Culture and Monetary Policy Effectiveness

Costantino Camodeca

A Thesis in

The Department

of

Finance

Presented in Partial Fulfillment of the

Requirements for the Degree of Master of Science

(Finance) at Concordia University

Montreal, Quebec, Canada

August 2023

CONCORDIA UNIVERSITY

School of Graduate Studies

This is to certify that the thesis prepared

By: Costantino Camodeca

Entitled: Culture and Monetary Policy Effectiveness

and submitted in partial fulfillment of the requirements for the degree of

Master of Science (Finance)

complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

Signed by the final Examining Committee:

_____Saif Ullah_____ Chair

Chair's name

_____Parianen Veeren_____ Examiner

Examiner's name

_____Dr. Thomas Walker_____ Supervisor

Supervisor's name

Approved by _____

Chair of Department or Graduate Program Director

_____ 2023 _____

Dean of Faculty

Abstract

Culture and Monetary Policy Effectiveness

Costantino Camodeca

Monetary policy, typically set by a nation's central bank, mainly focuses on managing price stability and encouraging economic growth. Arguably, this means that in shaping its monetary policy, a central bank also influences the behavior of its country's residents. In this context, we investigate if differing cultural and societal behaviors could make a central bank's job easier or more challenging. Specifically, we use five of the six dimensions of national culture from Geert Hofstede and information on a country's political, legal, and institutional framework to examine whether a country's cultural and/or institutional environment affects the efficiency of its monetary policy, as reflected in both price stability and economic growth. Our findings suggest that culture and societal behavior indeed play a role in how effective a country's monetary policy can be. For instance, we find that countries with high *Power Distance* and *Individualism* tend to be less efficient, whereas societies with more *Indulgence* tend to be more efficient. Additionally, our research supports previous findings regarding the positive effect of inflation-targeting on monetary policy efficiency.

Acknowledgements

I extend my heartfelt gratitude to all those who have contributed to the completion of this thesis, both directly and indirectly. This journey of research and discovery has been both challenging and rewarding, and I could not have reached this point without the support, guidance, and encouragement of numerous individuals.

First and foremost, I would like to express my sincere appreciation to my thesis supervisor, Thomas Walker, for their unwavering commitment, invaluable insights, and patient guidance throughout this endeavor. Their expertise, dedication, and willingness to share their knowledge have been instrumental in shaping the direction and quality of this research. Along with it I extend a sincere thanks to Moein Karami and Miles Murphy for the dedicated assistance through the writing and editing of this study.

I am also deeply thankful to the members of my thesis committee, Saif Ullah and Parianen Veeren, for their insightful feedback, critical evaluations, and constructive suggestions that have significantly enriched the content and presentation of this thesis. Your expertise and diverse perspectives have been invaluable in shaping the scholarly rigor of this work.

While this thesis represents the culmination of my individual efforts, it stands as a testament to the collaborative spirit and collective wisdom of those who have played a role, no matter how big or small, in its realization. I am truly grateful for their contributions.

Dedication

I would like to dedicate this work, to my family and loved ones who provided all their unconditional support, both financially and emotionally thought the long months of work towards this achievement.

I am indebted to my colleagues and friends who provided valuable discussions, brainstorming sessions, and moral support during the highs and lows of this academic journey. Your camaraderie and encouragement have been a constant source of motivation.

Table of Contents

List of Tables

Chapter 1: Introduction

Milton Friedman's early work in 1968 explored the role of monetary policy in an economy, focusing on its limitations and the best ways to implement it. Though central banks' monetary policies have seen significant changes since then, there is a strong agreement in the literature, continuing from Friedman's time, that central banks should use their policies to aim for stable prices, high employment, and sustainable growth.

However, managing all these elements simultaneously is a challenge due to the immediate and delayed impacts of these policies. This makes it impossible to gain complete control over an economy. Moreover, the influence of societal structures, technological changes, and interconnected economic relations add layers of complexity to monetary policy implementation. Therefore, it is possible if not likely that the effects of these policies can differ across economies and cultural settings.

Friedman (1968) famously likened monetary policy to a string, articulating, "You could pull on it to stop inflation, but you could not push on it to halt recession. You could lead a horse to water, but you could not make him drink." Despite these limitations, the implications of monetary policy on pricing, employment, and growth dynamics cannot be undermined. Friedman emphasized the significance of monetary policy for three fundamental reasons: to circumvent money from becoming a primary driver of economic instability; to engender a stable economy by fostering confidence in future price levels; and to counteract major disruptions instigated by other sources. Considering these vital factors, it is no surprise that monetary policy has held, and continues to hold, a central place in economic literature.

Central banks face a lot of uncertainty when setting strategies and policies. However, they do have control over one type of uncertainty: the one they create themselves. Since economies often react strongly to monetary policy announcements, it is widely accepted that clear communication and transparency are key for effective policy making. To this end, most central banks provide regular updates on their plans and expectations.

While the mandate of a central bank is to maintain economic stability, achieving this is not straightforward. The broad-reaching impacts of monetary policies introduce a multitude of challenges. For instance, societal characteristics and the pace of technological advancements can heavily influence how a nation responds to changes in monetary policy. The challenge intensifies when one considers the role of global economic interdependencies. As such, the effectiveness of these policies can vary considerably across countries and cultures.

This takes us to an aspect that has not been thoroughly investigated – the role of cultural factors on the effectiveness of monetary policy. It is easy to understand why culture might play a significant role in this context. The societal norms, values, and behavior in a country can affect how people react to changes in monetary policy, which in turn could influence the overall effectiveness of these changes.

In the context of monetary policy, communication holds immense importance. Central banks, by making their intentions and actions clear, can manage expectations and consequently, the reaction of the economy to their policies (see Nakamura and Steinsson (2013)). Regular updates about their plans and future expectations are therefore seen as an essential part of the policy-making process.

The considerations and principles that guide the monetary policy of a central bank, however, are not created in a vacuum. The socio-cultural environment of a country can have a profound impact on the formulation and effectiveness of these policies. For example, public sentiment towards inflation and monetary stability can significantly affect policy effectiveness (see Gillitzer, Prasad & Robinson (2021)).

This leads us to an interesting question - can cultural factors influence the efficiency of monetary policy? While the impact of institutional characteristics and policy transparency has been explored, the potential role of cultural attributes has been less examined. The aim of our research is to build upon existing knowledge to scrutinize the influence that societal preferences and cultural facets exert on monetary policy.

Hofstede (1980) developed a framework for cross-cultural communication, and Cecchetti and Kraus (2002) calculated a measure of policy inefficiency. We intend to delve into the relationship between Cecchetti-Kraus' measure of monetary inefficiency and Hofstede's six cultural dimensions. By doing so, we aspire to refine their discoveries and probe into the effects on central bank performance while striving to maintain a balance between growth and stability using a sample of 23 countries.

We find that nations with a more equal power distribution and less focus on individualism tend to benefit from higher monetary efficiency. Similarly, societies with a high indulgence level, where fundamental needs are freely met and individuals experience more freedom and happiness, also exhibit higher efficiency. This implies that societies emphasizing individual accomplishments and fostering freedom may have more successful policy implementations. These aspects might boost trust in governmental entities and regulators, facilitating easier

policy reception and creating stable social-political atmospheres to promptly address macroeconomic disruptions.

Our work advances the understanding of the culture-inflation relationship and how societal preferences may affect the optimization challenges faced by regulators aiming for minimized inflation and maximized growth. Future research could examine how these factors impact monetary policy efficiency and their role in other economic sectors.

The remainder of this thesis is organized as follows. In Section 2, we provide an overview of the related literature and develop our hypotheses. Section 3 describes our data collection process and provides an overview of the sample. Section 4 presents our methodology while in Section 5, we lay out the findings from our empirical analysis. Section 6 concludes.

Chapter 2: Literature Review and Hypothesis Development

2.1 Literature Review

Cecchetti and Ehrman (1999) devised a measure of inefficiency, based on the idea that regulatory goals can be expressed as a simple quadratic loss function. This means they seek to minimize the variation of inflation and output from their respective targets, resulting in an inflation-output variability trade-off, or an efficiency frontier. If a monetary policy is optimal, the economy will be on this frontier. If the policy is not optimal, its performance point will be above and to the right of this frontier. By estimating this frontier, they could measure the distance from it to the empirical data, providing a measure of inefficiency. The further away from the frontier, the less efficient the monetary policy is.

Using this methodology, Cecchetti and Ehrman (1999) calculated a measure of policy inefficiency and explored its relationship with central bank independence, accountability, transparency, and credibility. Their findings indicate that credibility is key - higher credibility usually leads to less inefficiency. Relatedly, in a later paper, Cecchetti and Krause (2002) examine how institutional characteristics can affect policy efficiency and macroeconomic performance.

Rasche and Williams (2007) conducted an analysis on the effect of implementing inflation-targeting policy, employing a sample of 23 countries. Their findings hint that central banks with an inflation-targeting approach tend to hit their targets more reliably over a medium-term horizon. However, the authors clarify in their conclusion that it is not explicitly evident from

the results if targeting inflation directly contributes to better performance, beyond enhancing confidence in the regulatory body through a commitment to price stability.

Mendonça and Nascimento (2020) build upon prior studies by investigating the influence of financial openness (a measure of a country's level of capital account openness) and economic globalization (which takes into account the long-distance flows of goods) on the inefficiency of monetary policy. While prior research has identified a relationship between these variables and both inflation and growth, their study provides empirical proof that both factors can markedly reduce policy inefficiency. Their analysis, based on panel data from 42 countries between 1990 and 2014, reveals that a 10% increase in financial openness and economic globalization leads to a reduction in average inefficiency by 1.8% and 8%, respectively.

In addition, their findings align with Rasche and Williams (2007) by demonstrating that the adoption of an inflation targeting regime significantly curbs monetary policy inefficiency. As these results indicate, a central bank's effectiveness is greatly shaped by its credibility, independence, and the public's perception of it. Intrinsic differences in individuals' behaviors or preferences can significantly impact the process and efficiency of policy-making. However, research exploring the connection between these characteristics and monetary policy remains sparse. A primary constraint in this area of study is quantifying these societal factors to examine their impacts.

Hayo (1997) posits that the independence of a central bank alone cannot account for lower inflation levels. Rather, the public's attitude towards inflation, which can give rise to an anti-inflation culture and a societal consensus on monetary stability, is particularly influential, especially in countries where low inflation has been sustained over extended periods. The features of a central bank are only one component of the broader stability regime. These characteristics need the reinforcement of a general public whose goals are in harmony with those of the regulatory body. This implies that for a central bank to achieve a reduction in inflation, the public's perception acts as a prerequisite for price stabilization.

Utilizing public opinion polls from 1976 to 1993 in nine Euro area countries, Hayo (1997) regresses public preferences against inflation levels, subsequently comparing this value with the indices for central bank independence. Their results endorse the concept that central bank independence is vital for maintaining price stability, but it is not sufficient, especially in instances where the public exhibits a high tolerance for inflation or perceives inflation as a necessity for economic growth. Countries with more independent central banks generally

exhibit lower inflation rates, but the degree of central bank independence needed for price stability may vary across countries, contingent on their specific institutional and cultural contexts.

Hofstede's (1980) pioneering work marked the initial academic endeavor to quantify cultural differences across nations into scores along a few key dimensions. His original study provided scores for four cultural dimensions: Power Distance, Uncertainty Avoidance, Individualism, and Masculinity. Later iterations added two more dimensions - Long-Term Orientation and Indulgence vs Restraint. More comprehensive descriptions of each dimension are elaborated upon in the data section. Initially built upon employee survey data from IBM, the dimensions expanded over the years with an enhanced questionnaire known as the Values Survey Modules (VSMs). This updated tool reached a broader pool of respondents, covering seventy-six countries. The last two dimensions were derived from the World Values Survey data, encompassing ninety-three nations. Hofstede's work equipped researchers with quantifiable cultural values for numerous countries, enabling empirical studies on culture's impact on economic and business performance.

Contradicting the consensus that central bank independence solely determines inflation performance, Jong (2002) proposes the presence of a third influential factor. The study strengthens and expands upon Hayo's work by incorporating non-European countries and utilizing Hofstede's initial four cultural dimensions. Covering eighteen industrialized countries between 1972 and 1989, the study finds lower inflation rates in cultures that display aversion to uncertainty. Tolerance for inequality appears to be less influential. These findings support the hypothesis that culture indeed impacts inflation ("Uncertainty Avoidance") and central bank independence ("Power Distance").

Monetary policy, not being an exact science, can result in varying approaches even under similar economic conditions across countries. Jost (2018) posits that these discrepancies can be attributed to cultural influences on societal preferences, which serve as key determinants of monetary policy. Even with central bank independence, societal preferences cannot be completely overlooked without inviting social and political pressure. Utilizing a Swiss dataset and using language as a cultural proxy, Jost provides evidence for culture's role in shaping monetary policy preferences. Despite sharing a single central bank and constant institutional characteristics, Switzerland's linguistic diversity results in varied policy preferences, underscoring the significant role of cultural factors.

Our research goal is to delve into earlier studies and elevate our comprehension of culture and societal inclinations' influence on monetary policy. We intend to investigate the relationship between Cecchetti-Kraus's monetary inefficiency metric and Hofstede's six cultural aspects, seeking to renew their findings and scrutinize how these factors affect the performance of central banks in their efforts to achieve both growth and stability.

2.2 Cultural Dimensions

Our analysis revolves around six cultural variables, as depicted in Geert Hofstede's six dimensions of culture. Derived from survey data collected between 1995-2004, these factors are assumed to remain constant over our sample period, considering the slow pace of cultural change over generations. This data, obtained from the author's website[1], are defined as follows:

2.2.1 Individualism (IND)

This dimension measures the extent to which individuals perceive themselves as independent units rather than integral components of larger groups. In societies with a high individualism score, emphasis is on individual achievements and rights, prioritizing personal and immediate family needs. Conversely, in societies with a low score, the focus is on group goals and collective well-being. Here, an individual's self-image is more akin to a collective "we".

2.2.2 Power Distance (PDI)

Power distance reflects the degree to which unequal power distribution is accepted and expected within a society or organization. High power distance societies readily accept hierarchical structures without requiring justification, whereas low power distance societies advocate for equal power distribution, endorsing consultative, democratic, or egalitarian relationships. In societies with high power distance, obedience to authority is emphasized, and subordinates show explicit displays of respect.

2.2.3 Masculinity (MAS)

Hofstede defines masculinity as the degree to which a society endorses the use of force. Societies with high masculinity values emphasize toughness, winning, and a distinct differentiation between genders, whereas those with low values do not overtly encourage competition and emphasize emotional closeness between genders.

[1] https://geerthofstede.com/culture-geert-hofstede-gert-jan-hofstede/6d-model-of-national-culture/

2.2.4 Uncertainty Avoidance (UNA)

This dimension relates to a society's level of tolerance for uncertainty and ambiguity, focusing more on the anxiety individuals experience when faced with the unknown. A society with a high uncertainty avoidance index shows low tolerance for ambiguity, uncertainty, and risk-taking.

2.2.5 Long-term Orientation (LTO)

This cultural dimension concerns a society's attitude towards change and its orientation to the future. Societies with a high score value traits such as persistence, thrift, and adaptability, with an emphasis on preparing for the future. Conversely, societies with a low score view the world as relatively unchanging, with adherence to traditional values seen as morally good.

2.2.6 Indulgence (IVR)

This dimension concerns a society's orientation towards the enjoyment of life's pleasures. In indulgent cultures, individuals value freedom and are encouraged to follow their impulses and desires. Conversely, in restrained cultures, life is perceived as challenging, and duty is prioritized over freedom.

In addition to these cultural dimensions, we consider a set of socio-political variables described as follows:

2.2.7 Socioeconomic Conditions (SOC)

Index that varies from "0" to "12". SOC measures socioeconomic pressures in a society that can constrain government action or incite social dissatisfaction. Considering factors like unemployment, poverty and consumer confidence, higher scores of SOC denote lower risk of political disruptions.

2.2.8 Corruption (COR)

Corruption disrupts the political system, reducing the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability. The index varies from "0" to "6". Lower values of COR indicate higher risk in such corruption at some time it will become so overweening resulting in a fall or overthrow of the government, a major reorganizing or restructuring of the country's political institutions.

2.2.9 Rule of Law (LAW)

This index measures the rule of law in a country. The rule of law indicates the confidence of agents in the rules of the country and includes the quality of property rights and

contract enforcement. It also ranges from "0" to "6" with a higher value showing greater confidence in the rules of the country.

The corresponding data is accessible through the International Country Risk Guide, a dataset by PRS Group[2] covering current risk ratings and composite risk forecasts for 140 countries worldwide.

2.3 Hypothesis Development

In developing our hypotheses, we are guided by the core economic principle suggesting that societies with high trust in their government and a deeper understanding of how individual behavior's influence on monetary policy outcomes tend to be more efficient. This leads us to argue that cultural traits oriented towards a greater, long-term economic advantage will positively influence monetary policy efficacy.

Keeping this perspective in mind, we lay out our hypotheses as follows:

Hypothesis 1 (H1): All things being equal, countries with higher individualism scores, where people prioritize self-interest over societal welfare, face higher monetary policy inefficiency as compared to nations with lower individualism scores.

Hypothesis 2 (H2): Countries with elevated power distance levels, i.e. with a higher concentration of power, are more likely to face agency dilemmas and thus face higher monetary policy inefficiency.

Inflation typically affects lower-income strata more severely, therefore an inequitable power distribution could result in policies favoring production and overlooking inflation. Hence, we expect, all else being the same, that nations with higher levels of power distance will experience more monetary policy inefficiency compared to those with a lower power distance score.

Next, societies with a lower uncertainty avoidance index are generally more accepting of unpredictability and, due to this, may act more cautiously in response to an economic shock, making the regulator's task less difficult. As a result, we propose that:

Hypothesis 3 (H3): All else constant, nations with a lower uncertainty avoidance index display lower levels of monetary policy inefficiency than those with high index scores.

[2] https://www.prsgroup.com/explore-our-products/icrg/

A society marked by a strong long-term orientation is often associated with a more aware and financially stable community. Given that a lower index value suggests a stronger long-term orientation, we expect that:

Hypothesis 4 (H4): All else being equal, nations with a higher long-term orientation index will have higher levels of monetary policy inefficiency compared to those with a lower index.

Finally, indulgent countries, where citizens experience a sense of freedom to achieve their life goals, should create more optimistic expectations within the population, implying more trust in the government and the regulators. Thus, we propose the following hypothesis:

Hypothesis 5 (H5): All else being constant, countries with higher indulgence scores experience lower levels of monetary policy inefficiency than their counterparts with a lower score.

Chapter 3: Data

3.1 Data Collection

In order to comprehensively analyze the long-term objectives achieved through monetary policy, we have chosen to employ as broad a timeline as feasible for our analysis. We employ the SVAR model, utilizing quarterly data related to GDP or industrial production, inflation as measured by CPI, the interest rate of monetary policy, the nominal exchange rate, and specific dummy variables to account for external economic shocks. This data is primarily sourced from the OECD[3] and Economic Intelligence[4] databases. After an in-depth review of the available data and to reduce the number of missing observations, we decided to employ a sample period from 1990 to 2022.

Our initial dataset comprised 52 countries, each offering complete data across all six of Hofstede's cultural dimensions. However, we deemed it necessary to exclude countries with limited control over their own monetary policy. Such exclusions cover countries within the Eurozone and those with a pegged currency, as these nations' monetary policy channels are substantially constrained in their ability to address internal imbalances. Following these considerations, our final sample consists of 23 countries.

[3] https://www.oecd-ilibrary.org
[4] https://www.eiu.com/n/

3.2 Sample Description

Table 1 presents descriptive statistics for the variables involved in our research. It is noteworthy that while the peak inefficiency in our sample reaches 14.57, the average score remains below 0.4. Various economic and political scenarios can instigate short-term shocks, thereby impacting a country's score. We examined alternative regression models that incorporated a variable accounting for financial crises (not reported in this paper), but its coefficient was statistically insignificant in all models, likely because GDP data adequately captures the majority of the economic shocks.

An examination of of Hofstede's cultural variables reveals that, although their range is from 0 to 100, extreme cases are seldom found. Regarding the sample of countries included in our study, there is a balanced representation, with inflation-targeting countries accounting for 53%, and developed countries making up 57% of the total sample.

- Insert Table 1 here -

Chapter 4: Methodology

Recent research concerning monetary efficiency largely draws upon the methodology established by Cecchetti and Kraus (2002). They developed a measure of monetary policy efficiency across 24 countries spanning the years 1991-1998, utilizing the trade-off between inflation and output variability. Cecchetti et al. (2006) extended this line of research, including the period from 1983-1990 and developing a measure to gauge improvement in monetary policy efficiency.

Our study adopts a methodology closely aligned with these studies, premised on the notion that policymakers navigate a trade-off between output and inflation. Consequently, we can posit that the primary objective of policymakers is to minimize the weighted sum of the variability in inflation and output, as captured by the subsequent loss function:

$$L = \lambda Var(\pi) + (1 - \lambda) Var(y) \qquad (1)$$

where λ is the regulator's preference parameter and Var(π) and Var(y) are the variance of the inflation and output gap, respectively. Various methodologies can be employed to calculate the gap, with prior research frequently adopting a 12-month moving average approach. However, for our study, we deemed the Hodrick-Prescott filter method as a superior alternative for deriving a more reliable de-trended measurement of the output and inflation gap. This choice

aligns with the findings of a study conducted by Nilsson and Gyomai (2011) for the Organization for Economic Cooperation and Development (OECD), which demonstrated the superior performance of this filter in comparison to the Phased Average method.

The preference parameter λ is estimated based on the historical performance of monetary policy for each country based on Cecchetti et al. (2002). The process follows two steps. First, we use a structural vector auto regression (SVAR) model to estimate the reaction of both inflation and output to changes in the monetary policy rate. Their study reveals an important implication about the preference parameter and the output-inflation variation,

$$\frac{\sigma_y^2}{\sigma_\pi^2} = \left[\frac{\lambda}{\gamma(\lambda-1)}\right]^2 \qquad (2)$$

with γ defined as the ratio of the responses of output and inflation to changes in the policy rate estimated with our model, and σ_y^2 and σ_π^2 the variance of the output and inflation gap, respectively. Therefore, we are able to rewrite the equation in order to solve for the preference parameter and obtain:

$$\lambda = \frac{\gamma\sigma_y}{[\,\sigma_\pi + \gamma\sigma_y\,]} \qquad (3)$$

where σ_π and σ_y are the standard deviation of the output and inflation gap. After estimating γ through our SVAR model results, equation 3 allows us to compute the preference parameter λ for each country. The next step is to use this parameter to calculate the loss function for each year based on the deviation of both output and inflation from their target levels.

$$INEF = \lambda[Var(\pi) - Var(\pi)^*] + (1-\lambda)[Var(y) - Var(y)^*] \qquad (4)$$

We consider this our measure of inefficiency as values closer to zero represent a more efficient policy.

Once we have our inefficiency values, we can use OLS regression models to look at the impact that cultural and political factors have on monetary policy efficiency. Our general model is of the form,

$$INEF_{t,i} = IND_{t,i} + PDI_{t,i} + MAS_{t,i} + UNA_{t,i} + LTO_{t,i} + IVR_{t,i} + P_{t,i} + X_{t,i} \qquad (5)$$

where *INEF* is our measure of inefficiency for country *i* at time *t*, *IND*, *PDI*, *MAS*, *UNA*, *LTO* and, *IVR* are our 6 dimensions of culture, *P* a vector of our socio-political variables *SOC*, *COR*, and *LAW*, and *X* is a vector of control variables gather from the literature on monetary policy

efficiency. First, the real output per capita (*GDP*), a measure of macroeconomic performance (see Cover & Mallick, 2012).

Over the last three decades various countries have adopted an inflation targeting strategy in order to achieve lower and more stable inflation, in order to observe if this behaviour has any effect on the efficiency of monetary policy we include *I_TARGET* a dummy variable equal to 1 for countries that have an inflation targeting policy (see, Carrasco & Ferreiro (2014); Corbo et al (2001)).

The literature results on monetary policy performance are also differing when comparing results of advanced and less developed economies (see Mishra et al (2012); Jha & Dang (2012)). Based on this we include *DEV* a dummy equal to 1 for developed countries according to the World Economic Outlook[5] database calcification.

Chapter 5: Empirical Results

5.1 Main Results

As a preliminary data examination, Table 2 demonstrates the correlation matrix for the regression variables. Notably, some of the explanatory variables exhibit high correlation, particularly our socio-political variables which show a strong positive correlation with each other and our developed country dummy variable. This outcome is anticipated, considering that developed nations often have greater stability and more robust law enforcement. With respect to our main explanatory variables, there is notably high correlation between Power Distance and both the Individualism and Uncertainty Avoidance indexes, as well as with our socio-political controls. Such correlation could be expected when viewing culture as a collective of beliefs and institutions inherited over generations. The connection between a country's political environment, economic performance, and societal behaviors becomes evident. We incorporate this understanding when constructing our regression models and deciding on the variables to be included.

- Insert Table 2 here -

Our results are divided into two phases. Initially, Table 3 is examined where our baseline model for each cultural factor is estimated individually. The associated results reinforce our hypothesis and the notion that culture influences the efficiency of monetary policy. In this

[5] https://www.imf.org/en/Publications/WEO/weo-database/2023/April

preliminary examination, four out of the six indexes, power distance, uncertainty avoidance, long-term orientation, and indulgency, display a significant coefficient, and the coefficient's direction aligns with our hypothesized predictions for all the variables. While the impact of these variables in the model is minor compared to our control variables, it serves as an indication of the potential role culture plays when considering the performance disparity among similar countries.

Consistent with prior research, countries categorized in the developed group tend to demonstrate less inefficiency than their counterparts in the developing group. Additionally, countries adopting an inflation-targeting policy and demonstrating stronger economic growth manifest lower inefficiency scores. These features are characteristic of nations with more stable economies and superior competitive power in international markets, thus reducing the potential impacts of economic shocks on domestic economies. Concurrently, they augment the resources of governments and regulators for handling these shocks.

One salient aspect that merits highlighting is the impact of culture, as delineated by earlier authors, which can influence the actions of politicians and regulators. Table 3 illustrates our baseline model for all the cultural factors, juxtaposed with varying combinations of our control variables. The intention behind this is to attain a more profound understanding of how these variables interact with one another.

- Insert Table 3 here -

Model 1 includes each of the six cultural factors derived from Hofstede's research without any control variables; revealing highly significant coefficients for PDI, IND, and IVR. The alignment of their signs with our hypotheses suggests that, with all other variables constant, a unit increase in the PDI and IND indexes on average augments inefficiency by 0.0088 and 0.0061 units, for the mean INEF score of 0.32 in our country sample, these results would imply a 2.75% and 1.9% increase in inefficiency, respectively. Conversely, a unit increase in the IVR index corresponds with an average decrease in inefficiency by 0.0085, suggesting a 2.65% improvement. The robustness of these results persists even with the inclusion of the main control variables in Model 2, though the magnitude of their impact diminishes. An intriguing finding is the coefficient for Masculinity, suggesting higher scores on this index correlate with reduced inefficiency. Given the index's definition, this implies that societies which are more assertive and competitive tend to foster superior policy efficiency. One possible explanation for this could be the stronger and more resilient economy nurtured by the prevalence of

masculine values, thereby mitigating the shock impacts and expediting the recovery process following regulatory action.

Models 3 and 4 encompass our three socio-political variables. The results offer similar insights as the previous models, although the significance of MAS dissipates. This could indicate that masculinity affects monetary policy efficiency through a political channel, although the weak correlation between MAS and the socio-political variables renders this connection more obscure and paves the way for future research regarding their relationship. Consistent with prior research, we note a significant correlation for COR, underscoring the crucial role of transparency and trust regulators must cultivate. In countries with lower corruption levels, governmental actions are perceived as stronger and more efficient due to the increased trust invested by the public. As exhibited in Table 3 and corroborated by previous studies, we continue to observe a highly significant coefficient for inflation-targeting regimes, GDP growth, and our developed country dummy.

- Insert Table 4 here -

Finally, adhering to the principle of parsimony, we strive to refine our model based on prior results. The last variable selection depicted in Model 5 offers the most accurate model according to the adjusted R^2. The coefficients suggest that major political factors such as the adoption of an inflation-targeting regime or countries demonstrating superior growth stability are primary determinants of superior policy efficiency. With all else held constant, countries implementing inflation target policies have, on average, INEF scores 0.2465 points lower than those that do not. Similarly, developed countries exhibit, ceteris paribus, an average INEF score that is 0.4326 points lower than their developing counterparts. In terms of growth, the findings suggest that a 1% annual increase in GDP leads, with all other variables constant, to a 0.047 point decrease in inefficiency.

Concerning Hofstede's cultural indexes, the results persist in displaying a significant relationship between culture and policy efficiency. Countries that are more democratic, free, egalitarian, and collective tend to have, on average, lower INEF scores than others. All else held constant, a 10-point increase in PDI and IND suggests an average increase in INEF by 0.096 and 0.055, respectively, while a 10-point increase in IVR corresponds to an average decrease in INEF by 0.091.

5.2 Robustness Test

In order to corroborate the strength and implications of our results, we run a final set of regressions that aim to clear any concerns about the strength and validity of our results.

Table 5 showcases the result for 6 regressions where we subsample our data following three different criteria, if the country is in a crisis period (defined in this case by those years with GDP growth lower than the historical median), if the regulators are following a inflation target policy, and finally if the country belongs to the developed or less developed category..

- Insert Table 5 here -

The results for the first subsets, crisis and no crisis, continue to support the idea of a significant relationship between the cultural and political factors with monetary policy inefficiency. Both power distance and indulgence, show a high level of significance for both subsets, one particularity of this results are the larger coefficients during the no crisis years, as well as a shift in significance from the economic performance and policy variables towards cultural and sociopolitical factors. The coefficients for *PDI* and *IVR* go from 0.0062 and -0.008 for the crisis subset, to 0.0127 and -0.0135 respectively, for the average *INEF* score. The second coefficients imply on average more than a 4% decrease in inefficiency for each point decrease in *PDI* and increase in *IVR*, compared to the 2% decrease on average during crisis periods. This suggest that although culture can have an impact on policy efficiency, its importance is undermined during periods of economic instability, highlighting the marginal role of culture.

We derive similar insights for the sociopolitical factors as they show higher coefficient and significance for both *COR* and *LAW* for the no crisis sample*,* suggesting that political and social characteristics become relevant mostly during periods of stability and once the impact of negative economic shocks fades away.

The third and fourth columns show the results for the subsets of country years under an inflation targeting policy and those without one. The results continue to support our hypothesis that culture and sociopolitical factors have an influence on the efficacy of monetary policy, though in line with our results for our crisis subsets we notice a loss of significance for these variables in non targeting countries. Inflation targeting has been shown to be a great determinant on the efficacy of regulators to control inflation and sustain production growth (Corbo et al. 2002 , Mishkin et.al. 2007), our results seem to signal a lack of relevance for sociopolitical differences when some of the more relevant factors are not

properly managed, when observed in this way culture seems to act as a highlighter of properly carried policies.

Our final two columns subset our data based on our *DEV* variable. Running our model with these restrictions we don't observe a significant coefficient for any of our cultural factors, one reason for this could be attributed to countries in the same group having similar cultural traits. With most developed countries belonging to areas like Europe and North America and if we expect long term economic performance to be an important factor in developing a countries culture, then deviation between countries should be reduced. This is in fact the case, with the standard deviation for most factors dropping to almost half when measured in the subsets.

We continue to see a significant importance for the adoption of an inflation targeting policy in both subsets. Macroeconomic performance although highly relevant in less developed countries loses its significance for the developed subsets, likely due to the more stable nature of this economies.

- Insert Table 6 here -

Due to the underlaying relationship between some of the variables in our model, correlations between them could arise as a cause for misleading results. Table 6 tackles this by rerunning some of our models excluding variables that showcase high correlation with other variables in the model, particularly we remove PDI, LAW, and SOC.

Table 6 shows the results of this tests. We continue to observe evidence of the importance of cultural factors on monetary policy efficiency, one highlighted result is the strong significance of UAV, our results suggest that stronger aversion to uncertainty is related to more inefficient policies, this results are in a way contradicting to Jong (2002) results where UAV was associated with lower inflation countries, this might be due to higher uncertainty avoidance restricting the growth potential of a country due to the avoidance of risk, and highlights the importance of considering both objectives when considering monetary policy.

Nonetheless the exclusion of PDI reduces the overall strength of the model suggesting that power distance might be more relevant than uncertainty avoidance.

The restriction of sociopolitical variables to only COR showed no significantly different results, but the lack of correlated variables showcases an important role for corruption suggesting that higher levels of it increase inefficiency.

In our final table we run our model restricting our country sample by excluding countries with "extreme" INEF scores which in the context of this study we will consider those countries outside the 0.1 and 0.9 percentile. These countries are Bulgaria, Canada, Mexico, Poland, Romania, and the United States. With this test we aim to show that a group of specific countries is not driving our previous results. Considering the results on table 6 we also include some models with omitted variables due to correlation concerns to see how they affect the new sample.

- Insert Table 7 here -

Table 7 shows the result for the restricted country sample. For the remaining countries the average overall *INEF* score is 0.272, still, we observe results consistent with our previous regressions. We continue to see an important effect of the correlation of PDI with some of the other cultural factors as its presence in the model considerably impacts the statistical significance of other factors like UAV and LTO. Even with some big economies like the USA and Canada excluded, we continue to see strong underperformance of less developed countries, as well as the importance of an inflationary target policy that sets concrete targets for the regulators.

Regarding corruption, its coefficient continues to show a positive sign signalling its link with higher inefficiency, nonetheless, a solid conclusion is not evident due to the inconsistence significance of the results.

Chapter 6: Conclusion

The primary objective of this study is to explore the influence of societal culture on the effectiveness of monetary policy. Our analysis yields compelling evidence that, while the main macroeconomic and policy determinants (GDP growth, inflation-targeting regimes) remain the paramount factors driving efficiency, differing societal environments enable certain regulators to outperform others. More specifically, we observe that nations with less individualistic predispositions and more equitable power distribution tend to display, on average, lower inefficiency scores. Additionally, societies characterized by higher indulgence levels, where fundamental needs are primarily satisfied liberally and individuals enjoy greater freedom and happiness, also demonstrate reduced inefficiency scores.

These findings suggest that societies which promote personal accomplishments, engender feelings of freedom, and nurture a sense of community tend to experience smoother policy implementation. Such environments likely foster enhanced trust in governments and regulators, thus facilitating better acceptance of regulatory changes and creating socio-politically stable contexts in which macroeconomic shocks can be rapidly detected and managed. That said, we find no evidence for Hypotheses H4 other than in our individual factor regression models and our evidence for H3 is restricted to our robustness test models where PDI is not included in the regression. This implies that a society's willingness to accept risk and its orientation toward long-term goals likely influences monetary policy efficiency via different channels, possibly interlinked with other cultural variables owing to their high correlation.

This study enriches the existing literature by delving into the relationship between culture and inflation beyond prior research, endeavoring to comprehend how societal preferences impinge upon the optimization dilemma confronting regulators in their effort to minimize inflation and maximize growth. Future research could pivot towards further elucidating the channels via which these factors impact monetary policy efficiency. For instance, investigating the public's reaction or the decision-making processes within institutions could shed more light on the issue. Moreover, probing the influence of these factors in other economic sectors could offer valuable insights.

References

Carrasco, C. A., & Ferreiro, J. (2014). Latin american inflation differentials with usa inflation: does inflation targeting make a difference? Journal of Economic Policy Reform, 17(1), 13–32.

Cecchetti, S., & Ehrmann, M. (1999). Does inflation targeting increase output volatility? An international comparison of policymakers' preferences and outcomes. National Bureau of Economic Research Working Paper No 69.

Cecchetti, S. G., McConnell, M. M., & Perez-Quiros, G. (2002). Policymakers' revealed preferences and the output–inflation variability trade–off: Implications for the European system of central banks. *The Manchester School*, 70, 596-618.

Cecchetti, S. G., & Krause, S. (2002). Central bank structure, policy efficiency, and macroeconomic performance: Exploring empirical relationships. *Federal Reserve Bank of Saint Louis Review*, 84(4), 47-60.

Corbo, V., Landerretche, O., & Schmidt-Hebbel, K. (2001). Assessing inflation targeting after a decade of world experience. International Journal of Finance & Economics, 6(4), 343–368.

Cover, J. P., & Mallick, S. K. (2012). Identifying sources of macroeconomic and exchange rate fluctuations in the uk. Journal of International Money and Finance, 31(6), 1627–1648.

Corbo, V., Landerretche, O., & Schmidt-Hebbel, K. (2002). Does inflation targeting make a difference?. Series on Central Banking, Analysis, and Economic Policies, no. 5.

De Jong, E. (2002). Why are price stability and statutory independence of central banks negatively correlated? The role of culture. *European Journal of Political Economy*, 18(4), 675-694.

De Mendonca, H. F., & Nascimento, N. C. (2020). Monetary policy efficiency and macroeconomic stability: Do financial openness and economic globalization matter? *The North American Journal of Economics and Finance*, 51, 100870.

Friedman, M. (1968). The role of monetary policy. *The American Economic Review*, 58(1), 1-17.

Gillitzer, C., Prasad, N., & Robinson, T. (2021). Political attitudes and inflation expectations: evidence and implications. Journal of Money, Credit and Banking, 53(4), 605–634.

Hayo, B. (1998). Inflation culture, central bank independence and price stability. European *Journal of Political Economy*, 14(2), 241-263.

Hofstede, G. (1984). Culture's consequences: International differences in work-related values. Sage.

Jha, R., & Dang, T. N. (2012). Inflation variability and the relationship between inflation and growth. Macroeconomics and Finance in Emerging Market Economies, 5(1), 3–17.

Jost, A. (2018). Cultural differences in monetary policy preferences. Swiss National Bank.

Mishkin, F. S., & Schmidt-Hebbel, K. (2007). Does inflation targeting make a difference? National Bureau of Economic Research

Mishra, P., Montiel, P. J., & Spilimbergo, A. (2012). Monetary transmission in low-income countries: Effectiveness and policy implications. IMF Economic Review, 60(2), 270–302.

Nakamura, E., Steinsson J., & National Bureau of Economic Research. (2013). High frequency identification of monetary non-neutrality : the information effect (Ser. Nber working paper series, no. w19260). National Bureau of Economic Research. Retrieved August 18, 2023

Nilsson, R., & Gyomai, G. (2011). Cycle extraction: A comparison of the phase-average trend method, the Hodrick-Prescott and Christiano-Fitzgerald filters. *OECD Statistics Working Papers*, 2011(04), OECD Publishing.

Philip Arestis & Malcolm Sawyer (2004) On the Effectiveness of Monetary Policy and of Fiscal Policy, Review of Social Economy, 62:4, 441-463

Purwanda, E., & Rochana, S. H. (2017). Measurement of the efficiency of monetary policy. *Economic Journal of Emerging Markets*, 9(2), 138-49.

Rasche, R. H., & Williams, M. M. (2007). The effectiveness of monetary policy. *Federal Reserve Bank of St. Louis Review*, 89, 447-490.

Tables

Table 1
Descriptive Statistics

	Min	Max	Mean	SD
INEF	0.00	14.57	0.32	0.88
PDI	18.00	93.00	54.02	22.13
IND	18.00	91.00	55.75	24.99
MAS	5.00	95.00	51.37	23.05
UAV	23.00	95.00	65.96	22.71
LTO	21.00	21.00	51.69	22.05
IVR	16.00	97.00	50.56	23.56
I_TARGET	0.00	1.00	0.53	0.57
COR	1.50	6.00	3.72	1.32
SOC	5.00	10.00	7.92	1.48
LAW	1.50	6.00	4.31	1.24
GDP	-0.13	0.12	0.02	0.03
DEV	0.00	1.00	0.57	0.50

Descriptive statistics table. *INEF* is our monetary policy inefficiency score, *PDI, IND, MAS, UAV, LTO*, and *IVR* are Hofstede's six cultural factors, each with a possible index ranging 0 to 100, *I_TARGET is* a dummy variable equal to 1 for the years in which a country has followed an inflation targeting strategy. The *COR* and *LAW* indexes measure the level of corruption and rule of law in each country, with a range from 0 to 6, *SOC* measures socioeconomic stability, ranging from 0 to 12. GDP is the annual growth rate of real GDP, and DEV is a dummy variable equal to 1 for the countries considered developed by the World Economic Outlook Data.

Table 2

Correlation Matrix

	INEF	*PDI*	*IND*	*MAS*	*UAV*	*LTO*	*IVR*	*I_TARGET*	*SOC*	*COR*	*LAW*	*GDP*	*DEV*
INEF	1												
PDI	0.24	1											
IND	-0.17	-0.81	1										
MAS	-0.02	0.11	0.12	1									
UAV	0.20	0.74	-0.62	0.31	1								
LTO	0.09	0.26	-0.42	0.16	0.35	1							
IVR	-0.30	-0.59	0.50	-0.08	-0.57	-0.59	1						
I_TARGET	-0.22	-0.26	0.26	-0.03	-0.09	-0.21	0.32	1					
SOC	-0.23	-0.82	0.65	0.16	-0.54	0.12	0.36	0.17	1				
COR	-0.21	-0.93	0.64	-0.27	-0.71	-0.16	0.51	0.19	0.76	1			
LAW	-0.18	-0.83	0.62	-0.26	-0.53	0.02	0.30	0.26	0.78	0.88	1		
GDP	-0.04	0.24	-0.25	-0.06	0.14	0.18	-0.32	-0.14	-0.14	-0.19	-0.16	1	
DEV	-0.26	-0.81	0.61	-0.09	-0.61	0.04	0.45	0.18	0.80	0.82	0.85	-0.20	1

Correlation matrix for all variables included in the regression analysis.

TABLE 3
Monetary Policy Inefficiency and Culture: Individual Factors with Controls

Regression	OLS					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
PDI	0.005***					
	0.002					
IND		-0.0003				
		0.002				
MAS			0.001			
			0.002			
UAV				0.004**		
				0.002		
LTO					0.004**	
					0.002	
IVR						-0.005***
						0.002
I_TARGET	-0.374***	-0.389***	-0.392***	-0.390***	-0.350***	-0.312***
	0.067	0.068	0.068	0.067	0.069	0.072
COR	-0.028	-0.095*	-0.09	-0.032	-0.034	-0.009
	0.059	0.055	0.057	0.061	0.060	0.061
SOC	-0.029	0.025	0.012	-0.014	-0.010	0.058**
	0.031	0.026	0.042	0.030	0.029	0.027
LAW	0.242***	0.296***	0.304***	0.230***	0.252***	0.211***
	0.065	0.062	0.066	0.069	0.064	0.068
GDP	-3.887***	-3.529***	-3.448***	-3.542***	-3.860***	-4.085***
	1.056	1.069	1.063	1.049	1.06	1.064
DEV	-0.65***	-0.891***	-0.892***	-0.709***	-0.878***	-0.880***
	0.136	0.104	0.104	0.133	0.103	0.103
Adjusted R^2	0.231	0.222	0.222	0.2279	0.2287	0.232
F Statistic	29.3***	27.91***	27.93***	28.8***	28.91***	29.53***
No. of Obs	659	659	659	659	659	659

This table provides results for our first set of regressions with one cultural factor per model. *INEF* is our monetary policy inefficiency score, *PDI, IND, MAS, UAV, LTO*, and *IVR* are Hofstede's six cultural factors, each with a possible index ranging 0 to 100, *I_TARGET is* a dummy variable equal to 1 for the years in which a country has followed an inflation targeting strategy. The *COR* and *LAW* indexes measure the level of corruption and rule of law in each country, with a range from 0 to 6, *SOC* measures socioeconomic stability, ranging from 0 to 12. GDP is the annual growth rate of real GDP, and DEV is a dummy variable equal to 1 for the countries considered developed by the World Economic Outlook Data. The upper values represent the regression coefficients, while the lower values are standard deviations. Marginal significance levels are indicated as follows: *** denotes significance at the 1% level, ** denotes significance at the 5% level, and * denotes significance at the 10% level.

TABLE 4

Monetary Policy Inefficiency and Culture: All Factors

Regression	OLS				
	Model 1	Model 2	Model 3	Model 4	Model 5
PDI	0.0088***	0.0059**	0.0092***	0.0074***	0.0096***
	0.0023	0.0026	0.0025	0.0027	0.0014
IND	0.0061***	0.0096***	0.0073***	0.0058**	0.0055***
	0.0016	0.0017	0.0026	0.0026	0.0019
MAS	-0.0033**	-0.0053***	-0.0036	-0.0029	-0.0021
	0.0016	0.0016	0.0024	0.0024	0.0015
UAV	0.0026	0.0042*	0.0042	0.0022	
	0.0023	0.0023	0.0026	0.0027	
LTO	-0.0012	0.0031	-0.0007	0.0003	
	0.0015	0.0021	0.0026	0.0026551	
IVR	-0.0085***	-0.0054***	-0.0106***	-0.0083***	-0.0091***
	0.0015	0.0018	0.0021	0.0023	0.0017
I_TARGET		-0.2861***		-0.2694***	-0.2465***
		0.0698		0.0729	0.0672
COR			0.1974***	0.1212*	0.1459***
			0.0695	0.0708	0.0398
SOC			-0.0149	-0.0019	
			0.0524	0.0522	
LAW			-0.1673**	0.0138	
			0.0787	0.0930	
GDP		-4.1854***		-4.6399***	-4.7437***
		1.0625		1.0878	1.0644
DEV		0.3260***		-0.4461***	-0.4326***
		0.1261		0.1561	0.1153
Adjusted R^2	0.202	0.243	0.209	0.248	0.252
F Statistic	28.85***	24.5***	20.36***	19.13***	28.68***
No. of Obs	659	659	659	659	659

This table provides results for our full set of regressions with multiple cultural factors per model. *INEF* is our monetary policy inefficiency score, *PDI, IND, MAS, UAV, LTO*, and *IVR* are Hofstede's six cultural factors, each with a possible index ranging 0 to 100, *I_TARGET is* a dummy variable equal to 1 for the years in which a country has followed an inflation targeting strategy. The *COR* and *LAW* indexes measure the level of corruption and rule of law in each country, with a range from 0 to 6, *SOC* measures socioeconomic stability, ranging from 0 to 12. GDP is the annual growth rate of real GDP, and DEV is a dummy variable equal to 1 for the countries considered developed by the World Economic Outlook Data. Values shown are coefficient on top with standard deviation right under, and marginal significance levels indicator: (***) denoting 0.01, (**) denoting 0.05 and (*) denoting 0.1.

TABLE 5

Monetary Policy Inefficiency and Culture: All Factors by subsample

Regression	OLS					
	Crisis	No Crisis	Targeting	No Targeting	Developed	Less Developed
PDI	0.0062*	0.0127***	-0.0048*	0.0008	-0.0014	0.0103
	0.0033	0.0046	0.0028	0.0049	0.0024	0.0126
IND	0.0045	0.0052	0.005***	0.0088	0.0009	0.0208
	0.0032	0.0040	0.0022	0.0055	0.0018	0.0187
MAS	0.0015	-0.0087**	-0.0034**	-0.0019	-0.0015	-0.0048
	0.0029	0.0038	0.0015	0.0045	0.0010	0.0162
UAV	-0.0015	0.0044	0.0078**	0.0078	0.0027	-0.0029
	0.0034	0.0041	0.0035	0.0049	0.0017	0.0124
LTO	-0.0007	-0.0005	0.0027**	0.0004	0.0015	0.0049
	0.0033	0.0040	0.0012	0.0072	0.0012	0.0124
IVR	-0.0080***	-0.0135***	0.0023	-0.0130**	0.0003	-0.0005
	0.0029	0.0037	0.0015	0.0056	0.0025	0.0057
I_TARGET	-0.3207***	-0.1124			-0.0498**	-0.8610***
	0.0916	0.1133			0.0221	0.2251
COR	-0.0019	0.2763**	-0.0907**	0.2222	-0.0345	0.3042*
	0.0877	0.1077	0.0372	0.1437	0.0505	0.1812
SOC	-0.0245	0.1033	-0.0618**	0.0281	-0.0360	-0.1035
	0.0651	0.0813	0.0295	0.1268	0.0219	0.1933
LAW	0.2188*	-0.2560*	0.0597	-0.0436	0.0868**	-0.0692
	0.1127	0.1442	0.0605	0.1535	0.0437	0.1841
GDP	-9.8388***	-7.9513**	-0.1174	-6.8718***	-0.1822	-7.4246***
	1.5732	3.4426	0.5194	1.9774	0.3974	2.0597
DEV	-0.6140***	-0.2546	0.0159	-1.0276***		
	0.1879	0.2454	0.1137	0.3403		
Adjusted R^2	0.364	0.206	0.295	0.288	0.252	0.273
F Statistic	16.24***	8.33***	14.15***	12.53***	28.68***	10.72***
No. of Obs	320	339	346	313	374	285

This table provides results for our full set of regressions with multiple cultural factors per model with subsamples controlling for crisis period, inflation targeting policies in place and development status. *INEF* is our monetary policy inefficiency score, *PDI, IND, MAS, UAV, LTO*, and *IVR* are Hofstede's six cultural factors, each with a possible index ranging 0 to 100, *I_TARGET is* a dummy variable equal to 1 for the years in which a country has followed an inflation targeting strategy. The *COR* and *LAW* indexes measure the level of corruption and rule of law in each country, with a range from 0 to 6, *SOC* measures socioeconomic stability, ranging from 0 to 12. GDP is the annual growth rate of real GDP, and DEV is a dummy variable equal to 1 for the countries considered developed by the World Economic Outlook Data. Values shown are coefficient on top with standard deviation right under, and marginal significance levels indicator: (***) denoting 0.01, (**) denoting 0.05 and (*) denoting 0.1.

TABLE 6

Monetary policy inefficiency and culture - baseline model controlled for correlation

Regression	OLS			
	Model 1	Model 2	Model 3	Model 4
IND	0.0043*** 0.0015	0.0039* 0.0022		0.0068*** 0.0021
MAS	-0.0033** 0.0016	-0.0030 0.0018		-0.0039** 0.0018
UAV	0.0095*** 0.0014	0.0096*** 0.0014		0.007*** 0.0017
LTO	-0.0005 0.0015	-0.0008 0.0020		0.0031 0.0021
IVR	-0.0073*** 0.0015	-0.0076*** 0.0018		-0.0058*** 0.0018
I_TARGET			-0.2579*** 0.0670	-0.2992*** 0.0692
COR		0.0112 0.0434	0.2463*** 0.0232	0.1025** 0.0462
GDP			-1.3174 1.0331	-3.9988*** 1.0498
DEV			-0.8463*** 0.1009	-0.5757*** 0.1215
Adj R2	0.1856	0.1844	0.1670	0.2429
F - statistic	31.03***	25.83***	34.04***	24.49***
No. of Obs	659	659	659	659

This table shows the results for our baseline model with the exclusion of PDI, SOC and LAW, in order to control for correlation between explanatory variables. *INEF* is our monetary policy inefficiency score*, IND, MAS, UAV, LTO*, and *IVR* are Hofstede's cultural factors, each with a possible index ranging 0 to 100, *I_TARGET is* a dummy variable equal to 1 for the years in which a country has followed an inflation targeting strategy. The *COR* index measures the level of corruption in each country, with a range from 0 to 6, *SOC* measures socioeconomic stability, ranging from 0 to 12. GDP is the annual growth rate of real GDP, and DEV is a dummy variable equal to 1 for the countries considered developed by the World Economic Outlook Data. Values shown are coefficient on top with standard deviation right under, and marginal significance levels indicator: (***) denoting 0.01, (**) denoting 0.05 and (*) denoting 0.1.

TABLE 4

Monetary policy inefficiency and culture - individual factor with controls

Regression	OLS				
	Model 1	Model 2	Model 3	Model 4	Model 5
PDI	0.0072*** 0.0012			0.0050*** 0.0015	
IND	0.0052*** 0.0011	0.0041*** 0.0011		0.0069*** 0.0012	0.0071*** 0.0012
MAS	-0.0012 0.0009	-0.0014 0.0009		-0.0022** 0.0009	-0.0027*** 0.0009
UAV	0.0007 0.0012	0.0057*** 0.0009		0.00189 0.0012	0.0044*** 0.0010
LTO	-0.0013 0.0009	0.0001 0.0009		0.0006 0.0013	0.0029** 0.0011
IVR	-0.0061*** 0.0011	-0.0055*** 0.0012		-0.0055*** 0.0019	-0.0037* 0.0019
I_TARGET			-0.1096*** 0.0422	-0.2008*** 0.0430	-0.2052*** 0.0434
COR			0.1342*** 0.0150	0.0461 0.0349	0.0314 0.0350
GDP			1.5770** 0.6701	-1.3172* 0.6836	-0.6662 0.6611
DEV			-0.4507*** 0.0664	-0.2818*** 0.0791	-0.3897*** 0.0727
Adj R2	0.344	0.302	0.2327	0.396	0.3831
F - statistic	43.73***	43.18***	38.01	32.94***	34.68***
No. of Obs	488	488	488	488	488

This table provides results for a restricted country sample that exclude those nations with "extream" *INEF* scores. *INEF* is our monetary policy inefficiency score, *PDI, IND, MAS, UAV, LTO*, and *IVR* are Hofstede's six cultural factors, each with a possible index ranging 0 to 100, *I_TARGET is* a dummy variable equal to 1 for the years in which a country has followed an inflation targeting strategy. The *COR* indexes measure the level of corruption in each country, with a range from 0 to 6. GDP is the annual growth rate of real GDP, and DEV is a dummy variable equal to 1 for the countries considered developed by the World Economic Outlook Data. Values shown are coefficient on top with standard deviation right under, and marginal significance levels indicator: (***) denoting 0.01, (**) denoting 0.05 and (*) denoting 0.1.

Appendices

Appendix 1: Variable definitions

Variable	Description	Source
Inefficiency	Our measure of monetary policy inefficiency. Data frequency: annual	Devised by author based on equation 4
Political variables (Data frequency: Time invariant, one value per country**)**		
Corruption	Corruption perception index, ranging from 0 to 6. A higher value indicates lower risk of corruption being disruptive to the system.	International Country Risk Guide
Rule of Law	The rule of law measures the extent to which agents have confidence and abide by the rules of the society. Countries are ranked from 0 to 6, 0 being the lowest rank	International Country Risk Guide
Socioeconomic Conditions	Index that varies from "0" to "12". Higher values denote lower risk of pressures that could constrain government action or incite social dissatisfaction.	International Country Risk Guide
Cultural variables (Data frequency: Time invariant, one value per country)		
Power distance	Power distance index – a measure of how society handles inequalities among the population. Higher PDI indicates an acceptance of hierarchical order in the society. Range: 0 to 104	Geert Hofstede's website
Individualism	Individualism versus collectivism – a measure of preference for a loosely-knit social framework. An individualistic society expects individuals to take care of only themselves and their immediate families. Range: 0 to 100	Geert Hofstede's website
Uncertainty avoidance	Uncertainty avoidance index – a measure of how society deals with an uncertain future, i.e., preplanning for the future vs. leaving events to unfold by themselves. Range: 0 to 112	Geert Hofstede's website
Masculinity	Masculinity versus femininity – a measure of a tough versus tender culture. A high masculinity score suggests a preference for achievement, heroism, and material rewards while a low masculinity (high femininity) score suggests a preference for cooperation, modesty, and quality of life. Range: 0 to 110	Geert Hofstede's website
Long-term orientation	Long-term orientation versus short-term orientation – a measure of whether society prefers to encourage efforts in modern education to prepare for the future or prefers to maintain traditions and norms. Range: 0 to 100	Geert Hofstede's website
Indulgence	Indulgence versus restraint – a measure of whether society allows for free gratification of resources to enjoy life or suppresses the gratification of needs via social norms. Range: 0 to 100	Geert Hofstede's website
Macro-economic variables		
GDP per capita	Natural logarithm of ratio of real GDP to population. Data frequency: annually.	The Economist – Intelligence Unit
Control variables		
Inflation targeting	A dummy variable equal to 1 for the years where a country has adopted inflation targeting policy.	Devised by author
Developed	A dummy variable equal to 1 for countries in the Developed group according to World Economic Outlook database classification.	Devised by author

Appendix 2: Country Representation

Country	INEF	Years of data
Australia	0.093	33
Bangladesh	0.617	28
Brazil	0.393	24
Bulgaria	1.173	22
Canada	0.001	22
China	0.318	12
Chile	0.057	24
Czech Republic	0.215	30
Denmark	0.131	26
United Kingdom	0.048	33
Hungary	0.646	33
Japan	0.203	33
North Korea	0.191	33
Mexico	0.044	31
Norway	0.236	33
New Zealand	0.052	33
Poland	0.652	32
Romania	1.183	32
Russia	0.642	26
Serbia	0.526	21
Sweden	0.175	33
Switzerland	0.084	33
United States	0.031	32

List of countries in the sample with their respective number of years of data and average INEF score.