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Do Monetary Policy Outcomes Promote Stability in Fragile Settings?

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ABSTRACT: This paper assesses how monetary policy outcomes affect fragility. Diving into the universe of the most prominent combinations of pursued monetary policy objectives across fragile settings, we examine the relationships between monetary policy outcomes and fragility and find the combination of reduction of inflation and lower unemployment to be the one that delivers the highest payoff in terms of promoting peace and cohesion. Setting aside challenges of monetary policy transmission, results from our analysis broadly confirm the above "winning" combination, with low inflation as a primary desired outcome and low unemployment rate as a secondary one. We also carry out a series of robustness tests, which confirm our findings. Overall, our results lend credence to the importance of paying attention—in the context of reducing fragility—to monetary policy outcomes.

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I. Introduction

The scorecard of progress towards achieving the sustainable development goals (SDGs) shows that countries lagging the furthest behind are those in conflict, post-conflict and/or fragile situations. Interest in issues of fragility and post-conflict has therefore gained momentum among international development practitioners. Such increased attention owes much to the realization that eradicating global extreme poverty, promoting inclusive and sustainable growth and development, while protecting the planet—all of which are at the core of SDGs— require significant progress in currently lagging countries.

While there is no consensus about what the concept of "fragility" entails, it often refers to a situation that features governance and capacity challenges, and sometimes weak state legitimacy, which often leads to tensions and violent conflict. In many cases, fragile environments feature fractured identities (e.g., ethnic, religious, political), which, sometimes, are exacerbated by civil war. Another common thread across fragile and post-conflict settings is the limited capacity of governments in these settings to fully and effectively provide its citizens with basic public goods and services. This results in these nations stuck in a poverty and instability "trap" (Besley and Collier, 2018).

In fragile and post-conflict environments, efforts are generally geared towards achieving political stability, restoring and re-building livelihoods, with the focus on meeting the most basic needs (World Bank, 2011). These efforts include pursuing food and nutrition security, providing basic health and education, and building and restoring physical infrastructure—say road, electricity, water and sanitation and telecommunication. These short-term actions are carried through government spending, much of which is funded by development partners. To a large extent, this reality has shaped the economic literature on fragility and post-conflict situations and the prominent attention given to matters of immediate humanitarian relief and initial post-conflict reconstruction, thus to the critical contribution of fiscal policies to the reduction of fragility and promotion of peace.

In addition to these short-term actions, attention has also been paid to building inclusive institutions to prevent social exclusion, which could trigger crisis and conflicts (United Nations and World Bank, 2018). While the institutional agenda has not been dissociated with that of basic services delivery, less attention was paid to economic institutions. This holds true especially for monetary and financial institutions, including the choice of monetary policy arrangements or frameworks, which potentially contribute to nation building and to economic recovery in several important ways.

Having, for instance, a single national currency can provide a unifying national symbol, which can contribute to a sense of national identity and to national cohesion. Also, the choice of

having (or not) an independent and credible central bank can determine decisions on monetary policies, hence on inflation and exchange rate, both of which could have important distributional effects and shape income and wealth distribution, thus fragility. Similarly, the choice of monetary policy framework implies, among others, making a determination on the expected outcomes, intermediary targets and instruments of monetary policies along with communication strategy. These final objectives could be nominal, such as setting price targets on inflation, nominal exchange rate, all of which, could, on occasion, be complemented by real objectives, including the pursuit of certain levels of economic growth and/or employment. Again, these nominal and real objectives could be important drivers of peace and stability.

This paper falls under the strand of the literature that focuses on long-term dimensions of fragility but differs from previous contributions in that it focuses on how some aspects of monetary policy frameworks, in particular expected outcomes, could deliver peace and stability. While recognising that monetary policy objectives may differ verily from monetary policy outcomes partly because of weak transmission channels and persistent inflationary shocks, among others, we often use both concepts interchangeably for simplicity reason[2]. More specifically, we assess the extent to which monetary policy outcomes affect fragility. To the best of our knowledge, no studies have assessed the above relationship. The closest paper to ours is that of Collier et al. (2008), who analyse the interplay among growing fiscal needs, aid and inflation in a post-conflict environment and where they recommend monetary "reconstruction."

Deep diving into the universe of the most prominent combinations of monetary policy outcomes across fragile settings, we examine one-to-one relationships between these combinations and fragility and found the combination (reduction of inflation and that of unemployment) to be the one that delivers the highest payoff in terms of promoting peace and cohesion.

Building on the "opportunity" and "grievance" and "combination of both" models, we conduct further empirical investigation, taking into account a potential two-way causality between fragility on the one hand and inflation and unemployment, on the other. Results broadly confirm the above "winning" combination, with inflation as a primary desired outcome of monetary policy and unemployment rate as a secondary one. We also carry out a series of robustness tests, all of which show that our earlier found results remain unchanged.

Overall, our results lend credence to the importance of paying attention to monetary policy outcomes in a fragility context. Evidence from our empirical analysis also points to the positive

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[2] While monetary policy transmission is important in explaining how policy objectives translate into policy outcome, this is not addressed in this paper.

contribution of reduced unemployment to decreasing fragility, especially when inflation is under control. This result suggests that unemployment rate could be a good secondary desired outcome of monetary policies in fragile contexts. These results suggest that central banks—at least through their determination of the choice of monetary policy outcomes—could contribute to addressing some of the deep root causes of fragility in developing countries. A stable monetary environment is likely to play a crucial role in helping stabilize fragile environments.

The rest of the paper is structured as follows. Section 2 presents an overview of monetary options in fragile settings. Section 3 displays the theoretical foundations of the discussion on monetary policy outcomes and fragility. The data and empirical strategy are laid out in Section 4, while Section 5 summarizes the findings of the paper and presents some policy recommendations.

II. Monetary Options in Fragile settings (FS)

A. Setting the Scene: Currency Options

A major characteristic of fragile settings is the limited capacity of the state to act, both because the state apparatus has been destroyed or damaged, and because of issues around political legitimacy that emerge after a conflict (see Gutierrez et al., 2011, World Bank, 2011). Delivery of basic public goods such as primary education cannot be taken for granted in this environment, and the private sector often has to fulfil the vacuum that cannot yet be filled by the state. With the possibility of a conflict always looming, governments are constrained in their actions, even when they are well intended (see Besley and Persson, 2000 and Pinto, 1999). As an example, countercyclical actions are often not possible. Budgets, which are typically cash budgets, imply procyclical spending—sometimes termed "you eat what you kill"— making it impossible to provide fiscal stabilizers. For the same reason, lack of credibility at the monetary policy level means monetary policy cannot be used counter-cyclically (see Naude et al, 2011).

In addition to limited capacities and limited legitimacy, or because of it, governments' preferences for short-term may also not be always in sync with the pursuit of long-term objectives. It is shown in the literature as instability can arise any time, politicians may focus on the immediate needs, and are more willing (compared to non-fragile settings) to, say, borrow at high rates, finance spending by printing money, or cut spending that benefits the country in the long-run, knowing that they will likely not be in power to account for these short-term-focused decisions (see Cilliers and Sisk, 2013). This seemingly rational behaviour

has implications, notably for monetary policy, as it may create a bias akin to the "time-consistency problem" (Kydland and Prescott, 1977). This generates an upward bias in inflation and makes currency stability a harder task. [3]

Whether in conflict or not, the challenge in fragile settings is one of putting the groundwork for reconstruction and private sector growth. Economic activity is constrained or disrupted on many fronts. As the stock of physical infrastructure—such as bridges, roads and airports, is insufficient or, if adequate, is either destroyed and/or poorly maintained, production costs rise or are prohibitive. As a result of this, production declines or stagnates—at best—with unemployment rate rising and vast numbers of unemployed young people tempted to join violent movements. Conflicts and tensions, in turn, further depress economic output and erode capital stock (see Blattman and Miguel, 2010, Brück and De Groot, 2013). In this context, without foreign aid, graduating out of fragility becomes a challenging task.

Armed conflict and social tensions have an even more damaging effect on domestic currencies. Fragile nations typically witness significant nominal exchange rate depreciation or see their currencies disappear altogether. As their economies stagnate or collapse, their tax bases also shrink, and taxing citizens and businesses becomes extremely challenging. Banking systems are also affected and can often collapse (see Addison et al., 2001, Naude et al., 2011). Growing fiscal deficits are therefore funded through monetary financing, which fuels inflation. Not surprisingly, countries that have experienced bouts of hyperinflation, which trigger partial or even full dollarization, are mostly fragile settings[4].

In this context, fragile settings face three options[5] (see also Appendix 15):

1) The first is to give up their own currency and adopt an international currency (i.e full formal dollarization). Adopting for a foreign currency—granted that it is a stable one—eliminates uncertainty about the value of money for transaction and saving purposes. This move is a

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[3] If the government cannot achieve macroeconomic stability, private sector individuals disengage from formal activities, and try to externalize their capital to safer countries. The effect of this capital flight is to further weaken macroeconomic stability, by weakening the currency and raising inflation further.

[4] In some countries, the phenomenon of a high parallel exchange rate arises, with an official rate accessible only to generally well-connected parties, and other agents forced to purchase FX at the parallel rate. When the parallel rate becomes high and persistent, they generate either hyperinflation or more often high level of dollarization. The result is that the domestic currency is marginalized if it does survive.

[5] Practitioners have emphasized the importance of fiscal discipline as a precondition to restore macroeconomic stability. Without a lid on fiscal dominance, macroeconomic instability cannot be avoided, and the currency cannot be stabilized.

strong commitment, and not easy to reverse, although not impossible.[6] Choosing an international and convertible currency reduces transaction costs and may also help attract capital flows. As having one's own currency is often a symbol of national prestige, this decision may be a tall order and is only undertaken under extreme cases. With no ability to collect seigniorage revenue, with business cycle potentially not synchronized with that of the main trading partner, and with increasingly tougher AML/CFT and other regulations (e.g. Know Your Customer—KYC--regulations), using foreign currency for transaction and saving purposes may become harder than in the past, especially when the informal sector accounts for a significant share of the economy. Further, this option precludes an independent monetary policy.

2) Another route is to go for a hard peg, whereby the domestic currency is anchored to a stable international currency, typically US dollar or Euro. An extreme form of a hard-peg is obviously the currency board, which can be established quickly and can support growth (see Hanke, 2002).[7] Unlike a dollarized regime, a currency board arrangement ensures that the central bank is immune from government interference, but captures some of the seigniorage revenues. Having a stable domestic currency delivers some payoffs, particularly in the form of improved confidence. Currency board arrangements have not been commonly used in fragile settings, in large part because they require a "starting capital" and because of the hard constraint they impose on the budget. In addition, in fragile environments, particularly those where there is conflict or a recovery from conflict, trade is typically minimal given that their economies have collapsed, and this is unlikely to change quickly—so exchange rate stability may not lead to a significant increase in trade, or said differently, exchange rate volatility is not in itself the main constraint to trade. Again, countries with currency board arrangement could not have independent monetary policy—except if they introduce capital controls. However, as one attempts to attract foreign capital, as it is the case in fragile environments, introducing capital controls— which are likely to be porous anyway—may send mixed signals.[89]

3) The remaining alternative is to adopt a floating/managed type of exchange rate regime. An advantage of this type of regime is that it does not require constituting large reserves. In

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[6] There are certain public goods, of which currency may be an example, that a small country cannot supply efficiently due to economies of scale or externalities. One way to overcome this problem is to use public goods produced by other countries, as when a small country adopts the currency of a larger one (Alesina and Barro 2002).

[7] The symbolic value of having a domestic currency should not be underestimated. In a post-conflict environment in particular, these symbols take an important role (e.g. name of currency, displays on them). With tensions still high between protagonists, finding a common ground on the currency can be interpreted as creating a joint future of cohabitation.

[8] In addition, the evidence implies that it is hard to limit cross-border private in-and out-flows, even when capital controls are in place. Therefore, the choice is often between targeting the nominal exchange rate or having flexibility on the nominal exchange rate and focusing on domestic monetary aggregates.

[9] In many examples, a fragile country adopts a nominal exchange rate anchor, even though the authorities cannot impose the fiscal discipline that is required by the exchange rate anchor. With the inability to impose fiscal discipline, demand for foreign exchanges (FX) increases at the existing exchange rate that cannot be met, in anticipation of future devaluation. If government refuses to devalue the currency, experience suggests that it often asks the central bank to restrict the demand for FX—it imposes priority list, distributes import licenses by allowing only certain companies to bid—and forcefully improves the supply of FX—by imposing surrender requirements on exporters for instance. The emergence of a parallel FX market, with a rising premiums, leads to rising domestic inflation and a de-anchoring from the nominal exchange rate, and a progressive appreciation of the real effective exchange rate.

theory, the exchange rate adjusts, reducing the impact on the real economy to exogenous shocks. Such an exchange rate regime allows for an independent monetary policy but requires something akin to the establishment of an (independent) central bank, which defines specific monetary policy objectives to be achieved through the use of some instruments (either direct or indirect ones) (see Bernanke et al., 1998). Having good statistics, analytical skills and tools to impact monetary aggregates is crucial.[10] This requires a level of sophistication of the central bank that is superior to the more fixed forms of currency regimes. This type of exchange rate arrangement has important prerequisites, including a level of sophistication of the central bank and a "credible monetary policy", which might not be a viable option for many fragile settings. Over the past decade, there has been a small shift from external exchange rate anchors towards domestic anchors in developing countries, though the former remains a predominant choice in fragile environments (see Adam et al., 2018). How does a country attempt to establish a credible monetary policy? In principle, a quick, well-executed monetary overhaul reduces uncertainty. It signals a clear break with the past, and the provision of this public good could be interpreted by stakeholders as an auspicious re-start. Once a country decides to implement a credible monetary policy, the ensuing question is on the objectives this policy should pursue and how to achieve these objectives. Credible monetary policy allows the delivery of a credible anchor for low and stable inflation and adjust to internal and external shocks. In general, monetary policy objectives include achieving price stability, promoting full employment, minimizing business cycle volatility, preventing financial crises, and stabilizing long-term interest rates and the real exchange rate (see Figure below).[11]

While some objectives are consistent with one another, this may not always be the case for others. Inflation in fragile settings is often linked to underlying fiscal imbalances. These imbalances can lead to an increase in inflation either by leading higher money growth, or by creating a balance of payment crisis. This strong relationship between government budget constraint and inflation has been stressed in the literature (e.g., Bruno and Fischer, 1990). In fragile environments, administrative prices are typically used by the authorities to contain inflation, often leading to shortages if they are largely below the market price, thus creating a form of inflation that is not properly captured by the statistics. Supply-side "cost-shocks"—movement in prices of particular goods, such as oil—that lead to a persistent change in aggregate price level is also a feature of fragile settings, as is the inertia

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[10] A look at history suggests that having an independent central bank focused on containing inflation is a recent phenomenon (e.g. Epstein, 2005). In the past, both in currently advanced economies and in developing countries, central banks had various targets. They financed government, supported growth through direct intervention and often financed the state.

[11] Financial stability is another important objective in the fragile environment. However, as already suggested by Addison et al. (2001), several problems typically arise: "First, central banks often remain weak and under-resourced. The consequence is haphazard and lenient supervision of the financial system, which is compounded by the frequently lax accounting and reporting standards of commercial banks. This hinders the application of international models of prudential supervision, such as the Basle Core Principles. Second, regulatory forbearance is common, reflecting both the technical weakness of central banks, but also the pressure of powerful interests—including war criminals—that straddle both state institutions and the financial sector. The consequences are leniency in the licensing of banks, insider-lending, excessive risk exposure, and a general failure to curb emergent bank crises. These in turn destabilize economies in recovery from war, and the fiscal burden of bank crises limits development and poverty spending—thereby threatening 'postconflict' reconstruction itself."

in inflationary expectations and adjustments (see Lougani and Swagel, 2001). As a result, the notion of the Phillips curve, which rests on the notion of tradeoff between unemployment and inflation, not only runs counter the simultaneous pursuit of the objective of taming inflation and that of reducing unemployment but is most likely not of much relevance in the fragile country context.[12]

In sum, in fragile environments one may assign these objectives equal weights or place greater emphasis on the objective of low inflation, as has been the case in many countries in recent years. While central banks in fragile and post-conflict settings place price stability as the primary objective of monetary policy, they follow, in many of the cases, other secondary objectives, including full employment and nominal exchange rate stability (see also Honohan and O'Connell, 1997). Table 1 presents a set of predominant monetary policy objectives found across fragile environments. As a caveat, it is worth highlighting that in many countries, monetary policy may not be "national", in the sense that the country is still split, and/or different currencies are circulating in different parts of the country. One could very well imagine that various regions of a same country may adopt different monetary policies and currencies because of regional proximity.

Table 1: Potential policy objectives in Fragile Settings	
Single objective	Price stability
	Exchange rate stability
Dual Objective	Price stability and exchange rate stability
	Price stability and full employment
	Exchange rate stability and full employment
Three or more objectives	Price stability, exchange rate stability and full employment

Source: Authors' compilation

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[12] In addition, the loss of relevance or flattening of the Philipps curve over the years in developed countries and the prevalence of an inverted Philipps curve in poorer countries, including in fragile countries, both validates in a way the notion that the objective of taming inflation—to a certain point—does not run counter the objective of reducing unemployment. Several studies on advanced economies suggest the loosening of the association between economic slack (or lack thereof) and price increases after the 1980s. Current inflation is found to be driven mostly by inflation expectations. These expectations have been firmly anchored thanks to increased credibility of central banks when it comes to their inflation commitments. Other arguments supporting the flattening of the Phillips curve include the changes in the composition of labor force (Daly et al., 2016) and other factors that result in downward rigidities in wages and prices (Ball and Mazumder, 2011). In low-income countries, which account for the majority of fragile settings, the argument has been that these countries face and inverted Philipps curve instead, largely because of the prominence of temporary supply-side shocks (Bleaney and Francisco, 2018). These shocks impart a positive association between inflation and unemployment.

B. Theoretical Background

Our point of departure is economic literature on the determinants of conflict and fragility. This literature is dominated by two schools of thought: the "opportunity" and the "grievance" models.

On the one hand, the "opportunity" framework is at the core of what is termed as "contest models", where the decision to embark or not in armed/violent activities is a classical rational choice (see Hirshleifer (1988; 1989), Garfinkel (1990), Skaperdas (1992), Collier and Hoeffler (2002, 2004b), Collier, Hoeffler and Rohner (2009)). Such a choice occurs in a setting where changes of public institutions can happen through means other than democratic ones, where property rights are neither clearly set nor properly enforced, and where terms of contracts are not always executed. In this environment, various forms of predation and extortion are substitutes to legal income-generating activities.

Economic agents therefore either join violent activities or engage in productive activities that earn incomes or likelihoods, all depending on the opportunity costs associated with these two options. The contest models posit that economic agents are likely to violently oppose established authorities if the net economic payoffs associated with this action outweigh its opportunity costs, which, in short, refers to what they would have earned in peaceful productive activities.

On the other hand, the second school of thought dubbed "grievance" model points to the impact of inequalities on fragility (Gurr and Moore, 1997; Stewart, 2008). The approach theorizes that it is not vertical inequalities, or inequalities among individuals, but rather horizontal ones, meaning between groups or regions, that matter. By fueling collective discontent, horizontal disparities result in some groups violently opposing established authorities, hence leading to instability.

Both theoretical constructs could also provide the basis for articulating nominal outcomes of monetary policy (inflation rate and nominal exchange rate) and real outcomes (employment and GDP growth) affect fragility[13].

Changes in such relative prices as inflation, nominal and real exchange rates have significant distributive effects and may result in widening economic and social disparities, all of which could turn into an important source of resentment and grievances. Conversely, relative price variations, say rising inflation and nominal and real depreciation, could dampen real wages and incomes, thus reducing the costs of fomenting armed insurrection.

Similarly, lackluster economic growth, employment generation and poverty reduction lower the opportunity costs of joining an uprising while at the same time reducing the costs of recruiting dissents. The combination of both raises opportunities for rebellion. On the other hand, the deterioration of economic and social conditions translates into rising inequalities and discontent, which, in turn, raises the prospects of conflict and instability.

III. Empirical strategy

A. Baseline Model

In keeping with the above theoretical discussions, our baseline model uncovers the potential relationship between fragility and final monetary policy outcomes. The model takes the following form:

$$Y_{jt} = \rho + \sum_{s=1}^{S} \sigma_s OM_{sjt} + \omega_{jt} \quad (1)$$

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[13] How does monetary transmission mechanism work in practice in fragile settings? The standard economic literature distinguishes between interest rate, exchange rate and asset price channels when analyzing the impact of monetary policy (Mishkin, 1996). Let's look at each in turn. The interest rate channel is less effective in fragile countries, due to the weakness of the elasticity of investment and consumption to interest rates. The wealth effect channel is also constrained, as ownership of capital is typically concentrated on a small share of the population, who do not necessarily change their consumption levels when their wealth changes (see Poterba, 2000). Even if individuals can buy stocks and properties, the high transaction costs often preclude the purchase/sale of assets to take advantage of the wealth effect. The exchange rate channel, which operates through aggregate demand and aggregate supply effects, is typically weak in fragile settings. In theory, reducing domestic interest rate causes an outflow of capital. This, under floating exchange rate regime, cutting interest rates causes a depreciation of domestic currency and a rise in net exports and output. In a country with a fully flexible exchange rate, this transmission of monetary impulses to the real economy is highest. However, in fragile environments, one has some form of fixed exchange rate regime (dollarized, currency board or fixed peg), negating the benefits of the effect. A look at the production mix of most fragile settings—specialization in some agricultural production or mining—suggests exports are inelastic. Related to that, exports are typically priced in Euros or dollars, even in countries with floating exchange rates, implying limited path-through of exchange rate fluctuations on growth. On the import side, in most fragile environments, one obtains basic commodities, from food to fuel, from abroad, and hence is unable to reduce consumption by much in case of devaluation (see Imam, 2008). Aggregate supply tends to be inelastic in fragile environments. To summarize, the monetary transmission mechanism is typically weak in fragile settings.

Y_{jt} represents a fragility variable in country j and in time t; OM_{jt} denotes the vector of monetary policy outcomes with $OM_{jt} = \begin{bmatrix} OM_{1jt} \\ \vdots \\ OM_{Sjt} \end{bmatrix}$; and S represents the number of monetary policy outcomes. ω_{jt} stands for the error term. ρ is the constant term and σ_s stands for the vector of coefficients associated with monetary policy outcomes.

The values of the coefficients measure the impact of monetary policy outcomes on the likelihood of conflict and fragility. The above relationship could go both ways, thus raising the possibility that the right-hand side variables are endogenous. If not addressed, this will result in biased estimates. In response, we revert to an instrumental variable (IV) estimation strategy.

B. Augmented Models

In keeping with the literature on the root causes of domestic warfare and fragility, we extend our baseline model to factor in other traditional "opportunity" and "grievance" variables[14]. In line with the discussions on the contribution of "opportunity" factors to fragility, our first augmented theoretical model is as follows:

$$Y_{jt} = \rho + \sum_{s=1}^{S} \sigma_s OM_{jt} + \sum_{u}^{U} \tau_u OP_{jt} + \sum_{x}^{X} \epsilon_v ACOV_{jt} + \omega'_{jt} \quad (2)$$

OP_{jt} stands for the vector of other "opportunity" variables.

$OP_{jt} = \begin{bmatrix} OP_{1jt} \\ \vdots \\ OP_{Ujt} \end{bmatrix}$ where U accounts for the total number of other "opportunity" variables, while

τ_u is the vector of corresponding coefficients on these variables.

$\tau_u = \begin{bmatrix} \tau_1 & \cdots & \tau_U \end{bmatrix}$ with U representing the total number of coefficients on "opportunity" variables.

$ACOV_{jt}$ represents the vector of other covariates.

$ACOV_{jt} = \begin{bmatrix} ACOV_{1jt} \\ \vdots \\ ACOV_{Xjt} \end{bmatrix}$ with X standing for the total number of other covariates.

ϵ_x is the vector of coefficients on other covariates.

$\epsilon_x = \begin{bmatrix} \epsilon_1 & \cdots & \epsilon_X \end{bmatrix}$ with X being the total number of the coefficients on covariates.

ω'_{jt} is the error term vector

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[14] This is a way to recognize that monetary policy outcomes alone do not explain the state or ability to reduce fragility.

When accounting for the "grievance" factors, we get the second specification of the augmented theoretical model. This model will be formulated as follows:

$$Y_{jt} = \rho + \sum_{s=1}^{S} \sigma_s OM_{jt} + \sum_{v}^{V} \varphi_v GR_{jt} + \sum_{x}^{X} \epsilon_v ACOV_{jt} + \omega'_{jt} \quad (3)$$

GR_{jt} is the vector of other "grievance" variables.

$GR_{jt} = \begin{bmatrix} GR_{1jt} \\ \vdots \\ GR_{Vjt} \end{bmatrix}$ with V representing the total number of other "grievance" variables.

φ_v denotes the vector of coefficients associated with other "grievance" variables.

$\varphi_v = [\varphi_1 \quad \cdots \quad \varphi_V]$ with V being the total number of the coefficients on other "grievance" variables.

ω'_{jt} is the error term vector.

Taking into account both the "grievance" and "opportunity" factors, we have the third specification as follows:

$$Y_{jt} = \rho + \sum_{s=1}^{S} \sigma_s OM_{jt} + \sum_{u}^{U} \tau_u OP_{jt} + \sum_{v}^{V} \varphi_v GR_{jt} + \sum_{x}^{X} \epsilon_v ACOV_{jt} + \omega'_{jt} \quad (4)$$

ω'_{jt} is the error term vector.

For the IV estimations, we build from the methodology developed by Soysa (2002), Goldsone et al. (2000) and Hegre et al. (2003), who consider trade openness a driver of peace and fragility. We also use this variable as an instrument to address potential endogeneity issues associated with the natural resource rent variable. We also use and test additional instruments, among which are the volume of exports, trade openness, international reserves, lagged variables of existing covariates or differences of existing covariates (inflation, unemployment, real GDP per capita, real GDP growth and ODA).

C. Data sources, definitions, and descriptive statistics

The dataset that we use in the empirical analysis consists of observations of variables displayed in Table 2 below. These observations are from 110 countries and cover the period from 1980 to 2018, all organised in a panel dataset.[15] This dataset presents some limitations, as there are

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[15] In addition, exchange rate volatility is based on the volatility of average monthly exchange rate data of the local currencies against the US Dollar, instead of daily values.

differences in the time coverage of each variable, particularly for some grievance variables that have been compiled in recent years and for variables that were observed in some countries that experienced major conflicts.

Our dependent variable is fragility, which is measured using the magnitude of episodes of violence (MEV). This variable assesses the magnitude of episodes of violence related to international violence and warfare, civil violence, civil warfare, and ethnic violence and warfare. The Center for Systemic Peace defines a major episode of violence as an event that results in at least 500 "directly-related" fatalities in which violence is both systematic and sustained (with a minimum of 100 directly related deaths per annum). The magnitude of episode of violence assesses the destructive impact of violence on the directly affected societies through an analysis of different factors such as: the state capabilities, area and scope of death and destruction, population displacement, or the episode duration. Although MEV covers only one aspect of fragility, its time and country coverages are relatively good. This implies that MEV may generate more robust empirical inference than constructed fragility indices, which have limited number of observations.

To check whether our MEV-based results hold up, we use the state fragility index (SFI) as an alternative measure of fragility. Compiled by the Centre for Systemic Peace, SFI assesses the capacity of states to manage conflict, formulate and implement public policy, and deliver essential services. The index captures the multidimensional nature of fragility. Its values range from 0 to 25, with 0 corresponding to a state where there is no fragility and 25 being when there is an extreme fragility.

The key explanatory variables of interest—inflation, exchange rate volatility and unemployment rate, and per capita GDP—are expected to be positively correlated with fragility.

Table 2: Expected Signs of Coefficients

Variable	Variable Description	Expected Signs of Coefficients
INFLATION	Inflation rate (%)	(+)
DEFLATOR	GDP deflator – Change (percentage points)	(+)
EXVOL	Exchange rate volatility	(+)
UR	Unemployment rate	(+)

Opportunity variables include: the high dependence on and the control over natural resources, which is proxied by the first difference of natural resource rent in percentage of GDP); total

average schooling years and secondary school enrolment (Blomberg et al., 2011; Collier et al., 2009; Collier and Hoeffler, 2004; Collier and al., 2005). We also include real GDP per capita growth as it can be related to forgone income (Collier and Hoeffler, 1998; Collier and Hoeffler, 2004), and it is also expected to have a negative impact on fragility.

Grievance variables encompass the following: democracy and political rights and social fragmentation (Baten and Mumme, 2013; Borooah and Paldam, 2006; Sambanis, 2001; Bertocchi and Guerzoni, 2012). Democracy and political rights are measured through by the polity index (Polity2) from the Center for Systemic Peace, while social fragmentation is proxied by the Historical Index of Ethnic Fractionalization (HIEF) compiled by Drazanova (2019). It is expected that more democratic regimes will exhibit less fragile features because these regimes avail themselves to peaceful negotiations and make the price of violent dissent high. By contrast a high ethnic fractionalization may fuel collective discontent, hence lead to increased fragility, because there are horizontal disparities among groups.

In addition to the opportunity and grievance variables, the models also account for other covariates that are potential drivers of fragility according to the existing literature. These variables include: (i) the population size (Baten and Mumme, 2013) as there is a high risk of conflict which could emerge from the existing competition; (ii) the colonial background as empirical studies find that the nature colonial systems have had a significant impact on countries after the de-colonization (Feeny and al., 2015; Bertocchi & Guerzoni, 2012); (iii) and the level of urbanization as it may be more challenging for government to provide public service when the population is concentrated in rural areas (World Bank, 2005; Collier and Hoeffler, 2004); and iv) the level of official development assistance (ODA) received by countries (Desai, 2020).

D. Stylized Facts

We first draw some stylized facts based on key variables of interest, in particular between a measure of fragility—magnitude of episodes of violence— and those of monetary policy outcomes (inflation, exchange rate volatility and unemployment). The purpose of this exercise is to spot potential regularities on the correlation among these variables. We generate five figures.

Average inflation seems to be highly correlated with violence– a proxy for fragility (see Figure 1 and Figure 3). Both average inflation and the violence variables have trended downwards since the early 1990s, although inflation in fragile settings has on average been higher than in non-fragile settings. While there is some indication that nominal exchange fluctuations have been higher in fragile environments than in non-fragile ones (Figure 4), the correlation between unemployment and fragility seems to be stronger starting from 1999 (Figure 5).

Stylized Facts: Figures 1-5

Figure 1: Trends in Average Inflation Rates and the Magnitude of Episodes of Violence, 1980-2018
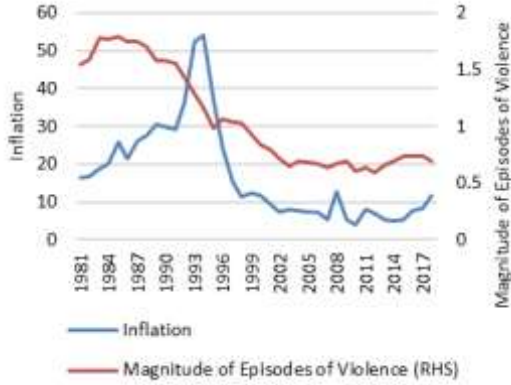
Figure 2: Trends in Average Inflation Rates in Fragile and Non-Fragile Settings, 1980-2018
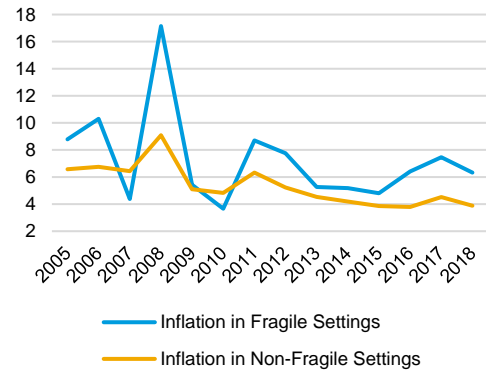
Figure 3: Scatter Plot: Inflation Rate and Magnitude of Episodes of Violence, 1980-2018
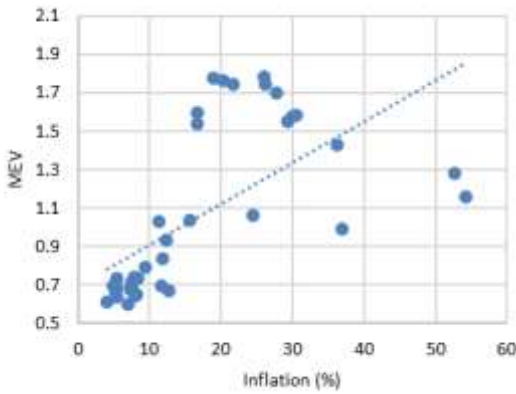
Figure 4: Scatter Plot: Exchange Rate Volatility and Magnitude of Episodes of Violence (MEV), 1980-2018
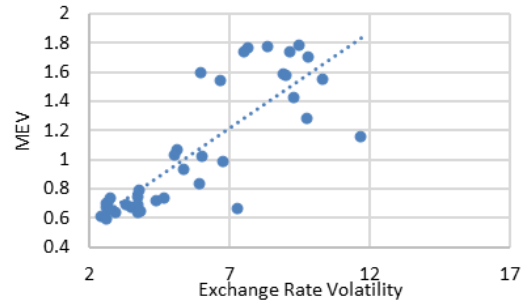
Figure 5: Trends in Average Unemployment Rates and the Magnitude of Episodes of Violence (MEV), 1992-2018
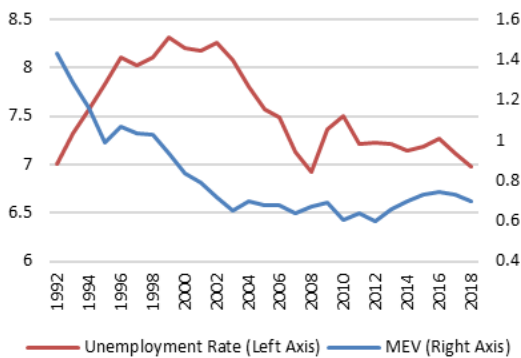
However, all the identified correlations should be interpreted with some caution, as panel causality tests show that there is a two-way causality between inflation and violence even though changes in both variables can be driven by other factors, including political and institutional ones (Dumitrescu and Hurlin, 2012). Thus, more violence can lead to higher inflation, and lower inflation can equally lead to lower violence, ceteris paribus.

IV. Results

A. Baseline

Our baseline empirical analysis entails regressing measures of fragility on a set of combinations of monetary policy outcome variables. As outlined in Table 1, this set of combinations mirrors predominant choices in the universe of monetary policy outcomes across fragile settings.

The below regressions are run by using Within Regression Estimator strategy for fixed-effect model. Based on the panel causality test, we found that the relationship between fragility and monetary policy outcomes go both ways. This raises the possibility that some of the right-hand side variables are endogenous. If not addressed, this two-direction causality will result in biased estimates. We therefore revert to an instrumental variable (IV) estimation strategy in estimating both random-effect and fixed-effect models.[16] For IV estimations, we use the first lag of independent variables as instruments. Results are presented in Table 3.

On the one hand, inflation and unemployment rates turn with positive and statistically significant coefficients in all combinations. These findings lend credence to the notion that the reducing price increases and cutting in the percentage of unemployed people could contribute to alleviating the state of fragility.

On the other hand, exchange rate volatility enters the regressions significantly only when considered alone or when combined with unemployment rate. However, it displays a non-statistically significant coefficient in a combination of three variables representing all 3 variables (columns 6 and 14).

The coefficient on inflation continues to appear with the theoretically expected sign in all regressions. However, unemployment rate now appears to be significantly correlated to fragility only in fixed-effect models. Exchange rate volatility continues to have a statistically significant coefficient only in combinations of monetary outcomes where inflation rate is

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[16] We report results for the "best" performing IV estimation of each model. Results from fixed-effects and random effects models are considered.

excluded. This result may be due to a strong correlation between exchange-rate volatility and inflation and/or the fact that the impact of exchange rate volatility on fragility unfolds through inflation. Such an explanation finds a strong resonance in the context of fragile environments, where—because of domestic supply constraints and significant dependence on imports, inflation is driven, to a large degree, by the prices of imported final products.

To check whether our results hold up, we then run similar regressions, using the alternative measure of fragility discussed earlier in the paper: the state fragility index (SFI). Tables 4 presents the results. These results remain unchanged and confirm earlier findings.

Having found the primacy of the price stability and the lesser contribution of employment and exchange rate stability in explaining fragility, the question is then to identify the combination of monetary policy outcomes that delivers the highest payoff in terms of averting conflict and advancing stability. We therefore compute aggregate scores for each hypothetical monetary policy outcomes mix. Scores are computed by using results from Tables 3-4 and results from random-effects models that have been tested. The determination of the most optimal model is based on (i) the minimization of the sum of squared residuals, and (ii) the maximization of the R-square. Based on each optimization measure, we assign the score of two for the most optimal model (combination), and the score of one for the second best.

The ranking of combination of monetary policy outcomes suggests that one outcome may not yield enough gains to reduce fragility. The combination of all three outcomes seems to generate the highest score. Yet, this score may have been over-estimated because of the strong correlation and multicollinearity between inflation rate and exchange rate volatility (see Appendix 1). Next are the combinations (inflation rate – exchange rate volatility) and (inflation rate – unemployment rate). Again, the combination (inflation rate – exchange rate volatility) is likely to be over-estimated because of the high correlation between those variables. In fact, controlling exchange rate volatility is likely to result in an improved management of the inflation rate, *ceteris paribus*; and, from an econometric point of view, using highly correlated independent variables to estimate coefficients result into biased estimated coefficients. Thus, this leaves us with the combination (inflation rate – unemployment rate) as the "optimal" set of monetary policy outcomes that reduces the most the state of fragility.

Table 3: Baseline Model – Fixed Effects and IV Models – Dependent Variable: MEV

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	IV Models						Fixed Effects Models						
Inflation	0.71***		0.59***		0.75***	0.69***	0.60***			0.50***	0.59***		0.51***
	(0.08)		(0.08)		(0.13)	(0.12)	(0.06)			(0.06)	(0.08)		(0.07)
Unemployment			0.06***	0.06***		0.06***			0.03***	0.06***		0.05***	0.06***
			(0.01)	(0.01)		(0.01)			(0.01)	(0.01)		(0.01)	(0.01)
Exchange rate volatility		0.03***		0.03***	0.00	-0.00		0.01***			0.00	0.01***	0.00
		(0.00)		(0.00)	(0.00)	(0.00)		(0.00)			(0.00)	(0.00)	(0.00)
Constant	0.86***	0.91***	0.28***	0.29***	0.87***	0.26***	0.89***	0.99***	0.65***	0.32***	0.89***	0.46***	0.31***
	(0.03)	(0.04)	(0.08)	(0.09)	(0.03)	(0.08)	(0.02)	(0.03)	(0.08)	(0.08)	(0.03)	(0.08)	(0.08)
Observations	3,633	3,768	2,870	2,876	3,565	2,812	3,743	3,879	2,992	2,892	3,677	2,894	2,837
Number of countries	109	109	108	108	109	108	109	109	109	108	109	108	108
R2	2.642	3.540	1.176	0.255	2.778	1.905	2.642	1.176	0.255	3.582	2.778	1.932	3.764
P-value model test	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4: Baseline Model –Fixed Effects and IV Models – Dependent Variable: SFI

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
			Fixed e	ffects mod	els					IV M	odels		
Inflation	0.98***			0.96***	0.95***		1.00***	1.56***		1.47***		1.79***	1.79***
	(0.22)			(0.22)	(0.26)		(0.26)	(0.35)		(0.35)		(0.44)	(0.44)
Unemployment			0.13***	0.09***		0.11***	0.10***			0.09***	0.09**		0.10***
			(0.03)	(0.03)		(0.03)	(0.03)			(0.03)	(0.03)		(0.03)
Exchange rate volatility		0.04***			0.01	0.04***	0.01		0.15***		0.15***	0.00	0.00
		(0.01)			(0.01)	(0.01)	(0.01)		(0.05)		(0.05)	(0.02)	(0.02)
Constant	11.09***	11.04***	10.09***	10.38***	11.04***	10.21***	10.29***	11.01***	10.66***	10.33***	9.98***	10.96***	10.18***
	(0.06)	(0.07)	(0.24)	(0.26)	(0.07)	(0.26)	(0.27)	(0.07)	(0.18)	(0.26)	(0.29)	(0.08)	(0.28)
Observations	1,160	1,172	1,224	1,160	1,132	1,172	1,132	1,157	1,171	1,157	1,171	1,128	1,128
Number of countries	50	50	51	50	50	50	50	50	50	50	50	50	50
R2	0.017	0.011	0.015	0.024	0.021	0.021	0.028	0.0003	0.002	0.040	0.017	0.0003	0.038
P-value model test	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
The IV models are strictly identified.

A. Augmented Models

We consider three specifications of augmented models: an opportunistic model (Equation 2), a grievance model (Equation 3), and a mix opportunity-grievance model (Equation 4).

Similar to the baseline model, several of the additional covariates are likely to be endogenous. We estimate fixed effect models with an IV strategy, but the results show that the models are not statistically significant. We therefore use an instrumental variable (IV) estimation strategy that is based on a two-stage-least square (2SLS) random-effects estimator. Building on a methodology developed by Soysa (2002), Goldsone et al. (2000) and Hegre et al. (2003), who consider trade openness as a driver of peace and fragility, we also use this variable as an instrument to address potential endogeneity issues associated with the natural resource rent variable. We also use and test additional instruments, among which are the volume of exports, trade openness, international reserves, lagged variables of existing covariates or differences of existing covariates (inflation, unemployment, real GDP per capita, real GDP growth and ODA). The validation of the different sets of instruments is based on the Sargan test of over-identification.

We perform detailed analyses that use MEV as the dependent variable. Table 5, Table 6 and Table 7 report results of the regressions based on from opportunity, grievance and merged models, respectively. All coefficients on control variables that are statistically significant exhibit the theoretically expected signs.

Unemployment rate appears to be a driver of fragility in the opportunity model (see Table 5). When real GDP growth rate—which could also be a proxy of changes in the real sector, is entered additively or as substitute to the variable "unemployment" in both grievance and the merged models, it is displays a statically significant negative coefficient or is insignificant.

Inflation rate turns to have a predictive content over fragility in the merged model. By contrast, inflation rate turns to have a predictive content over fragility in all three models: opportunity, grievance, and unifying models.[17]

We broadly find the size of human capital and ODA to be negatively correlated with fragility, while natural resource endowment, the population size and the relative size of rural population turn to be positively associated with the dependent variable.

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[17] Building on the empirical work of Hansen (1999), we wanted to check if there is inflation threshold level beyond which the nature of correlation between price stability and fragility changes but could because of data limitations.

Table 5: Opportunity Models with IV Estimators – Dependent Variable: MEV

VARIABLES	(1)	(2)	(3)	(4)	(5)
Inflation	0.35**	0.26	0.41**	0.26	0.91***
	(0.17)	(0.21)	(0.19)	(0.23)	(0.22)
Unemployment	0.05***	0.03**	0.04***	0.04***	0.07***
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Real GDP per capita growth	-1.29*	-2.60	0.06	0.70	-0.16
	(0.78)	(1.71)	(0.88)	(1.35)	(0.77)
Population size	0.76	0.53***	0.20*	0.53***	0.55***
	(0.52)	(0.09)	(0.11)	(0.09)	(0.13)
Mean years of schooling	-0.12**		-0.03		-0.00
	(0.05)		(0.03)		(0.03)
Natural resource rent	2.06***	2.23**	2.02***	1.55**	1.24**
	(0.64)	(0.97)	(0.64)	(0.67)	(0.58)
School enrolment		-0.75***		-0.70***	
		(0.12)		(0.13)	
Rural population			0.03***	0.01	0.03***
			(0.01)	(0.01)	(0.01)
ODA					0.02**
					(0.01)
Observations	2,064	1,384	2,044	1,375	1,963
Number of countries	93	89	93	89	92
Sargan test p-value	0.987	0.864	0.864	0.696	0.421
R2	0.2805	0.2213	0.2246	0.2473	0.2770
P-value model test	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Grievance Models with IV Estimators – Dependent Variable: MEV

VARIABLES	(1)	(2)	(3)	(4)	(5)
Inflation	0.44***	0.40***	0.35**	0.51***	0.38***
	(0.12)	(0.14)	(0.14)	(0.10)	(0.14)
Unemployment	0.02	0.00	0.01	0.04***	0.01
	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)
Real GDP per capita growth				-0.41	-2.80***
				(0.49)	(0.85)
ODA					0.01
					(0.01)
Population size	0.32***	0.23**	0.30***	0.20**	0.29***
	(0.09)	(0.09)	(0.09)	(0.08)	(0.09)
Ethnic fractionalization		0.93*	0.67	0.87*	0.49
		(0.56)	(0.57)	(0.46)	(0.54)
Rural population			0.02***	0.03***	0.02***
			(0.01)	(0.00)	(0.01)
polity2	-0.01	-0.02	-0.01		-0.02
	(0.01)	(0.01)	(0.01)		(0.01)
Constant	-4.59***	-3.57**	-5.80***	-4.86***	-5.21***
	(1.47)	(1.53)	(1.68)	(1.38)	(1.61)
Observations	1,305	1,001	1,001	2,160	947
Number of countries	50	47	47	99	47
Sargan test p-value	0.905	0.710	0.793	0.382	0.370
R2	0.2822	0.1944	0.1979	0.1470	0.1501
P-value model test	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7: Merged Grievance and Opportunity Models - Dependent Variable: MEV

VARIABLES	(1)	(2)	(3)	(4)	(5)
Inflation	0.39***	0.58*	0.37**	0.48***	0.46**
	(0.10)	(0.33)	(0.16)	(0.17)	(0.18)
Unemployment	0.02				
	(0.01)				
Real GDP growth		0.49	-1.23**	-1.19	
		(6.39)	(0.60)	(1.64)	
Population size	0.29***	0.36**	0.03	0.27*	0.26
	(0.09)	(0.16)	(0.31)	(0.15)	(0.21)
Mean years of schooling		-0.14***	-0.02		0.04
		(0.04)	(0.04)		(0.04)
Ethnic fractionalization		0.82	2.04	0.39	0.55
		(0.79)	(1.29)	(0.76)	(0.94)
polity2	-0.02**			0.01	-0.02*
	(0.01)			(0.02)	(0.01)
Rural population			0.05***	-0.00	0.03***
			(0.01)	(0.01)	(0.01)
School enrolment				-0.54**	
				(0.25)	
Natural resource rent	-0.08	3.05***	2.18**	-1.39	0.37
	(0.07)	(1.06)	(0.89)	(0.91)	(0.72)
Real GDP per capita growth					-2.66**
					(1.04)
ODA					0.03*
					(0.01)
Constant	-4.10***	-4.94*	-3.41	-1.79	-5.91
	(1.47)	(2.56)	(5.32)	(2.87)	(3.61)
Observations	1,244	1,690	1,692	651	746
Number of countries	50	87	87	37	38
Sargan test p-value	0.187	0.171	0.127	0.397	0.203
R2 (between)	20.94	22.42	8.883	25.33	9.310
R2 (within)	2.187	1.37e-05	0.216	1.731	8.813
R2 (overall)	16.24	3.624	3.918	8.630	8.451
P-value model test	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

B. Robustness Analysis

We perform a series of robustness checks to ensure that our results are not driven by: i) ways in which we measure some of the key right-hand side variables of interest, in particular inflation[18], ii) specific sub-periods of the timeframe covered by the study , iii) observations from sub-samples of the dataset, iv) the choice of econometric techniques, v) the inclusion of fiscal policy variable, and vi) different measurement of fragility, using standard data on conflict and violence from the Uppsala Conflict Data Programme.

Our empirical results so far rest on using changes of the consumer price index (CPI) as the measure of inflation. We run similar regressions as those performed earlier but using an alternative indicator: the growth rate of the GDP deflator. This deflator constitutes a broader measure of price changes in the economy (**Error! Reference source not found.**). In Appendix 5, columns (1)-(4) present results for the opportunity model, columns (5)-(8) those of grievance model, and the remaining columns pertain merged model.[19]

Running regressions based on GDP deflator generate results that are very much similar to those found earlier. Inflation—measured by the growth rate of GDP deflator—continues, in most cases, to be positively correlated with fragility. The same holds for unemployment rate in the opportunity and grievance models. Unemployment rate turns insignificant in the merged model when in the same equation as real GDP per capita growth, which is another proxy of dynamism of the real sector. Other control variables that are statistically significant at conventional level display theoretically expected signs.

Given that we observe a structural change in the magnitude of fragility around the year 1992 (Figure 1)[20], our next move is to assess whether this change in the trend drives our earlier empirical results. We split our samples into two—one that covers the period 1980-1992 and the other, the period 1993-2018—and run regressions on the corresponding two sub-samples. Results are reported in Appendix 6.

Our results remain unchanged irrespective of the sub-sample used in the empirical analysis. Inflation continues to be strongly correlated with fragility.[21] Since there are unemployment data points only for sub-period 1993-2018, results on the association between fragility and unemployment pertain to this period only and they support the tenet that lowering

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[18] We could not do the same for unemployment rate because of limited data availability.

[19] We correct an estimation bias that could emerge from high values of the growth rate of the GDP deflator (see Appendix 2 for summary statistics) by considering observations that have a growth rate of the GDP deflator below the 9th decile (D9 = 38 percent).

[20] This is confirmed by the time series of global average of MEV, which we computed. This series clearly shows a change in the trend in 1992.

[21] The introduction of grievance variables decreases significantly the number observations for the period 1980-1992, thus making robust statistical inference—based on grievance and merged models—impossible.

unemployment rate contributes positively to improving stability and cohesion. This finding holds up in a way when we introduce real GDP per capita growth: real sector variable that is highly correlated with a highly correlated. While the coefficient on unemployment rate turns statistically insignificant, that on real GDP per capita growth is significant and appears with the theoretically negative expected sign. The implication is that real-sector variables matter for fragility.

As the dollarization of the economy constrains the implementation of the monetary policy (Mecagni et al., 2015) and is a sign of macroeconomic fragility, we check whether a high level of dollarization affect our results. We therefore opt for the share of firms' dollar-denominated loans to the total loans as a measurement of the degree of dollarization of a given economy and we put the threshold at the first quartile (Q1 = 22.8 percent of total loans to firms are issued in US dollar). Beyond this breaking point, a country is considered highly dollarized, while below this point, an economy is seeing as been not dollarized.

Based on the above definition, we split our dataset into two sub-groups: i) countries that are dollarized, and ii) those that are not and perform econometric estimations on the two sub-samples and results are presented in Appendix 7. Inflation enters the regressions significantly only in the group of countries that are not dollarized, whereas unemployment rate displays statistically significant coefficients in both sub-samples. On the inflation results, two explanations stand out. First is the validation of the hypothesis that taming inflation is effectively and sustainably achieved only in when monetary policy is credible. Second is the existence of a threshold of dollarization beyond which inflation is not a driver of fragility.

The results on unemployment rate suggests that reducing the share of the population without work decrease the state of fragility regardless of whether an economy is highly dollarized or not. The results on other covariates are broadly consistent with those reported earlier.

The indicator of fragility is censored, as it ranges between specific lower and upper bounds. We account for this specific properly of the dependent variable by using Tobit censored model and check how the estimates based on this discrete model compare with earlier findings undergirded by continuous models. We use lagged variables to reduce potential endogeneity issues pertaining to reverse causality between contemporaneous variables and to the simultaneity of some economic behaviors, including the reverse impact of fragility (including violence) on monetary policy outcomes. Appendix 8, Appendix 9 and Appendix 10 set out the results.

The results are generally in keeping with those reported earlier. The coefficient associated with inflation rate is statistically significant and its sign is positive as posited in our analytical

framework. Similarly, unemployment rate turns with coefficients that are statistically significant and appear with the theoretically expected signs.

As inflation is driven by several sectors, and the monetary policy may not be effective to control all sources of inflationary pressures, we estimate a component of the inflation which is explained by the monetary policy. Specifically, we estimate a fixed-effects model where inflation is explained by the growth of the money supply. We estimate the predicted value of inflation and use this variable as an instrument in the IV models being tested throughout this paper (opportunity, grievance, and unifying). Results are reported in Appendix 11, and they are broadly consistent with our hypothesis on the impact of monetary policy outcomes on state fragility.

We test the robustness of our results by adding total government expenditure as a percentage of GDP to account for the potential role of the fiscal policy in reducing fragility - in a model that uses the component of inflation which is explained by monetary policy.

We consider two options: one with an exogenous fiscal variable and another with an endogenous fiscal variable. In the case where we posit that fiscal policy is endogenous, the first difference of government expenditure as a percentage of GDP variable is used as an instrument. While the coefficient on the fiscal variable is not significantly different from zero in the opportunity models (with more observations), our findings on inflation and unemployment remain broadly unchanged with both these two variables having a predictive content over fragility (Results reported in Appendix 12).

Finally, we also test our assumption by using standard data on conflict and violence from the Uppsala Conflict Data Program, and the results are consistent with our initial assumption. Specifically, the dependent variable that we attempt to explain is the number of fatalities from non-state violence and such analysis is similar to the ones performed by (Collier, 2000) and (Collier & Hoeffler, 2004b) who explain civil war and violence. In addition, we use the inflation component that is explained by the monetary policy as an instrument. Results are reported in Appendix 13. Overall, except for the grievance model, the results show that inflation does matter in the opportunity model, and the unifying model to some extent. In the unifying model, inflation is no longer a significant driver of violence when we include a proxy variable to assess the political regime (*polity2*). However, in the latter case, the sample size decreases significantly with a coverage of 37 countries from more than 86 countries in other models that do not include this variable.

V. Conclusion

Successfully emerging out of fragility is not a smooth ride. This transition is often subject to reversals. Conversation among international development practitioners on fragility and post-conflict therefore seems to be dominated by responses to immediate socio-economic needs and contribution of fiscal policy and place of inclusive institutions. This paper instead falls under the strand of the economic literature that focuses on longer-term issues such as those of building or rebuilding economic institutions, which have been less studied. In particular, we look into some aspects of monetary policy frameworks. Setting aside challenges of monetary policy transmission, we attempt to shed light on how the choice of the outcomes of monetary policy, which is an essential part of these frameworks, affects peace and internal cohesion.

We deep dive into the universe of the most prominent combinations of monetary policy outcomes across fragile settings and assess how these combinations statistically correlated with fragility. This preliminary exploratory analysis points to the combination (reduction of inflation and that of unemployment) as being the set that delivers the highest payoff in terms of reduction of fragility.

Building on the "opportunity" and "grievance" and "combination of both" models, we conduct further empirical investigation, taking account a potential two-way causality between fragility on the one hand and inflation and unemployment, on the other. Results from these models broadly confirm the above "winning" dual combination, with inflation as a primary desired outcome and unemployment rate as a secondary one. We also carry out another validation exercise by checking whether our results are driven by: i) ways in which we measure some of the key right-hand side variables of interest, in particular inflation , ii) specific sub-periods of the timeframe covered by the study , iii) observations from sub-samples of the dataset, iv) the choice of econometric techniques, v) the inclusion of fiscal policy variable, and vi) different measurement of fragility, using standard data on conflict and violence from the Uppsala Conflict Data Program. The earlier results hold up to all these robustness checks.

Overall, our results lend credence to the importance of paying attention to some aspects of monetary policy frameworks, in particular monetary outcomes, in a fragility context. The choice of modalities of these frameworks, in particular the outcomes of monetary policy, affects the ability in fragile settings to enter to path of peace and internal cohesion. In a fragility context, monetary policy matters the same way as fiscal policy does. Our results also validate the notion that macroeconomic stability encompasses both price stability (taming inflation) but also real stability (reduction of unemployment) (Lopes and al., 2017).

The recent trends have shown many advanced and emerging economies moving towards monetary frameworks that target one single price-stability variable— say inflation under the

inflation targeting regimes. Our findings suggest that such a single-objective approach would not always be appropriate in fragile settings. As many countries are embarking into reforming their monetary policy frameworks, they should balance nominal objectives (price stability) with real ones (reduction of unemployment). The impact of the monetary policy objectives on fragility will, however, depend on the effectiveness of the monetary policy transmission channels. Efforts to improve the effectiveness of these channels would be key in fragile environments.

Despite our conclusive findings, our paper turns the light only on prominent monetary policy frameworks across fragile environments and partially relies on the concept of fragility as defined by international financial institutions today—all because of limited data availability. We therefore see this paper as an initial step towards conducting further empirical research, discussing potential tensions between nominal and real objectives, and building on increasingly improved information from various stakeholders. While we attempt to address the issue of reverse causality by using instrumental variable estimates, our results could have some limitations because of potential persistent residual reverse causality effects. Along with improving the instrumental approach, further empirical research could also consider the use of new measures of the effectiveness of monetary policy framework.

Besides leveraging opportunities of improved data and definitions, other substantive questions also require further attention, including the coordination between fiscal and monetary policies in the context of fragility. Having found the primacy of maintaining relatively low inflation rates in reducing fragility, one question could be to identify the right set of policy instruments and intermediate monetary policy targets that enable central bankers in fragile settings to achieve price stability. This question equates to assessing monetary policy transmission in the context of fragility.

VI. References

Adam, C., Collier, P., & Davies, V. (2008). Post-conflict Monetary Reconstruction. *World Bank Economic Review, Vol.22*, pp.87-112.

Adam, C., A. Berg, R. Portillo and F. Unsal, 2018, "Monetary policy and central banking in sub-Saharan Africa," pp. 208-228 in P. Conti-Brown and R. Lastra (ed.), Research Handbook on Central Banking,(London: Edward Elgar Publishing).

Addison, T., Geda, A., Le Billon, P., & Murshed, S. M. (2001). Financial Reconstruction in Conflict and 'Post-Conflict' Economies. *World Institute for Development Economic Research Working Papers No.1*.

Alesina, A., & Barro, R. (2002). Currency Unions. *Quarterly Journal of Economics, Vol.107*, pp. 409-436.

Baten, J., & Mumme, C. (2013). Does inequality lead to civil wars? A global long-term study using anthropometric indicators (1816–1999). *European Journal of Political Economy, Vol. 32*, pp. 56-79.

Bernanke, B., T. Laubach, F. Mishkin, & A. Posen, 1998 "Inflation Targeting" (Princeton: Princeton University Press)

Besley, T & P. Collier, 2018, "Escaping the Fragility Trap" https://www.theigc.org/wp-content/uploads/2018/04/Escaping-the-fragility-trap.pdf

Besley, T and T. Persson, 2010, "State Capacity, Conflict, and Development" *Econometrica*, Vol. 78, pp.1-34

Bertocchi, G., & Guerzoni, A. (2012). Growth, history, or institutions: What explains state fragility in sub-Saharan Africa? *Journal of Peace Research, Vol.49*, pp.769-783.

Blattman, C., & Miguel, E. (2010). Civil War. *Journal of Economic Literature, Vol. 48*, pp.3-57.

Borooah, V. & M. Paldam, (2007) "Why is the world short of democracy?: A cross-country analysis of barriers to representative government," *European Journal of Political Economy*, Vol. 23(3), pp.582-604.

Bruno, Michael and Stanley Fischer, (1990), "Seigniorage, Operating Rules, and the High Inflation Trap" *Quarterly Journal of Economics*, Vol. 105, pp.353-374

Brück, T., & De Groot, O. (2013). The Economic Impact of Violent Conflict. *Defence and Peace Economics, Vol.24*, pp. 497-501.

Cilliers, J. and T. Sisk, 2013, "Prospects for Africa's 26 Fragile Countries" *African Futures Paper No. 8* (ISS Working Paper) http://dx.doi.org/10.2139/ssrn.2690235

Collier, P. (2000). Economic Causes of Civil Conflict and Thier Implications for Policy. World Bank Working Paper No. 28134. (Washington DC: World Bank).

Collier, P., & Hoeffler, A. (1998). On Economic Causes of Civil War. Oxford Economic Papers, Vol. 50(4), pp. 563-573.

Collier, P. & Hoeffler, A. (2002). "On the incidence of civil war in Africa". Journal of Conflict Resolution, Vol. 46, pp.13-28

Collier, P., & Hoeffler, A. (2004a). Aid, Policy and Growth in Post-Conflict Societies. European Economic Review, Vol. 48, pp.1125-45.

Collier, P., & Hoeffler, A. (2004b). Greed and Grievance in Civil War. Oxford Economic Papers, Vol.56, pp.563-595.

Collier, P. & A.Hoeffler & D. Rohner, 2009. Beyond greed and grievance: feasibility and civil war. Oxford Economic Papers, Vol. 61(1), pp. 1-27

Collier, P, A. Hoeffler & Mans Sonderbom, 2008. Post-Conflict Risks. Journal of Peace Research, Vol. 45, pp.461-478

Collier, P., Besley, T., & Khan, A. (2018). Escaping the Fragility Trap. Oxford: International Growth Centre.

Desai, H. (2020), "States of fragility and official development assistance", OECD Development Co-operation Working Papers, No. 76, OECD Publishing, Paris, https://doi.org/10.1787/44bbde61-en.

Dumitrescu E-I & Hurlin C (2012). Testing for Granger non-causality in heterogeneous panels. Economic Modelling, 29: 1450-1460.

Elbadawi, I., & Schmidt-Hebbel, K. (2008). The demand for Money in Peace and in Civil War. Unpublished Mimeo. Washington DC.

Epstein, G. (2005). Central Banks as Agents of Economic Development. Working Papers No. 104. University of Massachusetts at Amherst: Political Economy Research Institute.

Fearon, J & D. Laitin, (2003) "Ethnicity, Insurgency, and Civil War" American Political Science Review, Vol. 97, pp.75-90

Feeny, S., Posso, A., & Regan-Beasley, J. (2015). Handle with care: fragile states and the determinants of fragility. Applied Economics, Vol. 47(11), pp.1073-1085.

FitzGerald, E. V. (1997). Paying for War: Macroeconomic Stabilization in Poor Countries under Conflict Conditions. Oxford Development Studies, Vol. 25(1), pp. 43-65.

Garfinkel, M. 1990. "Arming as a strategic investment in a cooperative equilibrium". American Economic Review Vol. 80, pp.50-68.

Gurr, R, (1970) "Why Men Rebel" (Princeton: Princeton University Press).

Gurr, R.& W. Moore (1997) "Ethnopolitical rebellion: A cross-sectional analysis of the 1980s with risk assessment for the 1990s". American Journal of Political Science, Vol. 41, pp. 1079-1103.

Gutiérrez, F., D. Buitrago, A. González, and C. Lozano. 2011. "Measuring Poor State Performance: Problems, Perspectives and Paths Ahead. Crisis State Research Centre Report," London, London School of Economics and Political Science.

Homer-Dixon, T. (1994)), "Environmental scarcities and violent conflict: Evidence from cases". International Security, Vol. 19, pp.5-40

Hanke, S. H. (2002). On dollarization and currency boards: Error and deception. Journal of Policy Reform, Vol. 5(4), pp.203-222.

Hirshleifer, J., (1988) "The analytics of continuing conflict" Synthese Vol. 76, pp. 201-33

Hirshleifer, J. (1989). "Conflict and rent-seeking success functions: Ratio vs. difference models of relative success:. Public Choice Vol. 63, pp. 101–112

Honohan, P and S O'Connell (1997) 'Contrasting Monetary Regimes in Africa' IMF Working Paper 97/64.

Lopes, Carlos, Hamdok, Abdalla, and Elhiraika, Adam (2017), Macroeconomic Policy Framework for Africa's Structural Transformation, Palgrave Macmillan

Loungani, Prakash and Swagel, Phillip, Sources of Inflation in Developing Countries (2001). IMF Working Paper No. 198

Mecagni, M., & al. (2015). Dollarization in Sub-Saharan Africa. Experience and Lessons. Staff Papers. Washington DC: IMF.

McGuirk, E & M. Burke, 2017. "The Economic Origins of Conflict in Africa," HiCN Working Papers 242, (Yale: Households in Conflict Network)

Naudé, W., A.U. Santos-Paulino, and M. McGillivray. 2011. Fragile States: Causes, Costs, and Responses. Oxford: Oxford University Press.

Pinto, B. 1989. "Black Market Premiums, Exchange Rate Unification and Inflation in Sub-Saharan Africa." World Bank Economic Review, Vol. 3, pp.321–38.

Skaperdas, S. 1992 "Cooperation, Conflict, and Power in the Absence of Property Rights," American Economic Review, Vol. 82(4), pp.720-739

Stewart, F 2003. "Conflict and the Millennium Development Goals," Journal of Human Development and Capabilities, Vol. 4(3), pp.325-351.

World Bank, 2011, "World Development Report: Conflict, Security and Development" (World Bank: Washington DC)

VII. Appendix

Appendix 1: Correlation Matrix

	MEV	SFI	INFLATION	GDPCAP	D.GDPCAP	RENT	polity2	EFINDEX	EXVOL	POP	SCHYEAR	SCHENROLL	RURPOP	ODA	UR
MEV	1.00 (0.00)														
SFI	0.39 (0.00)	1.00 (0.00)													
INFLATION	0.14 (0.00)	0.02 (0.53)	1.00 (0.00)												
GDPCAP	-0.12 (0.00)	-0.52 (0.00)	-0.02 (0.34)	1.00 (0.00)											
D.GDPCAP	-0.09 (0.00)	-0.03 (0.36)	-0.21 (0.00)	0.04 (0.01)	1.00 (0.00)										
RENT	0.03 (0.12)	0.31 (0.00)	0.04 (0.02)	0.10 (0.00)	0.05 (0.00)	1.00 (0.00)									
polity2	-0.06 (0.00)	-0.32 (0.00)	-0.01 (0.74)	0.21 (0.00)	0.00 (0.93)	-0.26 (0.00)	1.00 (0.00)								
EFINDEX	0.12 (0.00)	0.40 (0.00)	0.02 (0.22)	-0.13 (0.00)	-0.05 (0.01)	0.16 (0.00)	0.09 (0.00)	1.00 (0.00)							
EXVOL	0.07 (0.00)	0.00 (0.89)	0.63 (0.00)	-0.01 (0.40)	-0.21 (0.00)	0.02 (0.18)	0.05 (0.05)	0.04 (0.03)	1.00 (0.00)						
POP	0.22 (0.00)	-0.01 (0.68)	-0.03 (0.07)	-0.01 (0.50)	0.11 (0.00)	-0.08 (0.00)	0.00 (0.94)	-0.10 (0.00)	-0.03 (0.06)	1.00 (0.00)					
SCHYEAR	-0.15 (0.00)	-0.61 (0.00)	-0.06 (0.00)	0.49 (0.00)	0.08 (0.00)	-0.15 (0.00)	0.10 (0.00)	-0.27 (0.00)	-0.05 (0.01)	0.03 (0.08)	1.00 (0.00)				
SCHENROLL	-0.12 (0.00)	-0.70 (0.00)	0.04 (0.08)	0.58 (0.00)	0.06 (0.00)	-0.17 (0.00)	0.26 (0.00)	-0.36 (0.00)	-0.02 (0.23)	0.04 (0.06)	0.82 (0.00)	1.00 (0.00)			

	MEV	SFI	INFLATION	GDPCAP	D.GDPCAP	RENT	polity2	EFINDEX	EXVOL	POP	SCHYEAR	SCHENROLL	RURPOP	ODA	UR
RURPOP	0.12 (0.00)	0.54 (0.00)	-0.06 (0.00)	-0.72 (0.00)	0.00 (0.85)	-0.01 (0.63)	-0.20 (0.00)	0.18 (0.00)	-0.01 (0.71)	0.05 (0.00)	-0.52 (0.00)	-0.67 (0.00)	1.00 (0.00)		
ODA	-0.07 (0.00)	0.49 (0.00)	0.04 (0.02)	-0.42 (0.00)	-0.06 (0.00)	0.10 (0.00)	-0.14 (0.00)	0.15 (0.00)	0.03 (0.08)	-0.16 (0.00)	-0.41 (0.00)	-0.49 (0.00)	0.39 (0.00)	1.00 (0.00)	
UR	-0.05 (0.00)	-0.27 (0.00)	-0.02 (0.21)	0.30 (0.00)	-0.03 (0.13)	0.01 (0.58)	0.05 (0.04)	-0.15 (0.00)	0.00 (0.94)	-0.10 (0.00)	0.29 (0.00)	0.26 (0.00)	-0.33 (0.00)	-0.16 (0.00)	1.00 (0.00)
Deflator	0.04 (0.01)	0.00 (0.99)	0.61 (0.00)	-0.02 (0.21)	-0.13 (0.00)	0.01 (0.47)	0.04 (0.14)	0.01 (0.47)	0.44 (0.00)	-0.01 (0.49)	-0.05 (0.00)	0.01 (0.63)	-0.03 (0.06)	0.01 (0.39)	-0.03 (0.12)

Note: P-values of significance tests of correlation coefficients are in brackets (below).

Appendix 2: Descriptive Statistics of Key Variables

Variables	Mean	Median	S.D.	Min	Max	# Observations
MEV	1.05	0.00	2.13	0.00	14.00	4,038
SFI	11.10	11.00	5.13	0.00	25.00	1,224
Inflation	16.61	7.10	41.41	-129.94	648.42	3,743
Real GDP per capita growth	1.52	2.05	6.85	-104.96	87.70	3,792
Natural resources rent	9.76	5.87	11.22	0.00	86.45	3,759
polity2	0.86	3.00	6.55	-10.00	10.00	1,893
EFINDEX	0.51	0.56	0.26	0.01	0.89	3,271
Exchange rate volatility	5.62	2.70	12.58	0.00	283.23	3,889
Population size (million)	45.09	9.94	158.66	0.23	1392.73	4,043
Mean years of schooling	5.45	5.20	3.09	0.00	12.80	3,030
School enrollment	51.88	49.19	29.18	2.48	132.82	2,683
Rural population	55.88	57.24	20.99	0.00	95.66	4,050
ODA (% of GNI)	6.80	3.74	9.23	-0.64	94.95	3,669
Unemployment rate	7.53	5.67	6.04	0.30	37.98	2,992
GDP Deflator (D)	-0.04	-0.02	1.06	-6.63	9.68	3,218

Appendix 3: Fisher Panel Unit Root Tests

Test Specifications		Statistics	Natural resource rent	Real GDP	Real GDP per capita	Net ODA	CPI	Exchange Rate Volatility
No trend	Level	Test statistic	584.93	35.02	109.44	504.16	1454.47	1999.68
		P-value	0.00	1.00	1.00	0.00	0.00	0.00
	First difference	Test statistic	3902.63	1416.12	2270.29	4630.17	1194.34	6935.60
		P-value	0.00	0.00	0.00	0.00	0.00	0.00
With trend	Level	Test statistic	475.63	267.52	538.11	689.55	734.33	1959.04
		P-value	0.00	0.02	0.00	0.00	0.00	0.00
	First difference	Test statistic	3320.35	1717.94	2098.62	4050.23	1059.23	6627.63
		P-value	0.00	0.00	0.00	0.00	0.00	0.00
No trend and demeaned	Level	Test statistic	463.06	51.75	258.27	508.29	983.88	1581.06
		P-value	0.00	1.00	0.04	0.00	0.00	0.00
	First difference	Test statistic	3515.96	512.91	2359.37	4363.95	727.62	6642.33
		P-value	0.00	0.00	0.00	0.00	0.00	0.00
Trend and demeaned	Level	Test statistic	396.92	49.77	421.40	478.92	703.26	1604.62
		P-value	0.00	1.00	0.00	0.00	0.00	0.00
	First difference	Test statistic	2963.47	1117.52	2040.71	3855.54	717.98	6210.76
		P-value	0.00	0.00	0.00	0.00	0.00	0.00

Appendix 4: Im-Pesaran-Shin Unit Root Tests

Test Specifications		Statistics	Natural resource rent	Real GDP	Real GDP per capita	Net ODA	CPI	Exchange Rate Volatility
No trend	Level	Test statistic	-6.33	31.91	10.34	-9.07	-11.45	-32.39
		P-value	0.00	1.00	1.00	0.00	0.00	0.00
	First difference	Test statistic	-38.20	-13.81	-27.43	-44.81	-25.61	-82.19
		P-value		0.00	0.00	0.00	0.00	0.00
With trend	Level	Test statistic	-4.62	11.96	1.15	-11.09	-14.86	-29.85
		P-value	0.00	1.00	0.87	0.00	0.00	0.00
	First difference	Test statistic	-32.78	-18.51	-22.92	-39.39	-24.66	-80.63
		P-value	0.00	0.00	0.00	0.00	0.00	0.00
No trend and demeaned	Level	Test statistic	-7.60	41.36	3.78		-42.79	-20.94
		P-value	0.00	1.00	1.00	0.00	0.00	0.00
	First difference	Test statistic	-34.51	-1.21	-28.41	-43.85	-34.23	-54.02
		P-value	0.00	0.11	0.00	0.00	0.00	0.00
Trend and demeaned	Level	Test statistic	-3.76	15.53	0.26	-9.69	-43.36	-21.67
		P-value	0.00	1.00	0.60	0.00	0.00	0.00
	First difference	Test statistic	-28.72	-15.71	-15.71	-38.25	-20.30	-46.90
		P-value	0.00	0.00	0.00	0.00	0.00	0.00

Appendix 5: Estimation of Grievance, Opportunity, and Unifying Models with the GDP Deflator (Δ) - Dependent Variable: MEV

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
GDP Deflator	0.00**	0.05**	0.00*	0.04*	0.00**	0.00***	0.00***	-0.01	0.00*	0.03*
	(0.00)	(0.02)	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.04)	(0.00)	(0.02)
Unemployment			0.06**	0.06*		0.12**			0.00	0.00
			(0.03)	(0.03)		(0.05)			(0.02)	(0.02)
Real GDP per capita growth	4.62	-2.91	3.28	-4.47			-2.17**	-3.70***	-2.55**	-4.22***
	(7.71)	(3.92)	(7.65)	(4.53)			(1.03)	(1.15)	(1.08)	(1.08)
Mean years of schooling	-0.04	-0.03	-0.03	-0.01			0.00	-0.04	0.01	0.02
	(0.04)	(0.05)	(0.04)	(0.05)			(0.04)	(0.07)	(0.04)	(0.05)
Rural population	0.02***	0.02***	0.02***	0.03***	0.04**	0.02***	0.03***	0.02**	0.03***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Population size	0.43***	0.45***	0.53***	0.56***	0.29***	0.36***	0.30**	0.34**	0.26*	0.28**
	(0.13)	(0.15)	(0.14)	(0.15)	(0.10)	(0.12)	(0.14)	(0.14)	(0.15)	(0.13)
Natural resource rent	0.13	-0.02	0.07	-0.04			0.52	1.12	0.47	0.46
	(0.26)	(0.15)	(0.23)	(0.14)			(0.68)	(0.83)	(0.66)	(0.55)
polity2					-0.00	-0.02	-0.03**	-0.03*	-0.03**	-0.02
					(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)
Ethnic fractionalization					0.51	0.96	0.24	0.35	0.37	0.58
					(0.76)	(0.63)	(0.71)	(0.67)	(0.76)	(0.67)
Observations	2,159	2,012	2,101	1,969	1,260	948	769	699	746	684
Number of countries	95	95	95	95	46	46	38	38	38	38
Sargan test p-value	0.0552	0.559	0.0993	0.534	0.312	0.611	0.417	0.0773	0.544	0.0663
R2	0.2549	0.2418	0.2904	0.2703	0.1586	0.1109	0.1274	0.1950	0.1085	0.1637
P-value model test	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 6: Estimations of Different Equations by Sub-Period – Dependent Variable: MEV

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
		1980-1992			1993-2018	
Inflation	0.89***	0.72***	0.41**	0.78***	0.48*	0.50*
	(0.33)	(0.28)	(0.17)	(0.22)	(0.28)	(0.27)
Unemployment				0.07***		-0.00
				(0.01)		(0.02)
Natural resource rent	0.17	0.16		1.20**	0.88	0.80
	(0.81)	(0.79)		(0.55)	(0.71)	(0.76)
Real GDP per capita growth	3.14	-0.30		-0.11	-3.40***	-3.30***
	(3.71)	(1.48)		(0.75)	(1.06)	(1.05)
School enrolment	0.49	0.35				
	(0.48)	(0.43)				
Rural population	0.05**	0.05**	0.04**	0.02***	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
Population size	0.58	0.59	0.40*	0.25**	0.35**	0.30**
	(0.43)	(0.37)	(0.21)	(0.11)	(0.15)	(0.14)
polity2			-0.01		-0.02*	-0.02*
			(0.02)		(0.01)	(0.01)
Ethnic fractionalization			0.49		0.34	0.34
			(1.30)		(0.70)	(0.72)
ODA				0.02	0.03*	0.02
				(0.01)	(0.01)	(0.01)
Mean years of schooling				0.01	0.00	0.01
				(0.03)	(0.04)	(0.05)
Constant	-12.84	-12.16*	-7.75**	-5.12***	-6.15**	-5.36**
	(7.82)	(6.82)	(3.68)	(1.98)	(2.52)	(2.56)
Observations	373	373	324	1,857	675	675
Number of countries	55	55	35	92	38	38
Sargan test p-value	0.884	0.839	0.0612	0.722	0.299	0.460
R2	0.1478	0.1495	0.09527	0.1961	0.00	0.00
P-value model test	0.00	0.00	0.02	0.00		

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 7: Estimations of Different Equations by Level of Dollarization – Dependent Variable: MEV

VARIABLES	(1)	(2)	(3)	(4)	(5)
	Above 22.8 percent			Below or equal to 22.8 percent	
Inflation	-0.02	0.32**	0.02	3.42**	8.53***	9.73***
	(0.50)	(0.14)	(0.22)	(1.52)	(1.39)	(1.73)
Real GDP per capita growth	-0.41		-3.68***	-5.73	2.09	1.49
	(0.95)		(0.80)	(5.77)	(3.29)	(3.36)
Unemployment	0.09*	0.01	0.02		0.13***	0.19***
	(0.05)	(0.06)	(0.04)		(0.03)	(0.05)
Mean years of schooling	-0.01		-0.02	-0.13		
	(0.04)		(0.03)	(0.08)		
Rural population	0.03***	0.02***	0.02**	-0.00	0.03	0.10
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.10)
Natural resource rent	0.65		-0.23	5.82	-2.08	-1.06
	(0.64)		(0.25)	(4.15)	(1.45)	(1.80)
Population size	0.61***	0.21**	0.25**	0.62***	0.76***	5.84*
	(0.17)	(0.11)	(0.12)	(0.12)	(0.26)	(3.40)
polity2		-0.01	-0.02*			
		(0.01)	(0.01)			
Ethnic fractionalization		0.34	0.28			
		(0.61)	(0.64)			
School enrolment					-0.65*	-2.04**
					(0.37)	(1.04)
Observations	1,734	883	858	253	150	150
Number of countries	93	47	47	41	35	35
Sargan test p-value	0.601	0.730	0.0700	0.336	0.0725	0.132
R2	0.2770	0.1070	0.07692	0.09629	01030	0.1916
P-value model test	0.00	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 8: Tobit Opportunity Models - Dependent Variable: MEV

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inflation	0.73***	0.76***			0.83***	0.70***		
	(0.20)	(0.21)			(0.21)	(0.24)		
Unemployment		0.18***				0.16***		
		(0.04)				(0.04)		
Inflation (t-1)			0.80***	0.75***			0.60***	0.40*
			(0.19)	(0.20)			(0.21)	(0.24)
Unemployment (t-1)				0.18***				0.16***
				(0.04)				(0.04)
Population size	0.78***	0.87***	0.79***	0.92***	1.66***	1.74***	1.69***	1.73***
	(0.26)	(0.27)	(0.26)	(0.26)	(0.28)	(0.29)	(0.29)	(0.29)
Mean years of schooling	-0.29***	-0.25***	-0.28***	-0.21***				
	(0.07)	(0.07)	(0.07)	(0.07)				
Rural population	0.08***	0.09***	0.09***	0.09***	0.10***	0.04*	0.10***	0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Natural resource rent	-0.05	-0.21	-0.01	-0.16	-0.62**	-0.81***	-0.63**	-0.73**
	(0.22)	(0.21)	(0.22)	(0.21)	(0.28)	(0.31)	(0.29)	(0.31)
Real GDP per capita growth	-6.09***	-6.21***	-5.85***	-6.80***	-8.30***	-7.21***	-8.85***	-7.04***
	(1.14)	(1.09)	(1.14)	(1.10)	(1.96)	(2.04)	(1.99)	(2.05)
School enrolment					-1.54***	-2.19***	-1.67***	-2.15***
					(0.33)	(0.35)	(0.34)	(0.35)
sigma_u	3.97***	4.09***	3.94***	3.90***	4.18***	3.89***	4.28***	3.78***
	(0.43)	(0.45)	(0.42)	(0.43)	(0.46)	(0.44)	(0.48)	(0.42)
sigma_e	2.55***	2.41***	2.54***	2.34***	2.77***	2.23***	2.75***	2.14***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.09)	(0.09)	(0.09)	(0.09)
Observations	2,751	2,669	2,732	2,570	2,340	1,741	2,263	1,669
Number of countries	106	106	105	105	107	106	106	105
Log likelihood	-2152	-2152	-2017	-2134	-1892	-2024	-1255	-1946

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 9: Tobit Grievance Models - Dependent Variable: MEV

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(6)	(7)
Inflation	1.45***	1.25***			1.57***	2.07***		
	(0.19)	(0.21)			(0.26)	(0.39)		
Unemployment		0.14***				0.00		
		(0.04)				(0.08)		
Inflation (t-1)			1.33***	1.17***			1.27***	1.47***
			(0.19)	(0.21)			(0.26)	(0.40)
Unemployment (t-1)				0.12***				-0.04
				(0.04)				(0.08)
Population size	0.33	0.39	0.40	0.56*	1.20***	1.14***	1.37***	1.11***
	(0.34)	(0.33)	(0.34)	(0.30)	(0.46)	(0.41)	(0.45)	(0.39)
Ethnic fractionalization	5.67**	5.96***	5.11**	5.09***	7.04**	5.50**	5.80**	4.27*
	(2.23)	(1.98)	(2.24)	(1.78)	(3.15)	(2.67)	(2.94)	(2.44)
Rural population	0.19***	0.13***	0.20***	0.12***	0.19***	0.11***	0.19***	0.09***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
polity2					-0.02	-0.12***	-0.03	-0.12***
					(0.04)	(0.04)	(0.04)	(0.04)
sigma_u	5.86***	4.76***	5.86***	4.26***	5.52***	4.48***	5.20***	4.04***
	(0.64)	(0.60)	(0.65)	(0.52)	(0.97)	(0.79)	(0.91)	(0.71)
sigma_e	2.99***	2.49***	2.96***	2.45***	2.93***	2.56***	2.90***	2.55***
	(0.08)	(0.08)	(0.08)	(0.09)	(0.13)	(0.13)	(0.13)	(0.14)
Observations	2,995	2,214	2,896	2,115	1,349	1,027	1,304	981
Number of countries	99	99	99	99	47	47	47	47
Log likelihood	-2809	-2809	-1794	-2688	-1672	-1117	-757.8	-1067

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 10: Tobit Grievance-Opportunity Unifying Models – Dependent Variable: MEV

VARIABLES	(1)	(3)	(5)	(7)	(8)
Inflation	0.65***		0.75***		
	(0.22)		(0.27)		
Unemployment	0.14***		0.15***		
	(0.04)		(0.04)		
Inflation (t-1)		0.70***		0.49*	1.15***
		(0.21)		(0.26)	(0.41)
Unemployment (t-1)		0.14***		0.16***	0.06
		(0.04)		(0.05)	(0.08)
Population size	0.72**	0.77***	1.62***	1.60***	1.54***
	(0.31)	(0.30)	(0.35)	(0.34)	(0.45)
Mean years of schooling	-0.16**	-0.12			
	(0.07)	(0.07)			
Natural resource rent	-0.31	-0.31	-0.75**	-0.71*	-0.31
	(0.23)	(0.24)	(0.35)	(0.36)	(0.44)
Ethnic fractionalization	4.40**	4.20**	2.85	2.37	0.61
	(1.80)	(1.71)	(1.93)	(1.86)	(2.37)
Real GDP per capita growth	-8.93***	-9.80***	-7.76***	-7.25***	-5.58*
	(1.29)	(1.32)	(2.33)	(2.39)	(3.08)
Rural population	0.11***	0.10***	0.05**	0.04	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
School enrolment			-2.23***	-2.23***	-2.21***
			(0.44)	(0.45)	(0.64)
polity2					-0.11**
					(0.05)
sigma_u	4.41***	4.16***	4.32***	4.13***	3.91***
	(0.53)	(0.49)	(0.53)	(0.51)	(0.71)
sigma_e	2.36***	2.30***	2.31***	2.25***	1.97***
	(0.08)	(0.08)	(0.10)	(0.11)	(0.14)
Observations	2,123	2,032	1,402	1,336	642
Number of countries	97	97	96	96	46
Log likelihood	-1636	-655.9	-612.5	-456.6	-950.5

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 11: Opportunity, Grievance and Unifying Models – Dependent Variable: MEV

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Natural resource rent	1.71***	1.96***	1.28**		0.40	-0.69	-0.10
	(0.58)	(0.66)	(0.53)		(0.55)	(0.52)	(0.50)
Inflation	-0.07	0.54**	0.63**	0.38**	0.47***	0.13	0.48***
	(0.23)	(0.23)	(0.26)	(0.17)	(0.14)	(0.21)	(0.14)
Real GDP per capita growth	-1.64**		-0.59		-2.49**	-3.99***	
	(0.76)		(0.79)		(0.99)	(1.01)	
Population size	0.63***	0.45***	0.54***	0.29***	0.31***	0.34***	0.31***
	(0.12)	(0.09)	(0.11)	(0.09)	(0.11)	(0.13)	(0.12)
Mean years of schooling	-0.16***	-0.04	-0.02		-0.01	0.02	0.00
	(0.03)	(0.03)	(0.03)		(0.04)	(0.05)	(0.04)
Unemployment	0.05***		0.07***	0.02		0.02	
	(0.01)		(0.01)	(0.02)		(0.02)	
Real GDP growth		-1.41**					-2.91***
		(0.69)					(0.95)
Rural population		0.02***	0.03***	0.02***	0.02***	0.03***	0.02***
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Ethnic fractionalization				0.81	0.11	0.37	0.24
				(0.56)	(0.58)	(0.65)	(0.58)
polity2				-0.03**	-0.03**	-0.03**	-0.03**
				(0.01)	(0.01)	(0.01)	(0.01)
Constant	-9.01***	-7.50***	-10.40***	-5.60***	-5.56***	-6.59***	-5.52***
	(2.00)	(1.50)	(1.85)	(1.64)	(1.97)	(2.39)	(2.05)
Observations	1,988	1,927	1,968	939	743	721	743
Number of countries	94	92	94	45	37	37	37
Sargan test p-value	0.324	0.0690	0.103	0.385	0.554	0.0716	0.0945
R2	0.284	0.304	0.283	0.157	0.185	0.193	0.192
p-value model test	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 12: Opportunity Models - Dependent Variable: MEV

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Natural resource rent	1.14	0.25	-0.19	1.60**	0.34	-0.08
	(0.78)	(0.68)	(0.61)	(0.80)	(0.71)	(0.61)
Inflation	1.34**	3.87***	4.38***	1.28**	4.11***	4.35***
	(0.59)	(0.97)	(0.97)	(0.63)	(1.03)	(0.97)
Real GDP per capita growth	-1.68		2.20	-2.89		2.36
	(2.28)		(1.58)	(2.38)		(1.61)
Population size	0.77**	0.63***	0.63***	0.73***	0.53***	0.66***
	(0.37)	(0.13)	(0.12)	(0.17)	(0.12)	(0.12)
School enrollment	-0.48***	-0.23	-0.23*	-0.45**	-0.32*	-0.41**
	(0.18)	(0.15)	(0.14)	(0.19)	(0.18)	(0.18)
Unemployment	0.11***		0.12***	0.09***		0.12***
	(0.02)		(0.02)	(0.02)		(0.02)
Government Expenditure (% GDP) = D,	0.00	0.01	0.02			
	(0.01)	(0.01)	(0.01)			
Real GDP growth		0.80			0.94	
		(1.54)			(1.63)	
Rural population		0.00	0.00		-0.00	0.01
		(0.01)	(0.01)		(0.01)	(0.01)
Government Expenditure (% GDP)				-0.01	0.02	0.03
				(0.02)	(0.03)	(0.02)
Constant	-10.92*	-9.02***	-10.08***	-10.14***	-7.58***	-10.94***
	(5.65)	(2.16)	(2.10)	(2.67)	(2.19)	(2.18)
Observations	965	896	960	965	896	960
Number of countries	85	83	85	85	83	85
Sargan test p-value	0.994	0.502	0.948	0.591	0.821	0.920
R2_between	0.224	0.284	0.209	0.238	0.259	0.171
p-value model test	0.000	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Columns (1)-(3) present results in the case of an exogenous fiscal variable, and columns (4)-(6) present results for an endogenous fiscal variable. The results for the grievance model are not reported because of the narrow sample and the number of covariates.

Appendix 13: Opportunity, Grievance and Unifying Models – Dependent Variable: Number of Fatalities

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Natural resource rent	-0.82	-0.77	-0.94	4.83**		-0.04	-0.02	0.02
	(0.68)	(0.68)	(0.72)	(2.26)		(0.09)	(0.09)	(0.12)
Inflation	0.84***	0.88***	0.77***	1.65***	-0.11	0.30**	0.37**	-0.16
	(0.27)	(0.28)	(0.27)	(0.50)	(0.20)	(0.14)	(0.15)	(0.26)
Real GDP per capita growth	2.68***	2.54***		3.92		0.53	0.32	-0.70
	(0.88)	(0.87)		(3.04)		(0.71)	(0.70)	(1.26)
Population size	0.46***	-0.10	0.55	0.45***	0.40***	0.41***	0.48***	0.58***
	(0.09)	(0.30)	(0.36)	(0.11)	(0.11)	(0.09)	(0.10)	(0.12)
Mean years of schooling	-0.03	-0.09**	0.06	-0.09**		-0.01	-0.02	0.07
	(0.03)	(0.04)	(0.05)	(0.04)		(0.03)	(0.03)	(0.05)
Unemployment	0.06***	0.08***		0.02	0.06		0.05***	0.07***
	(0.01)	(0.02)		(0.02)	(0.04)		(0.01)	(0.02)
Real GDP growth			1.10					
			(0.75)					
Rural population			0.03**	-0.00	0.01*	0.00	0.01	0.02**
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Ethnic fractionalization					1.62***	1.09**	1.18**	1.22**
					(0.55)	(0.46)	(0.47)	(0.60)
polity2					0.03			0.00
					(0.03)			(0.03)
Constant	-7.24***	1.07	-10.23*	-6.51***	-7.95***	-6.82***	-8.63***	-11.49***
	(1.41)	(4.77)	(6.14)	(1.79)	(2.24)	(1.56)	(1.65)	(2.14)
Observations	1,988	1,988	1,927	1,969	939	1,607	1,557	720
Number of countries	94	94	92	99	45	86	86	37
Sargan test p-value	0.890	0.934	0.180	0.269	0.674	0.152	0.102	0.378
R2	0.174	0.0401	0.168	0.202	0.386	0.302	0.299	0.407
p-value model test	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Appendix 14: Data sources

Variable	Variable Description	Data Sources
MEV	Magnitude of episodes of violence	Center for Systemic Peace
SFI	State Fragility Index	Center for Systemic Peace
INFLATION	Inflation rate (%)	World Development Indicators (WDI) database
DEFLATOR	GDP deflator – Change (percentage points)	World Development Indicators (WDI) database
EXVOL	Exchange rate volatility	International Financial Statistics (IFS) database
UR	Unemployment rate	World Development Indicators (WDI) database
RENT	Total natural resource rent expressed in percentage of GDP	World Development Indicators (WDI) database
POP	Total population	World Development Indicators (WDI) database
SCHYEAR	Total mean years of schooling (years)	UNDP
SHENROLL	School enrolment, secondary (% gross)	World Development Indicators (WDI) database
EFINDEX	Ethnic fractionalization index	Drazanova, Lenka (2019)
RURPOP	Rural population (% of total population)	World Development Indicators (WDI) database
GDPCAP	Real GDP per capita growth	World Development Indicators (WDI) database
polity2	polity index – adjusted variable	Center for Systemic Peace

Note: The exchange rate volatility is computed as the annual standard deviation of monthly nominal exchange rate divided by the monthly average of nominal exchange rate. It is basically a coefficient of variation. Data on exchange rates are extracted from the IFS, and it refers to the amount of local currency against US$ 1.

Appendix 15: Monetary policy framework, 2019

Exchange rate arrangement	Exchange rate anchor				Monetary aggregate target	Inflation-targeting framework	Other[1]
	US dollar	Euro	Composite	Other			
No separate legal tender	Timor-Leste	Kosovo Montenegro					
Currency board	Djibouti	Bosnia and Herzegovina					
Conventional peg	Eritrea Iraq	Comoros, Central African Rep., Congo, Rep, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Cameroon, Chad, Gabon, Mali, Equatorial Guinea, Niger Togo	Libya	Nepal			Solomon Islands[4]
Stabilized arrangement	Lebanon	North Macedonia			Democratic Rep. of the Congo[5] Guinea[5] Malawi[5] Nigeria[5] Yemen[5]	Armenia[5,9] Guatemala[5,10]	Kyrgyz Rep.[5,9] Sudan[5] Tajikistan[5,7,10]
Crawling peg	Honduras Nicaragua						
Crawl-like arrangement	Liberia (7/18)				Burundi[5] Papua New Guinea[5]	Dominican Republic[5]	Haiti[5] Lao P.D.R Mauritania[5] South Sudan[5,9] Uzbekistan[5,7,10]
Pegged exchange rate within horizontal bands							
Other managed arrangement	Cambodia		Syria		Afghanistan Myanmar Sierra Leone The Gambia		Venezuela

Floating					Belarus Madagascar Zimbabwe	Albania	Mozambique[7] Zambia
Free floating							Somalia[11]

Source: AREAER database.

Note: If the member country's de facto exchange rate arrangement has been reclassified during the reporting period, the date of change is indicated in parentheses (month, year). CEMAC = Central African Economic and Monetary Community; ECCU = Eastern Caribbean Currency Union; EMU = European Economic and Monetary Union; WAEMU = West African Economic and Monetary Union.

[1] Includes countries that have no explicitly stated nominal anchor, but rather monitor various indicators in conducting monetary policy.

[2] The member participates in the European Exchange Rate Merchanism (ERM II).

[3] Within the framework of an exchange rate fixed to a currency composite, the Bank Al-Maghrib adopted a monetary policy framework in 2006 based on various inflation indicators, with the orvernight interest rate as its operational target to pursue its main objective of price stability.

[4] The country maintains a de facto exchange rate anchor to a composite. [5] The country maintains a de facto exchange rate anchor to the US dollar. [6] The country maintains a de facto exchange rate anchor to the euro.

[7] The central bank is in transition toward inflation targeting.

[8] The authorities reported that their monetary policy framework is referred to as inflation targeting "lite."

[9] The exchange rate arrangement or monetary policy framework was reclassified retroactively, overriding a previously published classification.

[10] The exchange rate arrangement was reclassified twice during this reporting period.

[11] Currently the Central Bank of Somalia does not have a monetary policy framework.

Appendix 16: Descriptive Statistics of Key Variables – World Bank Classification of Fragile Countries (2005-2018)

Variables	Mean	Median	S.D.	Min	Max	# Observations
MEV	1.0	0.0	1.8	0.0	6.0	495
SFI	13.7	14.0	4.7	3.0	22.0	198
Inflation	0.1	0.1	0.1	-1.3	0.9	488
D.GDP	0.0	0.0	0.1	-0.5	0.2	487
GDPCAP	1974.0	1199.8	2112.9	210.8	9675.4	488
Real GDP per capita growth	0.0	0.0	0.1	-0.5	0.2	487
Natural resources rent	15.4	12.1	14.2	0.0	63.9	446
D.RENT	0.0	0.0	0.3	-2.3	2.3	445
polity2	0.2	2.0	6.0	-9.0	9.0	198
EFINDEX	0.6	0.7	0.3	0.1	0.9	292
Exchange rate volatility	4.2	2.2	15.7	0.0	283.2	477
Population size (million)	18.8	9.5	29.6	0.5	195.9	488
Mean years of schooling	5.1	4.6	2.3	1.5	12.5	484
School enrollment	49.6	45.6	21.1	13.0	111.9	237
Rural population	54.1	59.2	22.7	0.0	90.6	495
ODA	9.1	5.5	11.6	-0.5	92.1	477
Unemployment rate	6.2	4.6	5.0	0.4	20.5	484
GDP Deflator (D)	0.0	0.0	1.2	-5.8	5.2	381

Appendix 17: Descriptive Statistics of Key Variables – World Bank Classification of Non-Fragile Countries (2005-2018)

Variables	Mean	Median	S.D.	Min	Max	# Observations
MEV	0.5	0.0	1.4	0.0	7.0	1026
SFI	8.8	9.0	4.2	0.0	21.0	516
Inflation	0.1	0.1	0.2	-0.3	6.5	998
D.GDP	0.0	0.0	0.1	-1.0	0.8	1016
GDPCAP	4172.9	3224.0	3482.9	233.9	20533.0	1018
Real GDP per capita growth	0.0	0.0	0.1	-1.0	0.8	1016
Natural resources rent	9.7	5.2	11.6	0.1	68.8	945
D.RENT	0.0	0.0	0.3	-1.8	4.0	941
polity2	3.3	6.0	6.0	-9.0	10.0	516
EFINDEX	0.5	0.5	0.2	0.0	0.9	612
Exchange rate volatility	3.2	2.2	4.4	0.0	63.2	997
Population (million)	67.9	14.5	212.4	0.5	1392.7	1026
Mean years of schooling	7.2	7.4	2.8	0.0	12.8	998
School enrollment	72.4	81.0	26.2	9.6	132.8	743
Rural population	48.2	46.2	19.8	8.1	84.9	1026
ODA	3.2	1.5	4.2	-0.3	27.5	986
Unemployment rate	7.7	5.9	5.8	0.3	30.8	1026
GDP Deflator (D)	0.0	0.0	0.9	-4.3	3.7	920

PUBLICATIONS