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RESEARCH ARTICLE

Monetary Policy and Inflation Targeting: Lessons Learned from the Covid Crisis

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ABSTRACT

The global COVID-19 crisis led to a major recession, following a supply and demand shock severely affecting both developed and emerging economies. Containment measures reduced demand and production, while financial market volatility impacted emerging economies. Countries' stimulus policies had mixed effects on these economies. The pandemic also disrupted global supply chains, leading to volatility in the prices of raw materials such as oil, metals and agricultural products. These fluctuations had an impact on production costs and, consequently, on the prices of final goods and services. In the wake of rising inflation, some are questioning the effectiveness of inflation-targeting policies. Our study evaluates the performance of this monetary regime in the face of crisis, estimating the efficiency frontier: inflation variability - output variability, which allows us to deduce measures of economic performance and measures of the efficiency of monetary policy in the face of an economic crisis.

INTRODUCTION

The COVID health crisis has produced the worst global recession since 2008. Demand and supply in developed economies have plummeted, despite efforts by governments and central banks to support fiscal and monetary policies. Behera, H et al (2023). Inevitably, this had serious negative consequences for emerging and developing countries Chudik, A and al (2020), Rathnayaka, I and al (2023), Béland, L. P. and al (2023). The global health crisis triggered by the COVID-19 pandemic had significant macroeconomic effects in developed countries, with important implications for emerging economies, Dardouri et al (2023) ; Xie, X et al (2024). The containment and social distancing measures put in place to contain the spread of the virus led to economic contraction in many developed countries Dardouri et al (2023). Companies were forced to close or reduce their operations, resulting in lower production and higher unemployment Jabeen, F., (2023) and al., Kaftan, V (2023) This recession reduced demand for goods and services, which had a negative impact on emerging economies dependent on exports to developed countries, Coad, A (2023).The crisis triggered heightened volatility in global financial markets, leading to sharp declines in stock prices and fluctuations in exchange rates. Such volatility can negatively impact emerging economies by diminishing capital inflows and raising financing costs (Evgenidis, A., et al., 2023). The downturn in developed economies has reduced global demand for raw materials, resulting in lower commodity prices. This has adversely affected emerging economies that heavily depend on exports of commodities like oil, metals, and agricultural products (Berger, A. N., 2024).

Furthermore, the crisis caused a decline in capital flows to emerging markets as investors sought to minimize risk by withdrawing investments and seeking safer assets in developed countries. This capital flight exerted downward pressure on emerging market currencies and complicated the financing of external deficits (Davis, J. S., et al., 2023; Çakmaklı, C., et al., 2023; Ji, X., et al., 2024). In response to the economic downturn, many developed countries implemented expansionary fiscal

and monetary policies, including stimulus packages and interest rate reductions (Susskind, D., & Vines, D., 2020; Béland, D., et al., 2021; Quaglia, L., & Verdun, A., 2023). However, these measures may have unintended consequences for emerging economies, such as further currency depreciation and increased imported inflation (Papava, V., 2020; Wang, Y., 2023; Guo, M., & Lim, E. S., 2024).

During the initial phase of the crisis, widespread lockdowns and reduced demand led to deflationary pressures (Tomková, A., 2024; Laurentjoye, T., 2024). Movement restrictions suppressed demand for goods and services, leading to price declines in various sectors. Additionally, emerging economies—particularly those reliant on commodity exports—faced currency depreciations (Konstantakis, K. N., et al., 2024). Currency devaluation made imports more expensive, contributing to inflationary pressures. In response, many governments in emerging markets adopted fiscal and monetary stimulus policies, including interest rate cuts, increased public spending, and financial support for businesses and households. While these measures aimed to support demand, they also carried the risk of fueling inflation.

The crisis also exposed the fragility of global supply chains, prompting emerging countries to diversify their sourcing and reduce dependence on imports. However, this shift may raise production costs, leading to higher consumer prices and contributing to inflation (Gourinchas, P. O., 2023). Additionally, managing the health crisis imposed extra financial burdens on emerging economies, particularly in healthcare and economic support measures, which could lead to increased consumer prices (Hale, G., & Juvenal, L., 2023; Prabheesh, K. P., & Kumar, S., 2023).

In light of the crisis and its repercussions, it is crucial to explore whether certain economic policy frameworks could have helped countries better absorb the shock (Aguir, A., 2023). Some analysts suggest that central banks should reconsider the use of inflation-targeting monetary policies in response to the global health crisis (Izvi, S. A. R., & Pathirage, K., 2023; Coleman, W., &Nautz, D., 2023; Harding, M., 2023; Guo, M., & Lim, E. S., 2024). The effectiveness of inflation-targeting policies has been a central topic in economic debates during the COVID-19 crisis. This paper aims to evaluate the economic performance of this monetary policy approach during the pandemic, drawing on relevant economic literature. Inflation targeting policy is economically efficient when it generates an increase in the degree of stability in the monetary environment in the face of a crisis Ftiti (2012), Aguir and Smida (2015), Aguir (2016), Ortmans, A., &Tripier, F. (2021), Benkhayi& El Hassani (2023) . Drawing on the work of Cecchetti & Krause (2002), Cecchetti,S.G.,Flores-Lagunes ,A & Krause ,S (2006) and Mishkin & Schmidt Hebbel (2007), Aguir and Smida (2015), Aguir (2016) we estimate the efficiency frontier: inflation variability - output variability, which allows us to derive measures of economic performance and measures of monetary policy efficiency in the face of the health crisis.

Inflation targeting and economiccrisis

A country's macroeconomic performance can be measured by focusing on the stability of inflation and real growth. The majority of previous work shows that inflation and growth evolve better in the country pursuing Inflation Targeting than in countries practicing other monetary regimes. Aguir, A & Smida , M (2015) ; Aguir, A (2016) ; Bhar, R., & Malliaris, A. G. (2021)., Behera, H and al (2023), Rizvi, S. A. R., & Pathirage, K. (2023).

In what follows, let's calculate other performance measures to identify the contribution of monetary policy effectiveness in the observed differences in macroeconomic performance between countries with Inflation Targeting and those without Inflation Targeting in a crisis period characterized by supply and demand shocks like the COVID 19 crisis Meier, M, and Pinto, E. (2020), Moosavi, J and al (2022), Wang, Q. and al (2024).

ESTIMATION METHOD

Based on the research of Mishk in & Schmidt Hebbel (2007), as well as Aguir and Smida (2015) and Aguir (2016), we used the ordinary least squares (OLS) method to estimate the efficiency frontier, which links inflation variability to output variability that is an indicator of the degree of optimality of monetary policy. Using the principle of trade-off between inflation variability and output variability Aguir (2016); Guo, M., & Lim, E. S. (2024). Banerjee, R.,et al (2024) which allows us to construct an efficiency frontier.

The variability frontier between inflation and output is explained by considering an economy affected by two types of disturbance: aggregate demand shocks and aggregate supply shocks, such as those observed during the COVID crisis. Aggregate supply shocks trigger opposite movements in output and inflation, forcing the monetary authority to balance output variability. The position of this efficiency frontier depends on the magnitude of aggregate supply shocks. This makes it possible to measure economic performance and monetary policy, and helps distinguish the impact of monetary policy efficiency from that of shock variability on observed differences in macroeconomic performance between countries with and without inflation trageting, Aguir (2016), during a period of crisis such as the Covid crisis.

We follow the methodology of Cecchetti, Flores-Lagunes and Kraus (2006), Aguir and Smida (2015) by applying their method to the two groups of emerging countries pursuing inflation targeting to those of a group of neighboring emerging countries with comparable economic and social indicators (our study covers 13 emerging countries practicing inflation targeting and 9 (emerging countries practicing other monetary policies). (See appendix).

We begin by obtaining a measure of an economy's performance in terms of Output-Inflation variability.

$L = \lambda (\pi t - \pi t^*)^2 + (1- \lambda) (\gamma t - \gamma t^*)^2$

A weighted average of the observed variabilities of inflation and output relative to their target levels

With :

πt the inflation rate;

$\pi t^*$the inflation target;

γt the logarithm of output;

$\gamma t^*$the target or trend level of output;

λ the weight attached to inflation.

The disparities between the observed measures of performance of countries without the inflation trageting (LNIT) and those with the inflation targetiong (LIT) reflect differences in macroeconomic outcomes. The change in performance due to the change in the dimension of shocks is derived from the following combination of the optimal variances of output and inflation

$S = \lambda (\pi_t - \pi_t^*)^2_{opt} + (1- \lambda)(\gamma_t - \gamma_t^*)^2_{opt}$

With $(\pi t - \pi t^*)^2_{opt}$ et $(\gamma t - \gamma t^*)^2_{opt}$are the deviations of inflation and output from their targets under optimal policy. S is a measure of the variability of supply shocks.

Finally, we assess the efficiency of monetary policy by measuring how well current performance is performing relative to optimal policy (i.e., the distance to the efficiency frontier.) We call this measure E and define it as follows:

$E = \lambda [(\pi_t - \pi_t^*)^2 - (\pi t - \pi_t^*)^2_{opt}] + (1- \lambda) [(y_t - y_t^*)^2 - (y_t - y_t^*)^2_{opt}]$

A negative value of ΔE ($\Delta E = E_{NIT} - E_{IT}$) implies that the policy of countries without the inflation targeting is more efficient. Calculating these performance measures requires estimating the Output-Inflation variability frontier.

In order to determine the impact of the Inflation targeting, our approach consists of comparing the performance of 13 emerging countries with inflation targeting and 9 emerging countries with other monetary policies.

Countries with inflation targeting before the crisis (period 2016 Q1 to 2019 Q4) # countries with inflation targeting after the crisis (2020 Q1 to 2023 Q4)

Countries without inflation targeting before the crisis (period 2016 Q1 to 2019 Q4) # countries without inflation targeting after the crisis (2020 Q1 to 2023 Q4)

Countries with inflation targeting before the crisis (period 2016 Q1 to 2019 Q4) # Countries without inflation targeting before the crisis (period 2016 Q1 to 2019 Q4)

Countries with inflation targeting after the crisis (2020 Q1 to 2023 Q4) # Countries without inflation targeting after the crisis (2020 Q1 to 2023 Q4)

ESTIMATION RESULTS

Using the ordinary least squares estimation method, the estimated model of the economy (the two equations of supply and demand), for the 22 countries in the sample, is

$\tilde{y}_t = 0.0071\, i_{t-1} + 0.067\, i_{t-2} + 0.643\, \gamma_{t-1} + 0.532\gamma_{t-2} - 0.061\pi_{t-1} + 0.084\, \pi_{t-2} + \varepsilon_{2,t}$

$y_t = -0.004\, \tilde{y}_{t-1} + 0.09\, \tilde{y}_{t-2} + 1.345\, \pi_{t-1} - 0.432\, \pi_{t-2} + \varepsilon_{2,t}$

The table below (1) reports the estimated measures of economic performance (L), monetary policy efficiency (E) and supply shock variability (S) for each pair of country groups. Aguir & Smida (2015) , Aguir (2016).

The first row of Table 1 shows the estimated measures for inflation-targeting countries before and after the health crisis.

In these countries, economic performance (ΔL) was a little weak ΔL = 1.40, 83% of which was due to negative supply shocks. And in these target countries, there was a 15% increase in the efficiency of monetary policy under the inflation-targeting regime, which reduced economic inefficiency in the wake of the health crisis. The second row shows the estimated measures for non-targeting countries before and after the COVID 19 crisis. Non-inflation-targeting countries experienced economic inefficiency during the crisis period [2020- 2023] compared to the pre-crisis period [2016- 2019]. The inefficiency observed at ΔL = 78.1 can be attributed to unfavorable supply shocks (22%) and a decline in the effectiveness of the monetary policies implemented by these countries (29%).

The COVID-19 crisis introduced a new dimension to the comparison between countries with inflation-targeting frameworks and those without. In this context, countries that adopted inflation-targeting generally demonstrated greater resilience to the economic shocks brought about by the pandemic. Their focus on price stability allowed them to respond more swiftly and effectively, implementing economic support measures while maintaining relatively stable inflation rates.

Conversely, non-targeting countries often encountered more significant challenges and faced potentially harsher economic consequences due to less adaptable monetary policies. As a result, the COVID-19 crisis has underscored the advantage of inflation-targeting countries in terms of economic resilience and their capacity to cushion the impact of external shocks. Additionally, inflation targeting has enhanced the credibility of monetary policies, fostering a favorable environment for long-term economic growth.

Table 1. calculations Loss L, S and E

L1 E1 S1	**L2 E2 S2**	**Variations**
Countries with IT, before covid crisis 27.28 5.21 26.90 (in % of L) 19 98	Countries with IT, before covid crisis 28.68 4.22 28,31 (in % of L) 14,71 91	1.40 -0,99 1,41 -15 83
Countries without IT, beforecovid crisis 24.41 2.57 21.84 (in % of L) 11 89	Countries without IT, after covid crisis 102.41 25.11 39.04 (in % of L) 5 95	78,1 22.54 17,2 29 22
Countries with IT, before covid crisis 27.28 5.21 26.90 (in % of L) 19 98	Countries without IT, before covid crisis 24.41 2.57 21.84 (in % of L) 11 89	-2.87 -2,64 -5.06 92 176

Countries with IT, after covid crisis 28.68 4.22 28,31 (in % of L)14,71 91	Countries without IT, after covid crisis 102.41 25.11 39.04 (in % of L)5 95	73.73 20.89 10.73 29 15

The signs (-) means a gain in performance

The signs (-) means a loss of performance

CONCLUSION

Inflation-targeting countries are often distinguished by their proactive approach to monetary policy, focused on maintaining long-term price stability. Prior to the COVID-19 crisis, these countries had generally implemented pro-stability monetary policies, making them more resilient in the face of economic volatility. During the pandemic, this policy stance may have translated into a greater ability to mitigate economic shocks, by adjusting interest rates to support economic activity and control inflation. Moreover, the variability of supply shocks is a major challenge for economies, particularly during periods of crisis. Inflation-targeting countries can better manage these shocks because of their disciplined monetary policy, which aims to maintain price stability while promoting economic growth. This approach can provide a more stable framework for businesses and consumers, reducing uncertainty and encouraging more informed economic decisions. In the pre-COVID period and during the crisis, this relative economic stability may have enabled inflation-targeting countries to better absorb supply shocks, thus minimizing economic and social disruptions.

Based on research by Mishkin & Schmidt Hebbel (2007), Aguir & Smida (2015) , Aguir (2016). Our paper which compares the macroeconomic performance of two groups of emerging countries, pursuing inflation targeting to those of a group of neighboring emerging countries with comparable economic and social indicators, We find that countries adopting this inflation targeting regime generally show better macroeconomic performance than their non-targeting counterparts, and these differences are often attributed to the choice of this monetary regime. Thus, although the crisis led to a global economic recession, targeting countries demonstrated resilience and relatively better economic performance than non-targeting countries.

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APPENDIX

Non-target countries	**Target countries**
Argentina	South Africa
Bolivia	Brazil
Bulgaria	Chile
Croatia	Colombia
Georgia	Korea, South
Morocco	Hungary
Paraguay	Israel
Tunisia	Mexico
Uruguay	Peru
	Philippines
	Poland
	Czech Rep
	Thailand