blue line shows the overall relationship between the two variables: it is (weakly) positive, consistent with the consensus view. Allowing for a non-monotonic relationship, however, changes the picture dramatically. The relationship remains positive above a certain value of inflation (the red line), but becomes negative for inflation below this threshold (the green line). The threshold on Figure 1 is roughly 7.2%, but the full range of estimates suggests that inflation volatility is minimized at inflation rates that vary meaningfully by country (see section 3 for details).

The rest of the paper is organized as follows. Section 2 discusses the data and defines the variables to be used in the estimation. Section 3 outlines the estimation methodology, derives the main empirical results, and implements a number of robustness checks. Section 4 discusses the findings and concludes.
2. THE DATA

The price level \( (P_t) \) is measured by the CPI (Consumer Prices: all items). Data are obtained from the OECD for eight developing economies: Chile, China, India, Indonesia, Korea, Poland, South Africa, and Turkey. All eight data sets consist of monthly observations. While differences in data availability make the starting observations different across the eight economies (see discussion of Table 1 below), all series end in 2016M7. The inflation rate \( (\pi_t) \) is defined as the year-ago percent change in the CPI: 
\[
\pi_t = 100 \cdot \frac{P_t - P_{t-12}}{P_{t-12}}.
\]

Our first measure of the time-varying inflation volatility \( (\sigma_t^x) \) series is constructed using rolling five-year windows: \( \sigma_t^x \) is set equal to the standard deviation of the inflation rate over each 5-year period\(^3\). In addition, we use the Hodrick-Prescott (HP) filter, proposed by Hodrick and Prescott (1997), to decompose inflation into permanent and transitory components. We use again rolling five-year windows to define our second measure of inflation volatility \( (\sigma_t^{HP}) \) as the

\[ \sigma_t^{HP} = \sqrt{\frac{1}{59} \sum_{j=1}^{60} (\pi_{t+j} - \overline{\pi}_{t+j})^2}. \]

\(^3\) Middle-of-window values are used for \( \sigma_t^x \). More specifically, 
\[
\sigma_{t+30}^x = \sqrt{\frac{1}{59} \sum_{j=1}^{60} (\pi_{t+j} - \overline{\pi}_{t+j})^2}.
\]
When is lower inflation less stable? Evidence from eight developing economies

standard deviation of the HP transitory component of the inflation rate over each five-year period.⁴

<table>
<thead>
<tr>
<th>TABLE 1 - Sample Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Time Period</td>
</tr>
<tr>
<td>2016M7</td>
</tr>
<tr>
<td>πₜ</td>
</tr>
<tr>
<td>σₚₜ</td>
</tr>
<tr>
<td>σₚₜₜ</td>
</tr>
</tbody>
</table>

Notes: πₜ is inflation, σₚₜ is inflation volatility, and σₚₜₜ is the volatility of the HP cyclical component. See text for variable definitions. All means are over the time periods indicated.

Table 1 reports time periods and basic sample means for each of the eight economies. It is apparent that the inflation experience of these economies over the relevant time periods has been quite diverse. Thus, average inflation has ranged from 3.9% in China to 32.1% in Turkey, while average inflation volatility (measured by σₚₜ, the rolling standard deviation) has varied from 1.9 in Chile to 11.3 in Turkey. Note that, generally, countries with high inflation (such as Turkey or Indonesia) also have more volatile inflation over the relevant period, and vice versa. This is consistent with the consensus view of a positive relationship between the two variables.

Even in the small cross-sectional sample of Table 1, however, it is possible to find instances of a negative relationship, such as between Chile and China (who also happen to have the same time period). Thus, China has had lower average inflation than Chile, but Chile has had lower inflation volatility than China (Poland and South Africa offer another such simple example).

⁴In particular, the HP filter defines the trend, πₜₜ, as the component that minimizes

\[ \sum_{t=1}^{T} (\pi_t - \pi_{t|t})^2 + \lambda \sum_{i=2}^{T} \left[ (\pi_{t|i} - \pi_{t|t}) - (\pi_{t|i} - \pi_{t|i-1}) \right]^2 \]

for \( \lambda > 0 \). In the empirical section below we report results for \( \lambda = 14400 \), the value suggested by Hodrick and Prescott (1997) for monthly data, but we have also tried \( \lambda = 129600 \), as recommended by Ravn and Uhlig (2002).
This raises the possibility that the relationship between inflation and inflation volatility may be nonlinear, a hypothesis that is more formally examined in the next section.

3. EMPIRICAL EVIDENCE

3.1 Linear Relationship

We start with a simple linear relationship between inflation volatility and the level of inflation, of the form:

$$\sigma_i^\pi = \alpha + \beta \cdot \pi_i + u_i.$$  (1)

Table 2 reports the estimated $\beta$s, as well as the correlation coefficients between $\sigma_i^\pi$ and $\pi_i$, for each of the eight countries. As expected, the $\beta$s are all positive, ranging from 0.015 in South Africa to 0.381 in Poland, and all but two (India and South Africa) are statistically significantly different from zero. Similarly, the estimated correlations are all positive, ranging from 0.082 in South Africa to 0.869 in Poland. The time-series evidence, therefore, appears to be consistent with a positive correlation between inflation volatility on the one hand, and the level of inflation on the other.

<table>
<thead>
<tr>
<th>Country</th>
<th>$\beta$</th>
<th>corr($\sigma_i^\pi, \pi_i$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chile</td>
<td>0.090*</td>
<td>0.243</td>
</tr>
<tr>
<td>China</td>
<td>0.213**</td>
<td>0.296</td>
</tr>
<tr>
<td>India</td>
<td>0.055</td>
<td>0.103</td>
</tr>
<tr>
<td>Indonesia</td>
<td>0.282**</td>
<td>0.450</td>
</tr>
<tr>
<td>Korea</td>
<td>0.257**</td>
<td>0.547</td>
</tr>
<tr>
<td>Poland</td>
<td>0.381**</td>
<td>0.869</td>
</tr>
<tr>
<td>S. Africa</td>
<td>0.015</td>
<td>0.082</td>
</tr>
<tr>
<td>Turkey</td>
<td>0.160**</td>
<td>0.600</td>
</tr>
</tbody>
</table>

3.2 Break at 3.5%?

Next, we test the Coibion et al. (CGW, 2012) hypothesis that inflation and its volatility are positively correlated above a certain inflation rate value, but negatively correlated at levels of inflation below that value. Using the baseline values of their theoretical model, CGW (2012)
argue that this switch occurs at an annualized inflation rate of approximately 3.5%. Under this hypothesis, specification (1) is misspecified because it imposes a relationship between inflation and its volatility that is monotonic (and independent of the level of inflation).

To test that there is a break in the relationship which is located at 3.5% annual inflation, the estimated model becomes:

\[
\sigma_t^\pi = \alpha + \beta_{\text{LOW}} \pi_t \mathbf{I}(\pi_t \leq 3.5) + \beta_{\text{HIGH}} \pi_t \mathbf{I}(\pi_t > 3.5) + \epsilon_t, \tag{2}
\]

where \( \mathbf{I}(\cdot) \) is the indicator function. In effect, model (2) estimates two linear relationships: one for inflation values that falls short of 3.5% (captured by \( \beta_{\text{LOW}} \)), and another for inflation values that exceeds 3.5% (captured by \( \beta_{\text{HIGH}} \)).

The results of this split estimation are given in Table 3 and the evidence appears to be generally supportive of the CGW hypothesis. All but one (China) of the estimated \( \beta_{\text{LOW}} \) s are negative and statistically significant, while all the estimated \( \beta_{\text{HIGH}} \) s are positive and (except for China and South Africa) also statistically significant. In fact, for all countries but China, the null \( \beta_{\text{LOW}} = \beta_{\text{HIGH}} \) can be rejected in favor of the alternative \( \beta_{\text{LOW}} < \beta_{\text{HIGH}} \).

The estimated negative \( \beta_{\text{LOW}} \) s range from −0.196 in Chile to −6.265 in Indonesia, while the estimated \( \beta_{\text{HIGH}} \) s vary from 0.008 in South Africa to 0.480 in Poland. It appears that in Chile, India, Indonesia, Korea, Poland, South Africa, and Turkey the relationship between inflation and inflation volatility is positive for inflation rates higher than 3.5%, but it becomes negative for inflation below 3.5%. Consistent with the prediction of the CGW hypothesis, this finding implies that, for inflation values below 3.5%, increasing the rate of inflation reduces its volatility.

Figures 2a and 2b visualize the implied nonlinear relationship when the break point is assumed to be at 3.5% inflation. The conditional correlation coefficients reported at the bottom of Table 3 make the same point: inflation and its volatility are positively correlated (in all eight countries) when inflation is above 3.5%, but negatively correlated (in all countries but China) when inflation falls below 3.5%.

\[ \text{More specifically, for all countries but China and South Africa, the null } \beta_{\text{LOW}} = \beta_{\text{HIGH}} \text{ can be rejected in favor of the alternative } \beta_{\text{LOW}} < 0 < \beta_{\text{HIGH}} \text{ (for South Africa } \beta_{\text{LOW}} < 0 \leq \beta_{\text{HIGH}} \text{).} \]
Estimating the Break

In the last section, we investigated the existence of the break, under the assumption that it occurs at inflation of 3.5%, as suggested by the theoretical model of Coibion et al. (2012). In this section, the goal is to let the data identify the break. To that end, we specify a threshold-type model

$$\sigma_i^\pi = \alpha + \beta_{LOW} \pi_i I(\pi_i \leq q) + \beta_{HIGH} \pi_i I(\pi_i > q) + u_i,$$  

where $q$ is the break point to be estimated. We estimate $q$ using the econometric technique proposed by Hansen (1997)\textsuperscript{6}. Table 4 reports the results.

\begin{table}[h]
\centering
\caption{Break at 3.5% Inflation}
\begin{tabular}{lcccccccc}
 & Chile & China & India & Indonesia & Korea & Poland & S.Africa & Turkey \\
\hline
$\beta_{LOW}$ & -0.196** & 0.055 & -0.744** & -6.265** & -1.187** & -0.305** & -0.398** & -0.583* \\
 & (0.082) & (0.095) & (0.065) & (1.211) & (0.278) & (0.114) & (0.095) & (0.284) \\
$\beta_{HIGH}$ & 0.301** & 0.633 & 0.318** & 0.316** & 0.260** & 0.480** & 0.008 & 0.160** \\
 & (0.036) & (0.350) & (0.049) & (0.024) & (0.019) & (0.021) & (0.012) & (0.011) \\
$\text{corr}(\sigma_i^\pi, \pi_i | \pi_i \leq 3.5)$ & -0.306 & 0.061 & -0.746 & -0.786 & -0.370 & -0.368 & -0.388 & -0.319 \\
$\text{corr}(\sigma_i^\pi, \pi_i | \pi_i > 3.5)$ & 0.641 & 0.328 & 0.533 & 0.529 & 0.566 & 0.932 & 0.043 & 0.589 \\
\end{tabular}
\end{table}

Notes: $\pi_i$ is inflation and $\sigma_i^\pi$ is inflation volatility. See Table 1 for time periods and text for variable definitions.

Estimated HAC (heteroscedasticity and autocorrelation consistent) standard errors, with Newey-West adjustment, in parentheses. ‘**’ and ‘*’ denote statistical significance at the 1% and 5% significance levels.

\textsuperscript{6}Significance levels for $q$ are obtained by bootstrapping with 10000 random Normal draws.
TABLE 4 - Estimating the Break

\[ \sigma_t^z = \alpha + \beta_{LOW} \pi_t I(\pi_t \leq q) + \beta_{HIGH} \pi_t I(\pi_t > q) + u_t \]

<table>
<thead>
<tr>
<th></th>
<th>Chile</th>
<th>China</th>
<th>India</th>
<th>Indonesia</th>
<th>Korea</th>
<th>Poland</th>
<th>S. Africa</th>
<th>Turkey</th>
</tr>
</thead>
<tbody>
<tr>
<td>( q )</td>
<td>3.642**</td>
<td>4.027</td>
<td>7.209**</td>
<td>5.237**</td>
<td>3.439**</td>
<td>4.842**</td>
<td>3.188**</td>
<td>12.596**</td>
</tr>
<tr>
<td>( \beta_{LOW} )</td>
<td>-0.219**</td>
<td>0.087</td>
<td>-0.544**</td>
<td>-3.705**</td>
<td>-1.270**</td>
<td>-0.160**</td>
<td>-0.546**</td>
<td>-0.076</td>
</tr>
<tr>
<td></td>
<td>(0.082)</td>
<td>(0.102)</td>
<td>(0.063)</td>
<td>(1.211)</td>
<td>(0.261)</td>
<td>(0.050)</td>
<td>(0.084)</td>
<td>(0.090)</td>
</tr>
<tr>
<td>( \beta_{HIGH} )</td>
<td>0.286**</td>
<td>0.759*</td>
<td>0.460**</td>
<td>0.322**</td>
<td>0.259**</td>
<td>0.428**</td>
<td>0.012</td>
<td>0.067**</td>
</tr>
<tr>
<td></td>
<td>(0.040)</td>
<td>(0.368)</td>
<td>(0.036)</td>
<td>(0.025)</td>
<td>(0.019)</td>
<td>(0.031)</td>
<td>(0.011)</td>
<td>(0.016)</td>
</tr>
<tr>
<td>( corr(\sigma^z_t, \pi_t</td>
<td>\pi_t \leq q) )</td>
<td>-0.345</td>
<td>0.095</td>
<td>-0.588</td>
<td>-0.586</td>
<td>-0.404</td>
<td>-0.297</td>
<td>-0.481</td>
</tr>
<tr>
<td>( corr(\sigma^z_t, \pi_t</td>
<td>\pi_t &gt; q) )</td>
<td>0.612</td>
<td>0.377</td>
<td>0.677</td>
<td>0.556</td>
<td>0.560</td>
<td>0.906</td>
<td>0.061</td>
</tr>
</tbody>
</table>

The estimated \( q \)s range from 3.188% in South Africa to 12.596% in Turkey. Just as before, the estimated \( \beta_{HIGH} \)s are all positive, whereas all but one (China) the estimated \( \beta_{LOW} \)s are negative. In the majority of cases, the magnitude and statistical significance of the \( \beta_{LOW} \) and \( \beta_{HIGH} \) parameters is little affected from the results of Table 3. Qualitatively, therefore, these estimates remain consistent with the nonlinear prediction of the CGW hypothesis: inflation volatility and the level of inflation are positively related when inflation exceeds a certain threshold, but negatively correlated when inflation is below this threshold. Figures 3a and 3b visualize these nonlinear relationships when the break point is estimated with the Hansen (1997) method.

However, the Coibion et al. (2012) prediction appears less Le Verrieresque in terms of the estimated break. Instead of a 3.5% annual inflation threshold, the estimated break point varies by country and is numerically between 3% and 12.5%, which is substantially higher than the 2% inflation target of many central banks (see Ball, 2013).

3.4. Extensions

This section investigates the robustness of the paper’s results to a number of extensions. First, we replace the rolling standard deviation of inflation (\( \sigma^z_t \)) with the rolling standard deviation of the HP-filtered series (\( \sigma^{HP}_t \)) as the dependent variable in the estimated models (1),
Our findings prove to be robust, so (to preserve space) we report only the results from revised model (3'):

\[
\sigma_i^{HP} = \alpha + \beta_{LOW} \pi_i I(\pi_i \leq q) + \beta_{HIGH} \pi_i I(\pi_i > q) + u_i. \tag{3'}
\]

Table 5 reports the results. Once again, all but one (China) estimated \(q_s\) are statistically significantly positive. Those estimated break points range from (a statistical) zero in China to 11.1% in Turkey. Regarding the estimated slopes, the results are shown to be robust as well. In particular, not only do all estimated \(\beta_{HIGH}\)s continue to be positive, but now all (including China’s) estimated \(\beta_{LOW}\)s are negative. Generally, the magnitude and statistical significance of the \(\beta_{LOW}\) and \(\beta_{HIGH}\) parameters is very little affected from the results of Table 4. Figures 4a and 4b plot these nonlinear relationships when the dependent variable is the standard deviation of the HP-filtered series.

| Country       | \(q\)     | \(\beta_{LOW}\) | \(\beta_{HIGH}\) | \(corr(\sigma_i, \pi_i | \pi_i \leq q)\) | \(corr(\sigma_i, \pi_i | \pi_i > q)\) |
|---------------|-----------|----------------|-----------------|--------------------------------|--------------------------------|
| Chile         | 5.037**   | -0.117*       | 0.434**         | -0.255                        | 0.673                          |
| China         | 0.400     | -0.197        | 0.128**         | -0.244                        | 0.471                          |
| India         | 4.284**   | -0.487**      | 0.227**         | -0.698                        | 0.567                          |
| Indonesia     | 5.237**   | -3.020**      | 0.230**         | -0.607                        | 0.530                          |
| Korea         | 3.432**   | -0.913**      | 0.174**         | -0.607                        | 0.560                          |
| Poland        | 4.842**   | -0.048*       | 0.027**         | -0.420                        | 0.650                          |
| S. Africa     | 3.188**   | -0.408**      | 0.007           | -0.222                        | 0.061                          |
| Turkey        | 11.138**  | -0.168**      | 0.077**         | -0.056                        | 0.526                          |

Notes: \(\pi_i\) is inflation and \(\sigma_i^{HP}\) is volatility of the HP cyclical component. See Table 1 for time periods and text for variable definitions. \(q\) is the threshold value (q’s significance level is estimated by bootstrapping with 10000 random Normal draws). Estimated HAC (heteroscedasticity and autocorrelation consistent) standard errors, with Newey-West adjustment, in parentheses. *** and ** denote statistical significance at the 1% and 5% significance levels.
Next, and in addition to the HP filter, the Band-Pass filter proposed by Baxter and King (1999), and the “optimal” filter of Christiano and Fitzgerald (2003) were also used but their results were so similar to the HP filter’s that are not reported below to preserve space.

Finally, the method proposed by Bai and Perron (2003) was also used to estimate the break point \( q \) in models (3) and (3’), but the estimated \( q_s \) were so similar, that once more the results were virtually unaffected.

4. DISCUSSION AND CONCLUSIONS

An increasing number of economists and policy makers have been arguing in favor of a higher inflation target\(^7\). While the details differ, a common theme is that a higher inflation rate will enable monetary policy to deal more effectively with (or even avoid) problems associated with the zero lower bound for nominal interest rates. It is recognized, of course, that this benefit must be weighed against the well-known costs of higher inflation, which include those stemming from higher inflation volatility.

Using monthly data for eight developing economies with markedly different inflation experiences (Chile, China, India, Indonesia, Korea, Poland, South Africa, and Turkey) over various time periods that end in 2016M7, our results show that the relationship between inflation and its volatility is not monotonic. In particular, the evidence suggests that inflation and its volatility have been positively correlated when inflation exceeded a certain value, but negatively correlated when inflation was below this threshold. With the possible exception of China, these results are found to be robust to a number of different empirical specifications and estimation techniques, and several alternative ways of quantifying inflation volatility.

The significance of the paper’s results is straightforward. Most importantly, the evidence shows that, contrary to the broad consensus, lower inflation has not always been more stable inflation. The implication is that, if inflation falls below the break point, raising it may result in lower instead of higher inflation volatility.

\(^7\) Examples include Williams (2009), Blanchard et al. (2010), Ball (2013), Krugman (2013), Yellen (2013), and The Economist (2013). See English et al. (2015) and Ascari and Sbordone (2013) for additional discussion and evaluation.
What is the inflation rate that minimizes inflation volatility? Our evidence suggests that the break in the relationship occurs at rates that differ by country and range from 3% in South Africa to 12% in Turkey. This range includes the 3.5% break point predicted by the New Keynesian model of Coibion et al. (2012) and the 4% inflation target advocated by Ball (2013) and Krugman (2013) – but not the 2% (formal or informal) inflation target of many central banks.

Put differently, Can a higher inflation rate reduce inflation volatility in the countries examined here? In a nutshell, the answer is that it probably can, but only if the increase is very modest and from a relatively low starting value (that differs by country).

Though our results are robust to the specifications tried above, future research should pursue additional extensions. Karras (2015a, 2015b, and forthcoming) has found similar results for Japan, United Kingdom, and the United States, which suggests that the relationship between the level of inflation and its volatility is nonmonotonic in both developed and developing economies. Why this is the case and an investigation of the economic factors that cause the break points to differ across these economies would be of great interest.

REFERENCES


FIGURE 2A - Inflation Volatility versus Inflation. Assuming a Break at 3.5% Inflation

Note: Straight lines are regression lines assuming a break at 3.5% inflation.
FIGURE 2B - Inflation Volatility versus Inflation. Assuming a Break at 3.5% Inflation

Note: Straight lines are regression lines assuming a break at 3.5% inflation
FIGURE 3A - Inflation Volatility versus Inflation - Estimating the Break Point

Note: Straight lines are regression lines assuming a break at the estimated $q$ threshold of equation (3).
FIGURE 3B - Inflation Volatility versus Inflation. Estimating the Break Point

Note: Straight lines are regression lines assuming a break at the estimated $q$ threshold of equation (3).
FIGURE 4A - HP Inflation Volatility versus Inflation. Estimating the Break Point

Note: Straight lines are regression lines assuming a break at the estimated $q$ threshold of equation (3).
FIGURE 4B - HP Inflation Volatility versus Inflation. Estimating the Break Point

Note: Straight lines are regression lines assuming a break at the estimated $q$ threshold of equation (3).