THE IMPACT OF INFLATION TARGETING FRAMEWORK ON FOOD PRICE INFLATION: EVIDENCE FROM DEVELOPING ECONOMIES

Abhijit M. Surya *

* Paris School of Economics, France
Contact details: Paris School of Economics, 48 Boulevard Jourdan, 75014 – Paris, France

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Abstract

Inflation Targeting (IT) has gained much popularity in recent years, with fifteen countries formally adopting it as a monetary policy framework since 2000. However, in developing countries, where the contribution of food prices to headline inflation is generally higher than in advanced economies, the adequacy of an IT framework for curbing inflation is very much contested. In this paper, we use a difference-in-differences approach to evaluate the treatment effect of adopting IT. Controlling for reversion to the mean, we find that economies that function under an IT regime do no better than countries that use alternative policy instruments. We verify the robustness of these results using panel unit-root tests and find that food inflation rates converge across economies irrespective of the monetary policy framework implemented.

Keywords: Food Inflation, Inflation Targeting, Inflation Convergence, Monetary Policy

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1. INTRODUCTION

As of February 2015, The Reserve Bank of India became the newest addition to the list of central banks that function under an inflation targeting (IT) regime. Although the framework of inflation targeting was pioneered by industrialized nations such as New Zealand, Canada, and the United Kingdom, its popularity as a monetary policy tool quickly diffused to emerging market economies (EMEs) as well. Even prior to India joining the mix, eighteen EMEs and developing economies had already officially adopted inflation targeting (Hammond, 2012).

However, the experience of advanced economies with inflation targeting has been vastly different from that of EMEs or Low-Income Countries (LICs). One particular issue that arises repeatedly in the context of developing economies is that of the contribution of food prices to overall inflation levels. Firstly, in most developing economies the weight of food and fuel in the Consumer Price Index (CPI) is substantially higher than that of advanced economies (Table 1).

Secondly, for LICs in particular, one finds that food inflation is higher than non-food inflation in terms of both magnitude and volatility. Lastly, the pass-through of food inflation to headline inflation is significantly larger in developing economies relative to industrialized economies. Walsh (2011) estimates that a one percent increase in food prices on average causes a 0.3 percent increase in non-food prices in developing countries, as opposed to only 0.15 percent in developed countries.

A necessary condition for the effectiveness of an IT regime in maintaining food price stability is that monetary policy must be able significantly to impact food prices. Chambers (1984) develops a theoretical model that examines the effect of monetary policy on the agricultural sector concludes that contractionary policy leads to a fall in agricultural prices relative to non-agricultural prices in the short run. Another model developed by Frankel (1986) illustrates how monetary changes can cause agricultural prices to initially overshoot or undershoot their long-run equilibrium. Empirical studies also corroborate the real short-run and long-run effects of monetary policy on food prices, with the direction of Granger causality going from the money supply to the food prices (Peng, et al., 2004; Shahnoushi et al., 2009).

Table 1. Weight of Food in National Consumer Price Index (In Percent) in 2015

Developing Economies		***Advanced Economies***	
Ghana	43.9	Canada	10.9
India	45.9	Germany	10.3
Malaysia	30.3	Japan	18.6
Philippines	39	New Zealand	14.9
Russia	31	United Kingdom	10.3
Turkey	23.7	United States	8.4
Average	35.6	Average	12.3

Source: National Statistical Organizations and OECD Stat Database

Nonetheless, the argument that macroeconomic policy can play as important a role as microeconomic factors in determining food prices is strongly contested. In this context, this paper attempts to answer the question: How significant is the impact of inflation targeting on food price inflation in developing economies? Indeed, if inflation targeting has no impact on food price stability, it brings into question its effectiveness as a monetary policy tool in developing countries. In this paper we use a difference-in-differences approach to evaluate the performance of countries before and after IT adoption, using a sample of similar non-IT countries as a control group. Thereafter, we use a panel Augmented Dickey-Fuller (ADF) framework to test for the convergence of food inflation rates across developing economies. This paper contributes to the extant empirical literature insofar as it explicitly tests the degree of influence an IT regime has on food inflation rates.

The paper is structured in the following manner. Section II provides a literature review on studies of the efficacy of inflation targeting regimes. Section III describes the data and the methodology employed in the econometric analyses. Section IV discusses the estimation results and Section V provides a brief conclusion.

2. LITERATURE REVIEW

Since the failure of activist monetary policy in the 1970s, there has been a radical shift in perceptions of intellectuals regarding the role monetary policy should play in an economy. First, there was widespread acceptance of the theory put forth by Friedman and Phelps that there exists no trade-off between output and inflation in the long run. Second, there was a consensus that the only macroeconomic variable that monetary policy could affect in the long run was inflation. Finally, there was recognition of the policy credibility problem, i.e. activist central banks were often incentivized to increase inflation levels over and above public expectations in order to stimulate output. In the medium term, however, this policy credibility problem would lead to an inflationary spiral (Bernanke et al., 2001; King, 2005).

The recognition of price stability as an indispensable factor to a healthy economy went hand in hand with the adoption of inflation targeting regimes across the world. Unlike typical monetary policy rules, the implementation of an IT framework requires adherence to five main criteria: 1) recognition of price stability as the primary objective of monetary policy; 2) a public announcement of a quantitative target (point or range) for inflation; 3) employment of an information inclusive strategy, over and above data on monetary aggregates and exchange rates; 4) transparency of the central bank vis-à-vis its communications with the public on policy decisions; and 5) enforcing a system of accountability in the event the central bank fails to meet its inflation target (Mishkin, 2000).

In sharp contrast to central banks which target monetary aggregates or exchange rates, those that adopt IT are likely to maximize transparency since explicit inflation targets are more easily understood by the general public (Croce and Khan, 2000). Central bank transparency also has implication for a number of variables including inflation volatility, inflation persistence, and short-term private sector expectations (Posen, 2003). However, in the medium to long-term, transparency sans credibility is redundant. Empirical analyses indicate that when a central bank's commitment to an inflation target is more credible, the economy is less vulnerable to financial and cyclical shocks (Faust and Svensson, 2001; Carare and Stone, 2003; Minella et al., 2003).

Indeed, there are numerous proponents of the IT framework as an effective monetary policy instrument. Some of the earliest studies to empirically analyse the consequences of IT adoption showed that price and output shocks had a significantly weaker impact on the inflation and output gaps of ITers than non-targeters (Corbo, Landerretche, and Schmidt-Hebbel, 2001). Another study using panel methodology by Johnson (2002) indicated that announcement of inflation targets significantly reduced expected inflation in the following calendar year. Kontonikas (2004) concluded that IT adoption has a direct negative impact on long-run uncertainty. Such results held even for emerging economies, where it was found that inflation targeting has a significant, negative impact on both inflation level and volatility – a result that is robust with respect to different estimators (Batini and Laxton, 2006; Goncalves and

Salles, 2008; Brito and Bystedt, 2010; Gemayel, Jahan, and Peter, 2011).

On the other side of the spectrum, however, there are those who are not convinced by the success of IT as a policy measure. Studies of advanced economies provide descriptive and econometric evidence which suggests that the mere implementation of an IT regime is not sufficient to improve inflation performance or significantly affect inflation expectations (Lee, 1999; Siklos, 1999). A seminal piece in the literature is that of Ball and Sheridan (2003) which unequivocally concludes that there is no evidence to show improvement of a country's economic performance in the long run as a result of IT adoption. Similarly, studies for both advanced and emerging economies, which compare forecasted inflation based on pre-IT levels to the true inflation levels in the post-IT period find no evidence of a structural break at the time of adopting IT (Genc, et al., 2007; Genc and Balcilar, 2010). Further empirical analyses using propensity score matching find that the average treatment effects of IT are statistically and economically insignificant (Vega and Winkelfried, 2005; Lin and Ye, 2007).

3. DATA AND METHODOLOGY

Monthly data on the Food Consumer Price Index (FCPI) were obtained from the Food and Agriculture Organization (FAO) of the United Nations. The time period of the study is from 2000M1 to 2011M12, with 2000 being the base year for all countries. The yearly food inflation rate π_t^f is calculated from the FCPI as $\pi_t^f = \ln(FCPI_t/FCPI_{t-12}) \cdot 100$.[18] Inflation volatility is calculated as the standard deviation of food inflation rates. For the analysis that follows we consider a sample of 33 developing countries. The sample includes nine of the ten countries which adopted IT since 2002.[19] In order to ensure internal validity of the analysis, countries were chosen to be in the control group based on their geographical location and the similarity of their macroeconomic characteristics with those in the targeting group. Tables A.1 and A.2 in the Appendix show that average food inflation rates and food inflation volatility were indeed quite similar across both groups in the period before targeting. In this paper, we first employ a difference-in-differences approach to evaluate the relative performance of IT countries and to check for mean reversion of food inflation. To verify the robustness of our results we follow up this analysis by checking if food inflation rates converge irrespective of the adoption of IT.

3.1 The difference-in-differences approach

For the difference-in-differences regression, we divide the data in our study period into two subperiods. For IT countries, the first subperiod refers to the time before formal adoption of IT by the central bank and the second period refers to the post-IT era. To establish a counterfactual, for non-IT countries the year of adoption is taken as the average year of adoption[20] of IT countries and the subperiods are divided accordingly.

We then use the following specification which was first introduced in Ball and Sheridan (2003):

$$X_i^{post} - X_i^{pre} = \alpha + \beta_1 T_i + \beta_2 X_i^{pre} + \varepsilon_i \qquad (1)$$

Where X_i^{pre} and X_i^{post} are values of the performance measure X for country i in the pre-targeting period and the post-targeting period respectively. T_i is a dummy which accounts for the nominal variable on IT. We also include a constant term α and an error term ε_i. In this regression we are primarily concerned with the sign and significance of β_1 and β_2.

The coefficient β_1 indicates whether an IT framework has a significant impact on the two performance measures we consider – food inflation rates and food inflation volatility. The coefficient β_2 controls for mean reversion. As Ball and Sheridan (2003) postulate, countries which have higher initial levels of inflation are likely to have more significant drops in inflation than countries which have lower initial levels of inflation. Hence, if one does not control for the pre-targeting performance of the country, one is likely to overestimate the effect of the adopting IT. As a robustness check we estimate the baseline model, but this time we exclude all countries which had inflation (or conversely deflation) rates above 50 percent in any given year[21]. Another robustness check involves estimating the same model without any LICs.[22]

Although this cross-sectional difference-in-differences method has been criticized on the grounds that it does not account for the self-selection bias inherent to policy adoption, Willard (2012) finds that the bias is very small in both magnitude and significance. Thus, we find this estimation approach to be the most suitable to evaluate the long run impact of targeting on food price inflation.

3.2 The Panel Unit-Root Tests for Food Inflation Convergence

Following the convention in extant literature, we model the inflation differential as an AR(1) process:

$$\pi_{i,t}^f - \bar{\pi}_t^f = \alpha_i + \phi_i\left(\pi_{i,t-1}^f - \bar{\pi}_{t-1}^f\right) + \varepsilon_{i,t} \qquad (2)$$

Where $\bar{\pi}_t^f = \frac{1}{n}\sum_{i=1}^{n}\pi_{i,t}^f$ is the mean food inflation of the group at time t, $\pi_{i,t}^f - \bar{\pi}_t^f$ is the food inflation differential between an individual country and the sample average, and $\varepsilon_{i,t}$ is an error term.

In order to establish convergence of food inflation rates across countries, we must have that food inflation differentials diminish over time. This

[18] For the year 2000, for all countries, food inflation was calculated as $\pi_t^f = \ln(FCPI_t/FCPI_{t-11}) \cdot 100$ due to unavailability of FAO data before January 2000.

[19] The one country that is omitted from the sample is India, since it did not adopt IT in the study period.

[20] The average year of adoption is 2005, which is also the modal year of adoption.

[21] The countries which had inflation (or deflation) rates over 50 percent are Ecuador, Iran, Morocco, Serbia, Turkey, and Ukraine.

[22] All countries that were classified as Low Income Countries by the World Bank, as of 2012, were excluded from the sample. In our sample these countries were Bangladesh, Cambodia, and Nepal.

is only possible when the value of ϕ_i is less than one. To estimate the convergence coefficient ϕ_i, we can denote the food inflation differential as $fid_{i,t} = \pi_{i,t}^f - \pi_t^f$ and its first difference $\Delta fid_{i,t} = fid_{i,t} - fid_{i,t-1}$ and use the following Dickey-Fuller (DF) framework:

$$\Delta fid_{i,t} = \alpha_i + \rho_i fid_{i,t-1} + \varepsilon_{i,t}\ , where\ \rho_i = (\phi_i - 1) \quad (3)$$

However, the DF test makes the rather strong assumption that the error terms are i.i.d. To allow for serially correlated errors, we use instead of the Augmented Dickey-Fuller (ADF) framework:

$$\Delta fid_{i,t} = \alpha_i + \rho_i fid_{i,t-1} + \sum_{j=1}^{k} \gamma_j \Delta fid_{i,t-j} + \varepsilon_{i,t} \quad (4)$$

Given the aforementioned framework, we use three different panel unit root tests to check for convergence of food inflation rates:

1. The Im-Pesaran-Shin (IPS) test (2003) uses the specification in [4] to calculate the average t-ratio for ρ_i and then test the null hypothesis H_0: $\rho_i = 0, \forall i$ against the alternative $\rho_i < 0$ for some i. Monte Carlo studies (Hlouskova and Wagner, 2006; Baltagi, 2009) indicate that the small sample performance of the IPS test is better than that of other tests such as those of Levin, Lin and Chu, (2002), Hadri (2000), etc.
2. The Fisher-type test provided by Maddala and Wu (1999) also uses the specification in [3] to calculate ADF statistics. However, unlike the IPS test, they propose a test statistic based on the meta-analysis introduced by R.A. Fisher wherein $P = -2\sum_{i=1}^{n}\ln(p_i)$, in which p_i is the p-value of the i^{th} test. We test the null hypothesis that all panels contain a unit root against the alternative that at least one panel is stationary.
3. Both the IPS and the Fisher-type test assume cross-sectional independence of panels. However, if there is cross-sectional dependence which is not caused by a time fixed effect, these tests are no longer valid. Hence, we also consider the Cross-Sectional Augmented Im-Pesaran-Shin (CIPS) test developed by Pesaran (2007). It uses the following cross-sectional extension of the standard ADF framework:

$$\Delta fid_{i,t} = \alpha_i + \rho_i fid_{i,t-1} + \beta_i \overline{fid}_{t-1} + \gamma_i \Delta\overline{fid}_t + \varepsilon_{i,t} \quad (5)$$

Where $\overline{fid}_t = \frac{1}{n}\sum_{i=1}^{n} fid_{i,t}$ and $\Delta\overline{fid}_t = \overline{fid}_t - \overline{fid}_{t-1}$ are the lagged level and the first difference of the cross-section average respectively; which are intended to serve as a proxy for the unobserved common factor. Null and alternative hypotheses are the same as in the IPS test.

For all the tests in consideration, the optimal lag length was chosen as per the 'general to particular' approach outlined by Campbell and Perron (1991). We perform the convergence tests on the entire sample of all 33 developing economies. For robustness, we also verify the results of the tests for the two groups of IT and non-IT countries separately.

4. EMPIRICAL RESULTS

The results of the difference-in-differences regression, shown in Table 2 and Table 3, seem to indicate that adoption of IT has no significant impact on either food inflation rates or food inflation volatility.

Table 2. Difference-in-Differences Regression Results for Food Inflation Rates

	Entire Sample	*Excluding Countries with Inflation (%) > |50| in Any Period*	*Excluding LICs*
Targeter Dummy	-2.57	-0.86	-2.67
	(3.04)	(1.81)	(3.18)
Initial Conditions	-1.38***	-0.89***	-1.42***
	(0.25)	(0.15)	(0.26)
Constant	8.72***	6.55***	9.14***
	(2.34)	(1.37)	(2.66)
Observations	33	27	30
R-Squared	0.53	0.59	0.53

Note: Standard errors in parentheses. Significance Levels: *** → p<0.01, ** → p<0.05, * → p<0.1

Table 3. Difference-in-Differences Regression Results for Food Inflation Volatility

	Entire Sample	*Excluding Countries with Inflation (%) > |50| in Any Period*	*Excluding LICs*
Targeter Dummy	-0.43	-3.43	-0.5
	(5.37)	(2.22)	(5.64)
Initial Conditions	-0.81***	-1.25***	-0.82***
	(0.23)	(0.21)	(0.24)
Constant	9.58***	9.45***	9.79***
	(3.13)	(1.72)	(3.47)
Observations	33	27	30
R-Squared	0.3	0.59	0.32

Note: Standard errors in parentheses. Significance Levels: *** → p<0.01, ** → p<0.05, * → p<0.1

It may be noted, however that initial conditions, or pre-IT levels of inflation and inflation volatility, are statistically significant irrespective of the sample chosen. We also estimated the model for the entire sample without excluding any countries but opting instead to include dummy variables for the aforementioned categories and found the results to be very similar (Refer to Table A.3 in Appendix.). Our results on the impact or lack thereof of IT on inflation rates are corroborated by those of Ball and Sheridan (2003) and Hyvonen (2004). Even studies which do find a significant impact of IT find that the initial conditions are highly significant and are similar in sign and magnitude to our estimates (Gemayel, Jahan, and Peter, 2011; Goncalves and Salles, 2008).

The insignificant effect of IT adoption on food inflation performance can be explained by the fact that shocks to food prices are typically due to factors such as weather conditions, the expeditious development of the biofuels market, speculation in commodity markets, and other dynamics which are largely exogenous to monetary policy. Even the theoretical models developed by Chambers (1984) and Frankel (1986) which show responsiveness of food prices to monetary policy in the short run indicate that these real effects would, in fact, disappear in the long run. Empirical studies also find a monetary policy to not be a quantitatively important determinant of relative food prices in the long run (Lapp, 1990; Choe and Koo, 1993).

In contrast, the phenomenon of reversion to the mean has little theoretical underpinning. The explanation put forth by Ball and Sheridan (2003) relies largely on mean reversion being a statistical property of cross-country performance. Hyvonen (2004) puts forth an alternate explanation, which explains mean reversion not as a mechanical property of cross-country performance but instead as a convergence brought on by policy goals becoming increasingly similar across countries.

When we explicitly test for convergence of food inflation rates we find overwhelming evidence, presented in Table 4, for cross-country convergence irrespective of adoption of IT.

Table 4. Panel-Unit Root Test Results for Food Inflation Convergence

	Entire Sample		***IT Countries***		***Non-IT Countries***	
	Statistic	***P-Value***	***Statistic***	***P-Value***	***Statistic***	***P-Value***
IPS	-8.78***	0.00	-3.34***	0.00	-8.25***	0.00
Fisher-type	267.62***	0.00	53.86***	0.00	213.76***	0.00
CIPS	-2.66***	0.00	-2.46**	0.05	-2.69***	0.00

Note: Significance Levels: *** → p<0.01, ** → p<0.05, * → p<0.1

We strongly reject the null hypothesis of joint non-stationarity of food inflation differentials, at a 1% level of significance, even when cross-sectional dependence is accounted for. Furthermore, this result is equally valid for countries that have adopted IT as it is for non-IT countries. It must be acknowledged, however, that given the paucity of available food inflation data, its time dimension is not large enough to ensure high powers of the tests carried out. Moreover, the CIPS test accounts for cross-sectional dependence due to a single common factor. If cross-sectional dependence is due to a plurality of factors, one might consider using the test procedures put forth by Bai and Ng (2004) or Moon and Perron (2004) instead.

Nevertheless, the evidence is consistent with that of previous studies such as Arestis et al. (2014) which also use IPS and CIPS testing procedures and find evidence of cross-country convergence. One can explain these results by the fact that developing economies face many common policy challenges such as inadequate rural infrastructure, lack of engagement of small farmers in modern value chains, poor insulation from shocks caused by climate disruption, and stagnating agricultural productivity. Furthermore, as governments and central banks keep a close watch on one another, it should not be surprising to find that remedial measures to address these policy challenges are also similar as countries with poor food inflation performance emulate those who have had success in maintaining food price stability.

5. CONCLUSION

Conforming to the expectations of conventional economic theory, our results speak to the inadequacy of an IT framework for curbing food inflation rates and volatility. We also find strong evidence indicating mean reversion of food inflation. These results are validated by the use of panel unit root tests, which find that food inflation rates converge to the sample mean, irrespective of the implementation of IT. Furthermore, we find the results are robust to alternative empirical specifications.

However, the results of our analysis are subject to a number of caveats. It may well be the case that the non-IT developing economies we use in our sample do not provide an adequate counterfactual for the countries that did choose to adopt IT. We also note that our methods cannot account for bias resulting from the self-selection of countries into the IT regime. Additionally, given the constraints of the data, we are only able to comment on the impact of IT in the short run. One might argue that the benefits of IT only appear in the medium to long term – something that cannot be determined in our analysis. Lastly, it is important to consider that the true benefits of IT may be understated due to factors such as implicit inflation targeting and policy coordination, which act as threats to identification.

Nevertheless, it appears that inflation targeting is less than ideal for developing economies, which, on an average, assign a higher weight to food in the CPI. However, in order to draw definite conclusions, future research look at the impact of IT on core inflation. Anand, Ding, and Tulin (2014) show that for a developing country like India second-round effects of food shocks can be quite large. Thus, one needs to consider the effectiveness of IT in reducing the pass-through of food inflation to core inflation by anchoring inflationary expectations.

REFERENCES

1. Anand, R., Ding, D., & Tulin, V. (2014). Food Inflation in India: The Role for Monetary Policy. *IMF Working Papers, 14(178)*, 1. https://doi.org/10.5089/9781484392096.001
2. Arestis, P., Chortareas, G., Magkonis, G., & Moschos, D. (2014). Inflation Targeting and Inflation Convergence: International Evidence. *Journal of International Financial Markets, Institutions and Money, 31*, 285-295. https://doi.org/10.1016/j.intfin.2014.04.002
3. Bai, J. & Ng, S. (2004). A PANIC Attack on Unit Roots and Cointegration. *Econometrica, 72(4),* 1127-1177. https://doi.org/10.1111/j.1468-0262.2004.00528.x
4. Ball, L. & Sheridan, N. (2003). Does Inflation Targeting Matter?. *IMF Working Papers, 03(129*), 1. https://doi.org/10.5089/9781451855135.001
5. Baltagi, B. (2009). *Econometric Analysis of Panel Data.* Chichester: John Wiley & Sons Inc.
6. Batini, N. & Laxton, D. (2006*). Under What Conditions Can Inflation Targeting Be Adopted? The Experience of Emerging Markets.* Central Bank of Chile.
7. Bernanke, B., Laubach, T., Mishkin, F., & Posen, A. (2001). *Inflation Targeting: Lessons from the International Experience.* Princeton University Press.
8. Brito, R. & Bystedt, B. (2010). Inflation Targeting in Emerging Economies: Panel Evidence. *Journal of Development Economics, 91(2)*, 198-210. https://doi.org/10.1016/j.jdeveco.2009.09.010
9. Campbell, J. & Perron, P. (1991). Pitfalls and Opportunities: What Macroeconomists Should Know about Unit Roots. *NBER Macroeconomics Annual, 6*, 141-201. https://doi.org/10.1086/654163
10. Carare, A. & Stone, M. (2003). Inflation Targeting Regimes. *IMF Working Papers, 03(9)*, 1. https://doi.org/10.5089/9781451842616.001
11. Chambers, R. (1984). Agricultural and Financial Market Interdependence in the Short Run. *American Journal of Agricultural Economics, 66(1)*, 12. https://doi.org/10.2307/1240611
12. Choe, Y. & Koo, W. (1993). Monetary Impacts on Prices in the Short and Long Run: Further Results for the United States. *Journal of Agricultural and Resource Economics, 18(2)*, 211-224.
13. Corbo, V., Landerretche, O., & Schmidt-Hebbel, K. (2001). Assessing Inflation Targeting After a Decade of World Experience. *Int. J. Fin. Econ., 6(4),* 343-368. https://doi.org/10.1002/ijfe.165
14. Croce, E. & Khan, M. (2000). Monetary Regimes and Inflation Targeting. *Finance and Development, 37(3).*
15. Dreger, C. & Kosfeld, R. (2010). Do Regional Price Levels Converge?. *Jahrbücher Für Nationalökonomie und Statistik, 230(3).* https://doi.org/10.1515/jbnst-2010-0302
16. Faust, J. & Svensson, L. (2001). Transparency and Credibility: Monetary Policy with Unobservable Goals. *International Economic Review, 42(2)*, 369-397. https://doi.org/10.1111/1468-2354.00114
17. Frankel, J. (1986). Expectations and Commodity Price Dynamics: The Overshooting Model. American *Journal of Agricultural Economics, 68(2),* 344. https://doi.org/10.2307/1241436
18. Gemayel, E., Jahan, S., & Peter, A. (2011). What Can Low-Income Countries Expect From Adopting Inflation Targeting?. *IMF Working Papers, 11(276),* 1. https://doi.org/10.5089/9781463925932.001
19. Genc, I. & Balcilar, M. (2010). Turkish Experience with Inflation Targeting. *Center for Economics and Econometrics.* Retrieved from http://www.cee.boun.edu.tr/downloads/genc_balcilar.pdf
20. Gonçalves, C. & Salles, J. (2008). Inflation Targeting in Emerging Economies: What Do the Data Say?. *Journal of Development Economics, 85(1-2)*, 312-318. https://doi.org/10.1016/j.jdeveco.2006.07.002
21. Hadri, K. (2000). Testing for Stationarity in Heterogeneous Panel Data. *Econometrics Journal, 3(2),* 148-161. https://doi.org/10.1111/1368-423X.00043
22. Hammond, G. (2012). *State of the Art of Inflation Targeting.* Bank of England.
23. Hlouskova, J. & Wagner, M. (2006). The Performance of Panel Unit Root and Stationarity Tests: Results from a Large Scale Simulation Study. *Econometric Reviews, 25(1)*, 85-116. https://doi.org/10.1080/07474930500545504
24. Hyvonen, M. (2004). *Inflation Convergence across Countries.* Reserve Bank of Australia.
25. Johnson, D. (2002). The Effect of Inflation Targeting on the Behavior of Expected Inflation: Evidence from an 11 Country Panel. *Journal of Monetary Economics, 49(8)*, 1521-1538. https://doi.org/10.1016/S0304-3932(02)00181-2
26. Kontonikas, A. (2004). Inflation and Inflation Uncertainty in the United Kingdom, Evidence from GARCH Modelling. *Economic Modelling, 21(3)*, 525-543. https://doi.org/10.1016/j.econmod.2003.08.001
27. Lapp, J. (1990). Relative Agricultural Prices and Monetary Policy. *American Journal of Agricultural Economics, 72(3)*, 622. https://doi.org/10.2307/1243032
28. Lee, J. (1999). Inflation Targeting in Practice: Further Evidence. *Contemporary Economic Policy, 17(3)*, 332-347. https://doi.org/10.1111/j.1465-7287.1999.tb00686.x
29. Levin, A., Lin, C., & James Chu, C. (2002). Unit Root Tests in Panel Data: Asymptotic and Finite-sample Properties. *Journal of Econometrics, 108(1)*, 1-24. https://doi.org/10.1016/S0304-4076(01)00098-7
30. Lin, S. & Ye, H. (2007). Does Inflation Targeting Really Make a Difference? Evaluating the Treatment

Effect of Inflation Targeting in Seven Industrial Countries. *Journal of Monetary Economics, 54(8)*, 2521-2533. https://doi.org/10.1016/j.jmoneco.2007.06.017
31. Maddala, G. & Wu, S. (1999). A Comparative Study of Unit Root Tests with Panel Data and a New Simple Test. *Oxford Bulletin of Economics and Statistics, 61(s1)*, 631-652. https://doi.org/10.1111/1468-0084.61.s1.13
32. Minella, A., de Freitas, P., Goldfajn, I., & Muinhos, M. (2003). Inflation Targeting in Brazil: Constructing Credibility under Exchange Rate Volatility. *Journal of International Money and Finance, 22(7)*, 1015-1040. https://doi.org/10.1016/j.jimonfin.2003.09.008
33. Mishkin, F. (2000). Inflation Targeting in Emerging-Market Countries. *American Economic Review, 90(2)*, 105-109. https://doi.org/10.1257/aer.90.2.105
34. Peng, X., Marchant, M., & Reed, M. (2004). Identifying Monetary Impacts on Food Prices in China: A VEC Model Approach. Selected Paper Prepared For Presentation At The American Agricultural Economics Association.
35. Pesaran, M. (2007). A Simple Panel Unit Root Test in the Presence of Cross-section Dependence. *J. Appl. Econ., 22(2)*, 265-312. https://doi.org/10.1002/jae.951
36. Posen, A. (2003). Six Practical Views of Central Bank Transparency. In P. Mizen, Central Banking, Monetary Theory and Practice: Essays in Honour of Charles Goodhart. Volume 1. (1st ed.). Cheltenham, U.K.: Edward Elgar Publishing. https://doi.org/10.4337/9781781950777.00017
37. Shahnoushi, N., Henneberry, S., & Manssori, H. (2009). An Examination of the Relationship between Food Prices and Government Monetary Policies in Iran. Selected Paper Prepared for Presentation at The Southern Agricultural Economics Association Annual Meeting.
38. Siklos, P. (1999). Inflation Target Design, Changing Inflation Performance and Persistence in Industrial Countries. SSRN Electronic Journal.
39. Vega, M. & Winkelfried, D. (2005). Inflation Targeting and Inflation Behavior: A Successful Story?. *International Journal of Central Banking, 1(3)*, 152-175.
40. Walsh, J. (2011). Reconsidering the Role of Food Prices in Inflation. *IMF Working Papers, 11(71)*, 1. https://doi.org/10.5089/9781455227082.001
41. Willard, L. (2012). Does Inflation Targeting Matter? A Reassessment. *Applied Economics, 44(17)*, 2231-2244. https://doi.org/10.1080/00036846.2011.564136

Appendix

A.1. Average Food Inflation Rates and Volatility in Pre- and Post-Period, IT Countries

				Average Inflation		*Standard Deviation of Inflation*	
Country	*Year of Adoption*	*Pre-Period*	*Post-Period*	*Pre*	*Post*	*Pre*	*Post*
Armenia	2006	2000-2005	2006-2011	2.91	7.27	5.62	4.46
Ghana	2007	2000-2006	2007-2011	15.8	9.94	5.12	5.4
Guatemala	2005	2000-2004	2005-2011	8.51	8.12	3.72	5.32
Indonesia	2005	2000-2004	2005-2011	5.15	10.36	5.44	4.17
Peru	2002	2000-2001	2002-2011	0.81	3.53	1.42	3.08
Philippines	2002	2000-2001	2002-2011	3.24	2.71	1.18	8.54
Romania	2005	2000-2004	2005-2011	17.93	4.1	9.54	3.28
Serbia	2009	2000-2008	2009-2011	19.79	-30.86	25.69	67.7
Turkey	2006	2000-2005	2006-2011	4.69	10.06	55.76	1.88
Average				8.76	2.8	12.61	11.54

A.2. Average Food Inflation Rates and Volatility in Pre- and Post-Periods, Non-IT Countries

			Average Inflation		Standard Deviation of Inflation	
Country	*Pre-Period*	*Post-Period*	*Pre*	*Post*	*Pre*	*Post*
Argentina	2000-2004	2005-2011	10.49	-1.2	20.04	3.67
Bangladesh	2000-2004	2005-2011	4.09	9.04	2.81	2.52
Bolivia	2000-2004	2005-2011	2.64	3.89	2.46	11.25
Botswana	2000-2004	2005-2011	6.28	10.25	4.02	6.27
Bulgaria	2000-2004	2005-2011	3.24	5.88	5.56	6.73
Cambodia	2000-2004	2005-2011	0.93	0.3	5.24	20
Costa Rica	2000-2004	2005-2011	10.23	-0.55	2.29	23.96
Dominican Republic	2000-2004	2005-2011	17.13	5.53	17.14	4.17
Ecuador	2000-2004	2005-2011	15.6	0.75	22.81	16.5
Egypt	2000-2004	2005-2011	0.93	13.61	7.51	5.93
El Salvador	2000-2004	2005-2011	3.61	-1.38	2.07	13.43
Iran	2000-2004	2005-2011	11.41	3.78	6.16	34.64
Jordan	2000-2004	2005-2011	2.24	6.81	4.32	5.11
Malaysia	2000-2004	2005-2011	1.21	4.18	1.13	2.79
Maldives	2000-2004	2005-2011	4.77	8.08	13.1	12.03
Morocco	2000-2004	2005-2011	1.24	-4.12	1	20.75
Nepal	2000-2004	2005-2011	2.77	10.82	2.02	5.37
Nigeria	2000-2004	2005-2011	13.71	11.36	6.97	4.34
Pakistan	2000-2004	2005-2011	4.91	13.35	3.22	6.07
Paraguay	2000-2004	2005-2011	8.71	9.93	7.68	6.8
Russia	2000-2004	2005-2011	12.67	10.23	2.72	4.7
Sri Lanka	2000-2004	2005-2011	10.49	6.69	3.83	9.11
Ukraine	2000-2004	2005-2011	9.88	-1.86	8.18	30
Uruguay	2000-2004	2005-2011	10.26	8.63	9.52	4.4
Average			7.06	5.58	6.74	10.86

A.3. Difference-in-Differences Regression Results: Alternative Specifications

	Specification 1	Specification 2	Specification 3
Targeter Dummy	-2.3	-2.69	-2.54
	(2.68)	(3.13)	(2.75)
Initial Conditions	-1.21***	-1.4***	-1.24***
	(0.22)	(0.26)	(0.23)
High Inflation Dummy	-9.89***		-10.03***
	(3.16)		(3.21)
LIC Dummy		-1.24	-2.35
		(5.01)	(4.41)
Constant	9.17***	8.99***	9.7***
	(2.06)	(2.62)	(2.31)
Observations	33	33	33
R-Squared	0.65	0.54	0.66

Note: Standard errors in parentheses. Significance Levels: *** → p<0.01, ** → p<0.05, * → p<0.1