REGULAR ARTICLE

WILEY

Fragility exposure index: Concepts, measurement, and application

Ghassan Baliki[1,2] 🆔 | Tilman Brück[1,2,3] 🆔 |
Neil T. N. Ferguson[2] 🆔 | Sindu Workneh Kebede[2] 🆔

[1]Economic Development and Food Security Research Group, Leibniz Institute of Vegetable and Ornamental Crops, Großbeeren, Germany

[2]ISDC - International Security and Development Center, Berlin, Germany

[3]Natural Resources Institute, University of Greenwich, Chatham Maritime, UK

Correspondence
Tilman Brück, Economic Development and Food Security Research Group, Leibniz Institute of Vegetable and Ornamental Crops, Theodor-Echtermeyer-Str. 1, 14979 Großbeeren, Germany.
Email: brueck@igzev.de; brueck@igzev.de

Abstract

Definitions of fragility are focused at the level of the state, but this should not be considered to suggest that individuals with heterogeneous endowments experience a state of fragility in the same way. Nor does it suggest that all subregions of a fragile country exist in this state. In turn, experience of fragility varies not just at national level but also between districts and between individuals. To test this idea, we develop a fragility exposure module, which was inserted into the standard household survey. We consider three components of fragility: human security, economic inclusion, and social cohesion. We index data collected from a survey in Kenya. We show that experience of fragility in Kenya is in the midrange for most individuals, with notable heterogeneities. Those living in Nairobi experience higher levels of fragility than those in other areas. Young people experience higher levels of fragility than older individuals. We find no evidence of overall differences between men and women. These findings demonstrate the importance of capturing the experience of fragility at the individual level. More specifically, they also provide an important base to understanding which groups would benefit most from pro-stability interventions and for testing the performance of such interventions.

1 | INTRODUCTION AND BACKGROUND

In the past two decades, a growing literature has defined the adverse role of state failure on economic growth and development (Acemoglu & Robinson, 2013). While it is understood that institutions are important, there is no real consensus on their role in fostering development (North, 2007). On the one hand, weak institutions are considered a hindrance to economic performance (Acemoglu et al., 2005). On the other hand, poor economic performance often contributes to a state's designation as "fragile." While significant debate surrounds a precise definition of fragility, key in most definitions is a state-centered approach. In contrast, we will discuss and derive a view of fragility that is more people centric, emphasizing the weak performance of both formal state and informal civil society institutions to protect, include—socially and economically—and unite the people who live in a given place.

Countries that experience fragility are less likely to have made progress toward the millennium development goals (Harttgen & Klasen, 2013), show slower trajectories toward long-term peace and development (Cilliers & Sisk, 2013), and are more susceptible to economic crisis (Allen & Giovannetti, 2009). The presence of fragility complicates the functioning of development programming (Ahmadzai & Paracha, 2016) and causes poorer health and food insecurity than in more stable developing countries (Graves et al., 2015; Pingali et al., 2005). At the individual level, those in fragile countries suffer a range of adversities in standard human development indicators, as well as encounter the well-known costs that the (risk of) conflict brings (Blattman & Miguel, 2010).

At the same time, not everyone in fragile countries has the same endowments. Like poverty, which is widespread, fragility is pervasive but not universal. Just as they do in nonfragile states, individuals with different endowments in fragile countries will rely, differently, on services the government could provide. Even violence is experienced—at least to some degree—at the individual level, although with structural predictors, such as gender and socioeconomic status (Brück et al., 2016). In turn, different endowments likely determine the extent to which an individual experiences fragility. Similarly, subnational regions with different average endowments likely face life under fragility differently. In turn, some individuals or groups of individuals will have endowments that allow them to better mitigate the adverse effects of exposure to fragility than others.

In this article, we seek to explore this rather simple idea. In particular, we set out to capture whether some groups in the societies of a fragile country experience that fragility differently or if they show differences in the domains of fragility by which they are impacted. This requires us to define and understand how individuals experience life in a fragile state and, in turn, to collect bespoke microlevel survey data on these experiences. Based on a working definition of fragility that captures economic inclusion, social cohesion, and human security, we develop a "fragility exposure module" (FEM), which contains an array of indicators linked to each of these domains. The FEM was inserted in the HORTINLEA survey, a panel survey in rural Kenya (Kebede & Bokelmann, 2017). Using typical multidimensional indexing techniques, we aggregate responses

to the FEM into a fragility exposure index (FEI) to capture how individuals experience life under fragility.

Kenya is a logical choice for such an analysis, as it has frequently appeared in various fragility lists. In recent times, it has also spent periods of time considered as not fragile on at least some of these lists. Further, there is significant internal geographic variations in fragility and the domains of fragility that are relevant. For example, in areas close to the border with Somalia, human security is likely to be more relevant than in other parts of the country. Further, the country exhibits significant interpersonal and interregional heterogeneities in individual socioeconomic and demographic indicators, introducing the necessary variation for the research.

We use responses to the survey to compare the outcomes across key regional and demographic groupings in Kenya. The results from these comparisons show notable variations in exposure to fragility across geographic regions. Individuals living in Nairobi experience a higher level of fragility than those elsewhere. Individuals in young and single households are also more exposed. Older individuals, and married couples, are shown to have stronger recourse to informal networks and informal institutions. In the absence of strong, formal institutions, these go some way to mediating the adversities associated with fragility.

In combination, these results support the idea that fragility manifests itself in different ways across subnational regions and at the individual level, even if these microlevel experiences are not the root causes of fragility. In addition to making an important conceptual point in and of itself, this work presents baseline evidence of an important and valuable tool in understanding fragility and capturing how individuals experience it. Taken by themselves, these results provide new understanding on how programming aiming to mitigate or eliminate the worst impacts of fragility might be targeted. The FEI—both in the specific form presented here and in the more generic idea of such a module—in turn provides an opportunity to evaluate both the success of such targeting and the success of the interventions themselves.

The rest of this paper is structured as follows. Section 2 provides a concise literature review. Section 3 describes in detail our approach, underscoring the definitions used, the FEI, and the survey module of fragility exposure. Section 4 presents the results from the case study in Kenya. Section 5 provides the conclusions and outlines possible future work.

2 | STATUS QUO

Since the mid-1990s, a large body of literature has developed on state collapse and failure (Anderson et al., 2007; Binzel & Brück, 2009; Francois & Sud, 2006; Ghani & Lockhart, 2008; Goldstone et al., 2004; IEG, 2006; Justino et al., 2016; Milliken, 2003; Zartman, 1995). Since then, several terms have been used to attempt to describe the phenomenon,[1] with thought seemingly coalescing around "fragile states" and "fragility" in recent years. Despite the duration of thought on the matter, however, a single, unitary definition of what determines "fragility" remains elusive. Commonalities in thinking, however, do exist. Typically, definitions are state centered, likely due to the term in literature on state collapse (Dibeh, 2008; Kahn, 2004; Picciotto et al., 2005). Characterizations of fragility, too, typically follow this logic, with an interest in state-level indicators like legitimacy, effectiveness, capacity to impose the Weberian monopoly, and provision of public goods (Corral et al., 2020; Heydemann, 2018; Ziaja et al., 2019).

These aggregate-level indicators underpin major empirical efforts to measure fragility objectively. The Fragile States Index (FSI)—published by the Fund for Peace—for example, is composed of 12 state-level indicators that can be grouped into three distinguishable domains:

political and military, economic, and social. The Political Instability Taskforce focuses on a variety of societal, demographic, economic, and political factors that influence the likelihood of state failure (Goldstone et al., 2005). However, while the cause of these phenomena may well be at the state level, it is less obvious that individuals with heterogeneous endowments should experience some given level of fragility in the same way. For example, members of dominant ethnic groups likely experience economic exclusion differently than members of minorities; richer individuals, who rely less heavily on them, will experience deterioration in public services differently than those who rely on them most heavily.

Some of the domains in which fragility could have impacts might well move together (McKay & Thorbecke, 2019). For example, individuals who lack strong social ties might, also, be more vulnerable to violence. Those who are excluded from normal socioeconomic activities might, consequently, feel less safe. Indeed, such indicators might move together as a result of some other (omitted) process. Individuals who lack strong social ties and do not perceive themselves to be vulnerable to violence have different—and lower—experience of fragility than individuals who lack strong social ties and perceive themselves to be vulnerable to violence. This suggests the need to index the domains together, rather than monitoring them separately. Such an approach allows us to understand that some domains might move together, without imposing that they must do so for all individuals.

Stemming from this is that, despite the significant development of thought on what constitutes a fragile nation, and on how to comparatively measure fragility in a replicable, cross-national manner, there is a paucity of knowledge on how individuals actually experience life in fragile countries. How does fragility influence people's lives and behavior? How do they cope with it? And how do their lives differ from those of similar individuals in nonfragile countries? How do exogenous characteristics and endogenous economic situations influence these lives? And, ultimately, what can help individuals to overcome the adversities they experience as a consequence of fragility?

The FEM and FEI we develop in this article are designed to provide first insights into these gaps by collecting and indexing information on how individuals are exposed to the failures associated with fragility and on how exposure varies between individuals and groups. By understanding whether different individuals and definable socioeconomic groups experience state failures in different ways, we will provide important information on how aggregate failures transmit themselves differently to the populace. In turn, when collected within nationally representative panel household surveys, they afford the opportunity to understand who is most harmed by fragility and how this exposure is evolving over time. When collected as components of programmatic data, they provide additional opportunity to evaluate both the targeting and impact of interventions.

3 | APPROACH

Regardless of the precise definition of fragility one prefers, it is clear that it is a complex notion influenced by a range of separable phenomena. In turn, any efforts to measure fragility must consider and aggregate multiple domains (OECD, 2015). In typical approaches, these domains are captured at the state level. In turn, any effort to measure exposure to fragility must consider not only these multiple domains but also how to map aggregate indicators at the individual level. In this section, we develop illustrative thinking on how to operationalize a definition of fragility and discuss how we seek to measure and analyze it with the FEM and FEI.

3.1 | Operationalizing "fragility"

Perhaps the clearest proof that no shared definition of fragility exists is that competing lists—containing a different inventory of countries—exist. In this context, we do not seek to develop the definitive conceptualization of fragility but rather to operationalize an illustrative definition—built on the history of research to date—that allows us to develop our microlevel thinking. This matches the aim of this work, which is to establish the notion that individuals with different endowments experience a state of (aggregate-level) fragility differently. We, thus, explicitly seek not to provide an authoritative definition of fragility in this text or to attempt to challenge definitions provided by others. Rather, we wish to establish a definition of fragility that is tractable at the individual level and to test whether the indicators that stem from that definition structurally differ across individual, group, and geographic space.

Despite this, it is impossible to escape the fact that any index that attempts to capture the experience of fragility requires certain assumptions about what fragility is. First, therefore, we seek to make clear what these assumptions—and the definitions implicit in them—are. In this sense, our starting place is to revisit standard definitions from the lists of three well-known fragile states that are commonly referenced in academic and policy debates on fragility.

First, the OECD defines fragility as a "combination of exposure to risk and insufficient capacity of the state, system and/or communities to manage, absorb or mitigate those risks" (OECD, 2020). This definition entails a strong emphasis on an aggregate level of observation and on some institutional feature ("capacity") that shapes risk management. It leaves unanswered why such a macrolevel view is needed and what it may entail. In fact, the OECD States of Fragility reports classify countries and territories as fragile, not communities or systems.[2]

Second, and very similarly, the World Bank considers fragility along two main categorizations: countries with low-quality institutions and policies and countries affected by violent conflict.[3] The former is measured with publicly available data, which represents a logical challenge to the extent that more fragile countries most likely also have weaker statistical capacity. The World Bank also draws on some of its own indicators such as the Country Policy and Institutional Assessment score for some of the poorest countries in the world. Other indicators of fragility considered by the World Bank include large-scale forced displacement or the presence of UN peacekeeping forces. Overall, this classification is not based on microfoundations, mostly indicating symptoms of crisis rather than underlying drivers, and may suffer a self-reference bias.

Third, the FSI considers three major domains, namely the political (erosion of legitimate authority to make collective decisions), military (loss of legitimate use of force), and economic (inability to provide reasonable public services), which result in an inability to interact with other states.[4] An interesting feature of the FSI methodology is its combination of quantitative and qualitative methods and data. Across multiple domains, scores are assigned for each country for a range of 12 indicators on a scale of 1 (good) to 10 (bad), with the aggregate of all 12 indicators yielding the final country score. While some microfounded concepts are thus included in the analysis (e.g., group grievances or human rights), the resulting score is firmly country level.

Across these operationalizations, three major features of fragility become clear: the first is the inability of a society to protect its citizens, the second is the inability to ensure that all people have equal access to services and the economic opportunities of that society, and the third is that the capacity of the society to create and implement policy is weak. In addition, particularly from the OECD definition, a fourth important factor becomes apparent—that it is not just the state that plays a role in protecting individuals from risks but also the fabric of the society itself. In other words, even in the presence of state-level failure, strong, functioning informal or local

institutions can to some extent mitigate the impacts of those aggregate-level and/or formal state failures.

From this, we deduce that fragility can be considered as the weak performance of both formal state and informal civil society institutions to protect, include—socially and economically—and unite the people who live in that place. In turn, a microlevel approach to understanding how people experience fragility must understand whether people are safe (and perceive themselves to be safe), whether they have equal access (and perceive themselves to have equal access) to economic opportunity, and whether they have access to the social fabric of a place. Further, we note that—particularly in the latter domain—informal and/or local institutions can compensate individuals who, otherwise, are excluded from the formal institutional fabric of a place.

What is noticeable is that these domains overlap significantly with those in the FSI. Indeed, in many ways, our three domains are microlevel conceptualizations of those of the FSI, although we extend them to include recourse, access, and belonging to informal institutions, such as religious and civil society bodies. This grounds both the definition and the outcomes of this study in the body of literature to date. In many ways, this is desirable. Our aim is not to provide a new method of defining fragility, nor indeed to produce an "off-the-shelf" fragility index, but rather to establish the need to understand that individuals with different endowments experience an aggregate state of fragility differently and thus to establish the need for such a module. In this sense, while we are content to tack to the FSI in this research, we do so without specific motive. Rather, these apparent similarities endogenously emerge from our illustrative definitions.

In these definitions, three major features of fragility become clear: the first is the inability of a society to protect its citizens, which results in weak protection of *human security*; the second is an inability to ensure that all people have equal access to services and the opportunities of that society and, thus, that (*economic*) *inclusion* is low; the third is that the capacity of the society to support the interactions that allows its members to take part in the creation and implementation of policy is weak, or put another way, that *social cohesion* is low. Cutting across these key themes, another important factor – particularly evident in the OECD definition – becomes apparent: it is not just the state that plays a role in protecting individuals from risks but also the fabric of the society itself. In other words, even in the presence of state-level failure, strong, functioning informal or local institutions can go some way to mitigating the impacts of those aggregate-level and / or formal state failures.

Given these considerations, we define each of the three subcomponents as follows:

Human security is, at its very base level, a focus on individual protection but is considered more broadly than simply individuals being protected from physical violence. We therefore consider human security to encompass physical safety, such as exposure to armed actors and experience of violence but also a lack of group- or gender-based discrimination, and equal rights before the law. In turn, this domain has strong relations to political institutions.

Economic inclusion addresses alleviating extreme poverty and inequality but, again, lacks a single accepted definition. Those definitions that do exist share a number of important overlaps, on which we focus. In that regard, we consider economic inclusion as the provision of opportunity and ability for all people to take an equal share in economic opportunity. That is, no individuals, or groups, are excluded from opportunity. While this can focus on poor personal economic situations and opportunities, it can also include uneven access to public services or the experience of corruption.

Social cohesion is based on the idea that members of communities have the opportunity to cooperate within and across groups. As Chan and Chan (2006) state, this is a situation that facilitates vertical and horizontal interactions and a set of attitudes and norms that include trust, sense of belonging, and a willingness to participate. In this regard, we consider social cohesion to reflect participation in communities and trust in government and other institutions (both formal and informal).

3.2 | The fragility exposure module

From this stems a requirement to discuss which indicators and metrics accurately reflect these domains and which do so optimally. In reality, given the restricted space in ongoing surveys, these desires need to be traded off against ensuring that any module can easily be included. Similarly, they also need to be traded off with the style of the questions asked and the familiarity of these questions to survey designers, statistical agencies, and enumeration teams.

With regard to human security, we include measures on satisfaction with personal, neighborhood, and national security; fear of crime, assault, war, ethnic conflict, and police violence; and the presence of armed/criminal organizations. We regard increases in fear as worsening of the fragility status quo and improved satisfaction as a betterment. For economic inclusion, we measure satisfaction with household economic and financial situation, education, health, community integration and corruption. Experience of corruption is measured through questions that ask how easy it is to obtain assistance from a range of institutions without paying a bribe. Increasing satisfaction is associated with a situation that is getting better, while reductions in the experience of corruption also reflect reductions in fragility.

We measure social cohesion in the horizontal sense from self-reported participation in a range of secular and religious organizations, political parties, and elections and in terms of trust between social groupings. Trust is measured through a range of questions that ask individuals how much they trust their families, their neighbors, and their countrymen an and assumes that higher trust is a sign of less fragility. We hypothesize that greater participation and trust is a sign of increased community cohesion and of reduced fragility.

Vertical inequalities are captured through questions that ask about individual perception on the effectiveness of a range of formal and informal institutions and the degree of trust they have in these various formal and informal institutions. The specifically named institutions include some that are generic, such as central or local government, police, or courts, and others that are context specific, such as tribal elders and religious bodies. In general, we view increasing perceptions of effectiveness as the basis of a lower exposure of fragility. This implies not only that more effective state institutions correspond to lower levels of fragility but that, in the absence of such effective institutions, more effective informal institutions still mitigate fragility.

Table 1 presents all the subindicators used within each domain, as well as the scale on which they are answered and the domain to which they are assigned.[5] All answers are coded to ensure that higher values reflect increasing fragility. As with the wider definition of fragility, these domains are designed to be illustrative rather than definitive or exhaustive.

3.3 | The fragility exposure index

The aim of the FEI is to bring together a range of relevant subindicators that capture relevant aspects of each of the three domains. In this section, we discuss how we treat the individual variables that comprise each domain and how we bring together the three domains into a single index. As a starting point, we make an implicit assumption that no domain is more important than any other domain. That is, in the index as a whole, the value of each domain is given the same weighting as the other domain. A similar rule is imposed on the subindicators within that domain. Within a single domain, each subindicator is given the same weight as all the other subindicators. This assumption is made given a lack of strong priors about the relative importance of each domain. This is designed to ensure (1) that domains that are more difficult to capture with

TABLE 1 Subindicators and domains in the FEM

Questions	Answer choices	Domain
Please choose the level that fits your personal perception!		
...Your personal security	1 = completely dissatisfied to 10 = completely satisfied	Human security
...The security in your neighborhood	f 1 = completely dissatisfied to 10 = completely satisfied	Human security
...The security situation in your district	f 1 = completely dissatisfied to 10 = completely satisfied	Human security
...Your community integration/social integration, supportive interaction with neighbors	f 1 = completely dissatisfied to 10 = completely satisfied	Social cohesion
...Your social equality in your village/community	f 1 = completely dissatisfied to 10 = completely satisfied	Social cohesion
...Spare time/leisure	f 1 = completely dissatisfied to 10 = completely satisfied	Social cohesion
...Your family life	f 1 = completely dissatisfied to 10 = completely satisfied	Social cohesion
...Your financial situation	f 1 = completely dissatisfied to 10 = completely satisfied	Economic integration
...Your living standard	f 1 = completely dissatisfied to 10 = completely satisfied	Economic integration
How often in the last year have you or anyone in your family		
...felt unsafe walking in your neighborhood at night?	1 = very rarely to 10 = very often	Human security
...feared crime in your own home?	1 = very rarely to 10 = very often	Human security
In the previous 12 months, were there any organized groups posing insecurity in your district?	0 = no; 1 = yes	Human security
How important is it to own a weapon to defend yourself and your family?	1 = very unimportant to 10 = very important	Human security

TABLE 1 (Continued)

Questions	Answer choices	Domain
Imagine that a close family member committed a violent crime. How likely would you report him or her to the police?	1 = very unlikely to 10 = very likely	Human security
Was your household affected by any of the following events in the past 12 months?	1 = yes/0 = no	
Sexual incidents		Human security
Assault/threat		Human security
Theft		Human security
Bribery/corruption		Human security
Please indicate how much you are afraid of certain phenomena in your village	0 = no fear 5 = fear	
Juvenile delinquency		Human security
War		Human security
Religious/ethnic conflict		Human security
Misconduct of government authorities		Human security
Misconduct of local authorities		Human security
Police violence		Human security
Arbitrary police control		Human security
Crime		Human security
Corruption		Economic integration
Unemployment		Economic integration
Loan sharking		Economic integration
Land conflicts		Human security

TABLE 1 (Continued)

Questions	Answer choices	Domain	How much do you trust (institution) in Kenya?	How easily can you obtain assistance from (institution) without bribe in Kenya today?
Type of institution	How good does (institution) deliver services in Kenya today?			
a. Central government	1 = very ineffective to 10 = very effective	Human security	1 = completely untrustworthy to 10 = completely trustworthy	1 = extremely difficult to 10 = extremely easy
b. Local/county government		Human security		
c. Police		Human security		
d. Court		Social cohesion		
e. Religious institutions		Social cohesion		
f. Traditional institutions		Social cohesion		
g. Private sector		Economic integration		
h. Village government (informal)		Social cohesion		
Do you belong to a political party?	0 = no 1 = yes	Social cohesion		
Did you register to vote in the last national election?		Social cohesion		
Did you register to vote in the last local elections?		Social cohesion		
Do you think you will register to vote in the next national election?		Social cohesion		
Do you think you will register to vote in the next local election?		Social cohesion		
Is anyone in your household a member of any group (youth group, men's group, etc.)?		Social cohesion		
Is anyone in your household a member of women's group?		Social cohesion		

Abbreviation: FEM, fragility exposure module.

a small number of questions are not given artificial influence in the overall index and (2) that a random choice of weights does not have the opportunity to influence outcomes.[6]

As shown in Table 1, each subindicator is collected in a different way and on a slightly different scale, as is appropriate for what is being asked. In a first step, we thus normalize each of the indicators in the standard way[7]:

$$\text{Norm}\left(x_{ijt}\right) = \frac{x_{ijt} - \min\left(x_{jt}\right)}{\max\left(x_{jt}\right) - \min\left(x_{jt}\right)} \tag{1}$$

where x is the subindicator of interest for individual i in location j at time t. This approach is undertaken to ensure that each variable is presented on a comparable scale. Next, each x in the domain X is weighted equally within the domain such that

$$X_{ijt} = \frac{1}{N}x1_{ijt} + \frac{1}{N}x2_{ijt} + \ldots + \frac{1}{N}xN_{ijt} \tag{2}$$

where N measures the number of items in the domain. Next, each of the three domains in our index is brought together, again equally weighted such that

$$D_{ijt} = \left(\frac{\text{Human Security}_{ijt}}{M}\right) + \left(\frac{\text{Economic Inclusion}_{ijt}}{M}\right) + \left(\frac{\text{Social Cohesion}_{ijt}}{M}\right) \tag{3}$$

where M is the total number of domains—in our case three—and Human Security, Economic Inclusion, and Social Cohesion are our domains of interest, constructed as in Equation (2). The application of Equations (1)–(3) generates an index that has a value between 0 and 3 (where 0 denotes the least exposure to fragility). We conduct a final normalization of this data, where D_{ijt} is reformed to take a value between 0 and 1 and is then multiplied by 100 to allow easier understanding of the coefficients we generate. We thus generate the final index:

$$FEI_{it} = 100 \times \text{Norm}\left(D_{ijt}\right) \tag{4}$$

4 | CASE STUDY: Kenya

4.1 | Data and country background

To test the validity and performance of the proposed FEI, we include an FEM in the HORTINLEA household survey in Kenya. The FEM was introduced in the survey questionnaire in a wave of this data collected in 2016. Even though the main focus of the survey is on the agricultural sector, in general, and the horticultural sector, in particular, it contains comprehensive socioeconomic information on households and individuals, which augment the FEM and our analysis of it.

Households were selected using a multistage sampling approach. Given the agricultural nature of the survey, a purposive sampling technique was used to select five counties within rural, peri-urban, and urban strata. These are Kisii and Kakamega (rural), Nakuru and Kiambu (peri-urban), and Nairobi (urban). Subcounties and divisions are selected based on information from the respective district agricultural offices. From each division, locations/wards were randomly selected, and households within locations were in turn randomly selected, giving a total sample

size $N = 1{,}000$ households: 700 in rural and peri-urban counties and 300 in Nairobi. We note that HORTINLEA survey is not nationally representative but rather representative of a particular subsection of Kenyan society, namely agricultural and horticultural producers, traders, and consumers in rural and peri-urban areas, with a "comparison" group in urban Nairobi. Although our results cannot be fully generalized to the entire population, the data still provides the opportunity to test our baseline hypotheses.

Kenya provides an excellent opportunity to test our hypotheses. It has, in recent years, appeared on a number of fragile countries lists. In the 2018 iteration, it scored above the 90-point "very fragile" threshold in the FSI, with only 16 countries considered more fragile. It has been far from ever present in the World Bank's list. It is also an ethnically, culturally, and economically diverse country (KNBS, 2007). Particularly after the electoral violence in 2007 and 2008, a number of legislative and constitutional reforms have been implemented. Most notably, these reforms created an ambitious decentralization process that aimed to transfer important governance decision-making to subnational legislatures, giving autonomy to these bodies to address local service requirements (World Bank, 2012). Despite such reforms and impressive economic growth, Kenya's underlying fragility classification has not significantly improved across the board. This situation, and the diversities within the country, provides the essential data variation to test our notion that fragility has different effects, depending on the endowments of those who are affected by it.

4.2 | Illustrative findings

The HORTINLEA survey questionnaire includes a large section on crime and instability in addition to general socioeconomic and demographic information, ensuring that the survey already covers a range of key FEM questions. In this regard, the full FEM required only small additions to the survey. In Figure 1, we illustrate the nature of this data and the importance of capturing the experience of fragility at the microlevel. Figure 1 indicates for a selected number of formal and informal institutions the mean values of the following four variables: (1) power, (2) effectiveness, (3) trust, and (4) ease of services without bribes. In all cases, questions are asked on a Likert scale running from 1 to 10, with 1 implying the worst indicators and 10 the best. We find that religious institutions have a mean value of ~8 for all four variables. In other words, Kenyans perceive religious institutions to be very powerful, effective, and trustworthy and that services can easily be received. This static trend also applies for village governments at a mean value of ~6. However, even though Kenyans perceive the central government to be powerful, they do not trust it and are unable to obtain assistance easily. The same diminishing trend applies to the police and courts.

These results provide an important glimpse on the existence of a "governance gap" for formal institutions in Kenya between the central and local levels. Central formal institutions are viewed as less able to deliver legitimate services despite their perceived power. Identifying this gap underscores the importance of using microlevel indicators for measuring fragility and understanding better how different individuals are affected by it. A powerful central government or police force need not necessarily be effective in the provision of services to local communities, implying counteracting impacts on fragility. Individuals trust local informal village governing bodies more and believe they are more likely to obtain better services from them. Ceteris paribus, such a situation may be viewed as undesirable, yet in the case of weak delivery from the central government, shortfalls can be compensated by an effective, if informal, form of local governance. Thus, local institutions can mitigate and reduce experience of fragility. Measures that do not account for
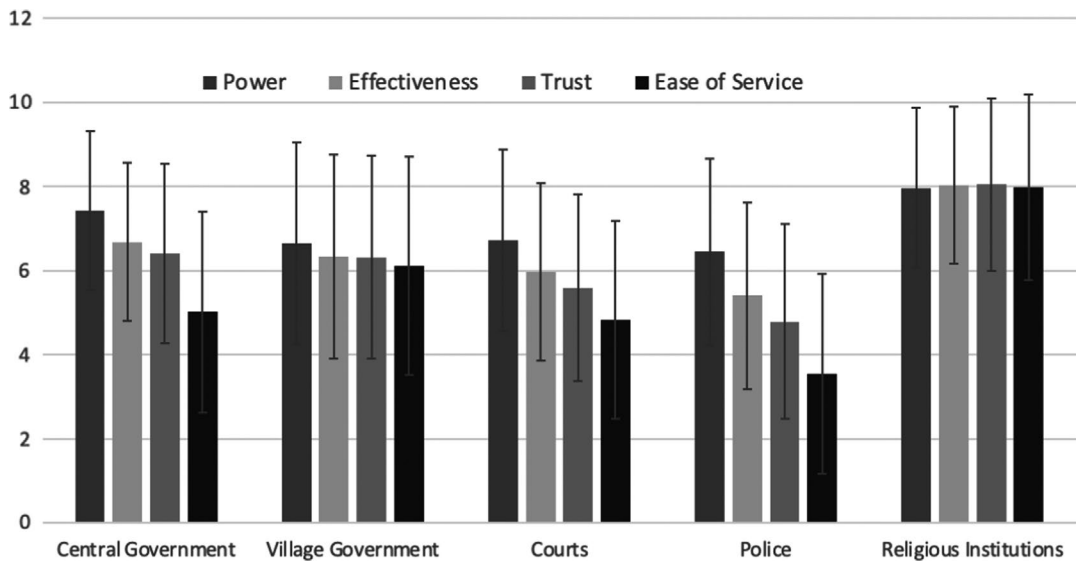
FIGURE 1 Governance gap of formal institutions in Kenya. Source: Authors' calculations based on data from the HORTINLEA survey

such different experiences across people and across branches of government are, therefore, likely to overestimate the experience of fragility.

4.3 | Results

4.3.1 | Headline findings

Based on Equation (4), we construct the FEI using the normalized value of the subindicators as presented in Table 1. In Figure 2, we compare the distribution of the three domains. First, we see that Kenyans are more likely to experience fragility via the human security and economic inclusion domains. Human security shows a mean of 0.55 and economic inclusion a mean of 0.60 compared to 0.36 for social cohesion. In the specific case of Kenya, these results might not be unexpected. The country has suffered multiple episodes of violence, particularly during and after elections (Murunga, 2011), and has faced terrorist attacks, particularly from Somali jihadists (Botha, 2015), as well as low-level violence and high police corruption (Hope, 2019), all of which can undermine human security. Similarly, political corruption is high (D'Arcy & Cornell, 2016), and inequalities are endemic in a range of domains, including education (Kimosop et al., 2015); health (Ilinca et al., 2019); income (Gĩthĩnji, 2019); and other dimensions, which can, economically and noneconomically, exclude individuals and groups from the societies in which they live. Despite clear tribal and ethnic divisions (Maina, 2020), however, adverse behaviors between ethnic groups have not been observed (Berge et al., 2020), either in mono- or multiethnic parts of the country (Barriga et al., 2020), suggesting that threats to social cohesion are not as severe in the context as one might imagine. More generally, however, these results suggest that the nature of fragility, and how it is experienced by individuals living in fragile places, is likely influenced and determined by a myriad of local factors that must be considered before meaningful comparisons on the "level" of fragility can be made.
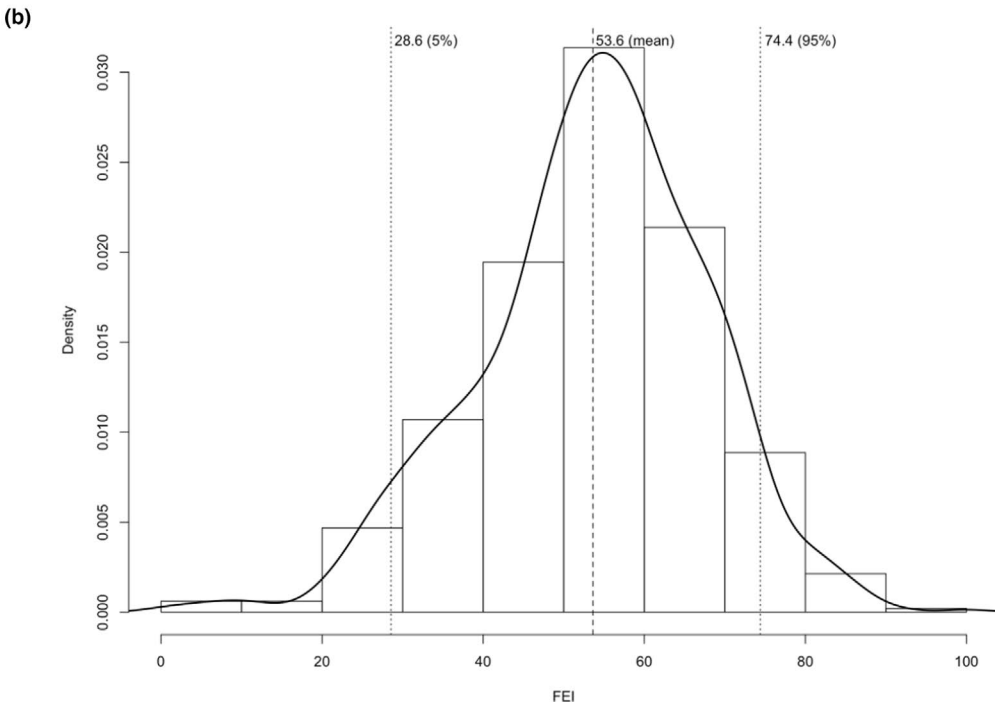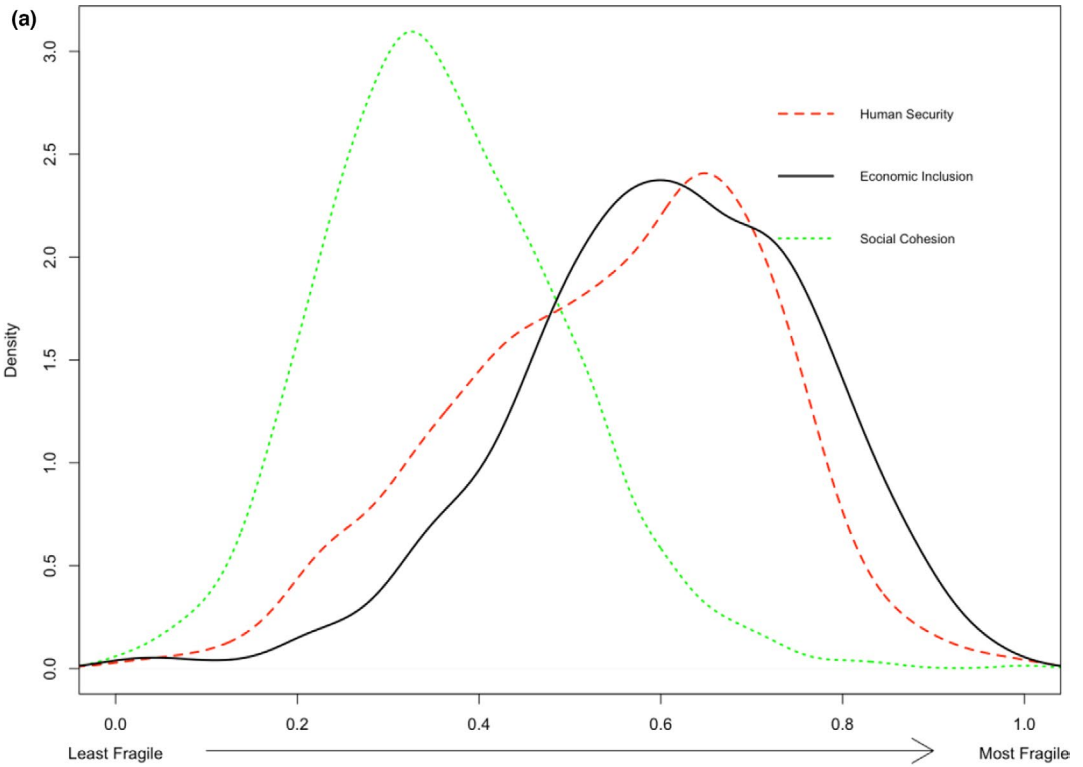
FIGURE 2 (a) Distribution of the domains of fragility exposure index—Kenya Source: Authors' calculations based on data from the HORTINLEA survey. (b) Distribution of the fragility exposure index—Kenya Source: Authors' calculations based on data from the HORTINLEA survey

TABLE 2 Variations in exposure to fragility across groups and locations

	Total FEI	Human security	Economic inclusion	Social cohesion
Gender				
Female	53.74 (14.16)	0.55 (0.17)	0.60 (0.16)	**0.37 (0.13)**
Male	53.26 (14.24)	0.54 (0.16)	**0.62 (0.16)**	0.35 (0.14)
p-Value	0.642	0.283	0.051*	0.026**
County				
Nairobi	**56.66 (13.40)**	**0.56 (0.16)**	**0.62 (0.15)**	**0.41 (0.14)**
Kisii	51.64 (14.09)	0.54 (0.17)	0.59 (0.17)	0.33 (0.12)
Kakamega	54.40 (14.07)	0.56 (0.17)	0.63 (0.15)	0.34 (0.13)
Nakuru	52.96 (14.40)	0.55 (0.17)	0.60 (0.17)	0.35 (0.12)
Kiambu	51.04 (14.18)	0.51 (0.17)	0.58 (0.16)	0.36 (0.14)
p-Value	<0.001***	0.006***	0.013**	<0.001***
Age group				
Age ≤ 25	56.40 (13.29)	0.57 (0.16)	0.57 (0.17)	**0.44 (0.13)**
25 < age ≤ 45	53.94 (14.09)	0.55 (0.17)	0.60 (0.16)	0.37 (0.14)
45 < age ≤ 65	53.00 (13.89)	0.55 (0.17)	0.61 (0.15)	0.34 (0.12)
Age > 65	52.26 (15.85)	0.52 (0.18)	0.61 (0.18)	0.35 (0.14)
p-Value	0.261	0.537	0.426	<0.001***
Marital status				
Single	**58.66 (14.05)**	**0.60 (0.17)**	0.62 (0.16)	**0.41 (0.14)**
Married, poly	53.67 (15.08)	0.55 (0.18)	0.60 (0.16)	0.37 (0.14)
Married, mono	52.87 (13.98)	0.54 (0.17)	0.60 (0.16)	0.35 (0.13)
Divorced/widowed	53.90 (13.72)	0.54 (0.18)	0.59 (0.15)	0.39 (0.13)
p-Value	0.003***	0.010***	0.484	<0.001***

Note: Standard deviation is in parentheses.

Abbreviation: FEI, fragility exposure index.

Source: Authors' calculations based on data from the HORTINLEA survey.

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

Figure 2 shows, in Kenya, that the median of each domain is very close to the mean. In other words, the data is quite highly clustered. This suggests both that most people have similar experiences to others and that our results are not being driven by a small number of individuals with either particularly good or particularly bad experiences. This suggests, therefore, that our results are reflective of collective, as individual, experiences of fragility. In other words, the experiences of most individuals in our sample are quite similar to those of most others, suggesting common experiences of fragility.

In the next stage, we run comparative analyses by splitting the sample across a range of individual and household characteristics. We split the sample by geographic region, gender, age, and marital status.[8] We show the mean differences between the various groups in Table 2 for the whole index and for each domain. For categorical variables, such as region, marital status, and age, we report the significance levels of the average means of the pairwise differences between each category.

We find that individuals living in Nairobi, the capital, experience fragility to a significantly greater degree than residents of peri-urban and rural counties. The differences are significant at the 1% level across all three domains. The most notable difference is in regard to the social cohesion domain, where the mean level in Nairobi is 0.41 compared to ~0.34 in other counties. In some ways, these results might seem surprising. Nairobi is significantly richer than Kenya as a whole, although economic inequality is also significantly higher (Shifa & Leibbrandt, 2017), which is particularly likely to influence more subjective domains, such as perceptions of economic inclusion. Nairobi is a notoriously insecure city (Elfversson & Höglund, 2019), with the index potentially trading off the risk of interpersonal violence in the city with other forms of conflicts—like those over land—elsewhere. However, these analyses also show that heightened exposure to fragility is not limited, only, to large cities. Individuals in Kakamega, a rural county, report greater experiences of fragility—driven particularly by the human security and economic inclusion domains—than those in other rural or peri-urban communities. This further reinforces the notion that local factors—at both the national and local levels—are needed to compare fragility and the experience of fragility across space.

We find that younger people (specifically those aged 25 years and below) experience fragility to a greater degree than older cohorts. This finding is driven entirely by the social cohesion domain, with no corresponding differences shown in the economic inclusion or human security domains. In some ways, this finding is intuitive. Younger people, not just in Kenya, may lack recourse to deep social networks that are available to older individuals. This, in turn, implies that older individuals have stronger social networks, which can help mitigate the experience of fragility in other dimensions. Young people, on the contrary, have their experience of fragility in other dimensions exacerbated by a form of social exclusion, which in turn reduces the capacity to successfully cope with other major shocks. This both suggests that young people might have greater experience of fragility and provides guidance on how these experiences can be mitigated. Prosocial cohesion and pro-inclusion programming might help overcome such adversities. On the contrary, these results also suggest that more "objective" components of the index, specifically those focusing on human security violence, are experienced equally among the population.

Our analyses also show that while women do not experience fragility, overall, to a greater or lesser degree, than men, there are key differences across the domains. Men are much worse off in the economic domain than women, but women, like young people, experience poorer social cohesion. The structure of the Kenyan society suggests such findings are likely (Musalia, 2018). Men, as traditional breadwinners, might perceive more keenly their experience of economic exclusion; women, traditionally viewed as homemakers, might more keenly experience social exclusion. Monogamous households are less exposed to fragility than single or polygamous households. The differences in exposure to fragility between these groups are very notable and significant at the 1% level and are particularly strong for single individuals, despite no noticeable differences in the economic inclusion domain between the groups. These findings suggest gender sensitivity and sensitivity to household structure are required in programming designed to alleviate fragility.

4.3.2 | Heterogeneities

Finally, to add further context to these findings and to understand the potential drivers in the headline differences we observe, we focus on variation in outcomes across multiple indicators. In particular, we focus on whether there is a gender aspect to the spatial heterogeneities we observed and whether gender and age interact together to determine the experience of fragility.[9] The results are presented in Table 3.

In Table 3, we observe women living in Nairobi experience a higher overall level of fragility than they do in more rural areas of Kenya. This finding is driven, substantially, by a much higher (worse) score in the social cohesion index. By contrast, we observe no differences in overall exposure to fragility, nor in any of the individual domains, for men across different locations. This suggests both that the earlier findings are driven by the experiences of women and that women in urban Nairobi have very different experiences of social cohesion than women in rural locations. This could be attributed to differences in norms and expectations across urban–rural divides.

Table 3 also shows that both young men and women (below age 25 years) score much worse in the social cohesion domain than individuals above age 25. This suggests that both young men and young women could be more harmed and more exposed to fragility. In this sense, young

TABLE 3 Variations in exposure to fragility across two indicators

	Total FEI	Human security	Economic inclusion	Social cohesion
County—female				
Nairobi	56.81 (14.05)	0.57 (0.17)	0.62 (0.15)	0.41 (0.14)
Kisii	51.82 (14.22)	0.54 (0.17)	0.59 (0.18)	0.34 (0.11)
Kakamega	53.28 (13.16)	0.55 (0.16)	0.61 (0.15)	0.35 (0.12)
Nakuru	52.78 (14.31)	0.56 (0.17)	0.58 (0.16)	0.35 (0.12)
Kiambu	51.69 (14.37)	0.52 (0.17)	0.57 (0.16)	0.37 (0.14)
p-Value	0.002***	0.154	0.039**	<0.001***
County—male				
Nairobi	55.72 (8.12)	0.56 (0.11)	0.61 (0.13)	0.40 (0.10)
Kisii	51.24 (13.90)	0.54 (0.17)	0.59 (0.17)	0.32 (0.15)
Kakamega	56.35 (15.43)	0.58 (0.17)	0.66 (0.16)	0.34 (0.14)
Nakuru	53.65 (14.96)	0.52 (0.16)	0.64 (0.18)	0.35 (0.15)
Kiambu	49.48 (13.73)	0.47 (0.18)	0.60 (0.16)	0.33 (0.12)
p-Value	0.044**	0.008***	0.084*	0.078*
Age group—male				
Age ≤ 25	57.26 (3.60)	0.58 (0.13)	0.60 (0.10)	**0.42 (0.11)**
25 < age ≤ 45	53.62 (12.71)	0.55 (0.16)	0.60 (0.16)	0.36 (0.14)
45 < age ≤ 65	52.65 (15.10)	0.52 (0.18)	0.64 (0.16)	0.32 (0.13)
Age > 65	52.58 (16.81)	0.53 (0.17)	0.62 (0.18)	0.33 (0.14)
p-Value	0.756	0.587	0.401	0.049**
Age group—female				
Age ≤ 25	56.21 (14.61)	0.57 (0.17)	0.57 (0.18)	0.45 (0.14)
25 < age ≤ 45	54.03 (14.47)	0.55 (0.17)	0.60 (0.16)	0.37 (0.13)
45 < age ≤ 65	53.13 (13.40)	0.56 (0.17)	0.60 (0.15)	0.35 (0.12)
Age > 65	52.06 (15.40)	0.52 (0.18)	0.59 (0.17)	0.36 (0.13)
p-Value	0.427	0.515	0.437	<0.001***

Note: Standard deviation is in parentheses.

Abbreviation: FEI, fragility exposure index.

Source: Authors' calculations based on data from the HORTINLEA survey.

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

women in Nairobi are doubly harmed by the threat of fragility—lacking access to social relationships compared to both their older counterparts and their counterparts living in more rural areas. These outcomes justify particular focus on women and youth in the context of fragility but also suggest that focus should be on improving their integration into the wider social fabric of society rather than on the other domains.

5 | CONCLUSIONS

In this article, we focus on the experience of living under fragility—a phenomenon usually considered only at the state level—at the microlevel. In doing so, we define fragility along the lines of previous state-level literature but apply it at the individual level to understand how people and households experience lives lived in fragile scenarios. We seek to establish that different individuals, with different endowments, can experience the same background level of fragility in different ways. Different endowments allow the use of different coping strategies to deal with fragility and, in principle, might allow some individuals to avoid, entirely, some of its key harms.

To study this hypothesis, we generate an FEI, which is based on three distinct domains: human security, economic inclusion, and social cohesion, which—broadly—are microlevel reflections of aggregate-level phenomena. These domains are in turn composed of subindicators from a set of variables that can be inserted into standard household or individual surveys. The analysis of this data allows us to understand the spatial dimensions of fragility and to consider how different individuals are differently exposed to state-level failures.

The results from this analysis demonstrate that individuals in Kenya experience fragility differently depending on their location, age group, and marital status. Such findings support our assertions that aggregate measures are, often, a blunt instrument in measuring and understanding fragility. Individuals in different locations and of different socioeconomic and demographic characteristics clearly experience life under fragility differently. In turn, programs need to target those individuals more directly.

Despite the promise of these findings, we note a number of limitations to our approach. First, we focus only on one particular (implicit) definition of fragility and a short, nonexhaustive survey module designed to capture indicators relevant to these definitions. In turn, our results should not be understood in absolute terms. We do not seek to say that one societal group experiences greater adversities as a consequence of fragility than another in a universal sense, rather to establish first evidence that the experience differs across groups and individuals.

Second, related to that, is that it is not trivial to take an aggregate concept like fragility and create a microlevel analogue. For example, it might be possible to assess the availability and quality of a given public service in a place. At the individual level, however, experience of whether a quality service is provided depends on both what is provided, whether the person in question needs that service at all, and, conditional on that, whether that person has fair access to the service. In this article, we use a range of individual perceptions to overcome this. Future research might like to, more deeply, explore the microlevel analogues of aggregate indicators, domains, and subindicators of fragility and to more deliberately postulate how those indicators are experienced.

It is important to note that our findings are based on a limited case study in Kenya, using a survey that is not representative of the urban parts of the country. In this regard, the results we present are only illustrative of what can be achieved by this approach. Future research should consider inserting the FEM in nationally representative surveys and conducting similar analyses to those presented here. Such work would be doubly beneficial. First, it would provide grounds

to make comparisons between micro- and macrolevel measures of fragility, and second, it would provide even stronger evidence of the group-based differences we illuminate in this work. Inclusion of the FEM in multiple surveys, therefore, would allow better robustness and validation tests of this index, as well as facilitate cross-country comparisons. Furthermore, it may allow data reduction analyses to be conducted, to restrict the length of the FEM, reducing the length of the module and maximizing its opportunity to develop cross-country comparisons.

Simultaneously, however, our results are suggestive of the need for such modules and research based on them. At the highest levels, they provide suggestive evidence that aggregate concepts like fragility do not have universal impacts on all who live in such situations. How men, women, youth, minorities, and other groups experience a particular state of fragility is different, as, too, is how they mitigate it. Consequently, this shows the need not only to understand these phenomena at multiple levels but also to focus policy prescriptions at the multiple levels at which they are experienced. Individual-level, regional, and national policies are all needed to tackle fragility and people's experience of it.

Similarly, they are capable of showing the domains in which fragility is best mitigated, or worst experienced, by particular groups. Again, this allows policy prescriptions to be more accurately developed and targeted to the needs of key societal groupings. For example, our results suggest that men and women do not experience overall fragility differently but that women are more socially excluded and men more economically excluded. Young people and urban women, for example, are shown to be more socially excluded than older people, men, and rural women, suggesting a specific need for social integration policies for these groups.

DATA AVAILABILITY STATEMENT

We use data from another study (namely HORTINLEA), which is mentioned as the source of our data.

ORCID

Ghassan Baliki https://orcid.org/0000-0002-3070-0222
Tilman Brück https://orcid.org/0000-0002-8344-8948
Neil T. N. Ferguson https://orcid.org/0000-0001-8363-433X
Sindu Workneh Kebede https://orcid.org/0000-0001-7114-5029

ENDNOTES

[1] Low-income countries under stress—World Bank (2005), "difficult environments" (Moreno Torres & Anderson, 2004), "fragile states" (USAID, 2005), and "weak states" (Rice, 2006).

[2] https://www.oecd.org/dac/states-of-fragility-fa5a6770-en.htm

[3] https://www.worldbank.org/en/topic/fragilityconflictviolence/brief/harmonized-list-of-fragile-situations

[4] https://fragilestatesindex.org/frequently-asked-questions/what-does-state-fragility-mean/

5 In each survey, these questions will be context specific. This ensures that the institutions we use in our questions, the reference to neighborhoods, and areas are matched to those that our respondents understand.

6 While a different choice of weights might well change the precise scores in our analysis, we have no reason to believe that it would invalidate the broader idea that individuals with different endowments experience a state of fragility in very different ways.

7 In this approach, we also ensure that each variable "runs" in the same direction—that is, that the highest normalized value reflects the worst experience of fragility. This involves inverting the scale of some of our subindicators. For example, the presence of local armed groups in the Human Security domain is encoded such that lower values capture the fact that armed groups are not present and higher values that more groups are present. Trust in the economic inclusion domain, on the contrary, gets "better" as scores increase. We invert the scale of all such variables to ensure comparability across all subindicators.

8 We note that other ways to split the data up exist beyond this. However, due to potential endogeneities and other biases that could result, we do not present these results here. For example, individuals might have lower levels of education *because* they grew up in a more fragile place (or in a family more greatly exposed to fragility).

9 In addition, we focused on age-based differences across locations but found no indication of variation. Due to the volume of results produced in these analyses and the relative lack of discussion that stems from these findings, we do not report them here. The results are available from the authors on request.

REFERENCES

Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Institutions as a fundamental cause of long-run growth. *Handbook of Economic Growth*, *1*, 385–472.

Acemoglu, D., & Robinson, J. A. (2013). *Why nations fail: The origins of power, prosperity, and poverty*. Crown Books.

Ahmadzai, N., & Paracha, S. (2016). Why do projects crash & burn in fragile countries? *SIBR*, *5*(1), 315–328.

Allen, F., & Giovannetti, G. (2009). Fragile countries and the current economic crisis. *Conference on moving towards the European Report on Development, Florence, Italy, 21–23 June*.

Andersen, L., Møller, B., & Stepputat, F. (Eds.) (2007). *Fragile states and insecure people?: Violence, security, and statehood in the twenty-first century*. Palgrave Macmillan.

Barriga, A., Ferguson, N. T., Fiala, N., & Leroch, M. A. (2020). *Ethnic cooperation and conflict in Kenya* (Ruhr Economic Papers, No. 872).

Berge, L. I. O., Bjorvatn, K., Galle, S., Miguel, E., Posner, D. N., Tungodden, B., & Zhang, K. (2020). Ethnically biased? Experimental evidence from Kenya. *Journal of the European Economic Association*, *18*(1), 134–164. https://doi.org/10.1093/jeea/jvz003

Binzel, C., & Brück, T. (2009). *Analysing conflict and fragility at the micro level: Extending the vulnerability framework* (unpublished manuscript).

Blattman, C., & Miguel, E. (2010). Civil war. *Journal of Economic Literature*, *48*(1), 3–57. https://doi.org/10.1257/jel.48.1.3

Botha, A. (2015). Radicalisation to terrorism in Kenya and Uganda: Political socialisation perspective. *Perspectives on Terrorism*, *9*(5), 2–14.

Brück, T., Justino, P., Verwimp, P., Avdeenko, A., & Tedesco, A. (2016). Measuring violent conflict in micro-level surveys: Current practices and methodological challenges. *World Bank Research Observer*, *31*(1), 29–58.

Chan, J., To, H.-P., & Chan, E. (2006). Reconsidering social cohesion: Developing a definition and analytical framework for empirical research. *Social Indicators Research*, *75*(2), 273–302. https://doi.org/10.1007/s11205-005-2118-1

Cilliers, J., & Sisk, T. D. (2013). Prospects for Africa's 26 fragile countries. *Institute for Security Studies Papers*, *2013*(8), 1–12. https://doi.org/10.2139/ssrn.2690235

Corral, P., Irwin, A., Krishnan, N., & Mahler, D. G. (2020). *Fragility and conflict: On the front lines of the fight against poverty*. World Bank Publications.

D'Arcy, M., & Cornell, A. (2016). Devolution and corruption in Kenya: Everyone's turn to eat? *African Affairs*, *115*(459), 246–273. https://doi.org/10.1093/afraf/adw002

Dibeh, G. (2008). *Resources and the political economy of state fragility in conflict states* (UNU/WIDER Research Paper, 2008/35).

Elfversson, E., & Höglund, K. (2019). Violence in the city that belongs to no one: Urban distinctiveness and interconnected insecurities in Nairobi (Kenya). *Conflict, Security & Development*, *19*(4), 347–370. https://doi.org/10.1080/14678802.2019.1640493

Francois, M., & Sud, I. (2006). Promoting stability and development in fragile and failed states. *Development Policy Review*, *24*(2), 141–160. https://doi.org/10.1111/j.1467-7679.2006.00319.x

Ghani, A., & Lockhart, C. (2008). *Fixing failed states: A framework for rebuilding a fractured world*. Oxford University Press.

Gīthīnji, M. W. (2019). *Ten millionaires and ten million beggars: A study of income distribution and development in Kenya*. Routledge.

Goldstone, J. A., Bates, R. H., Gurr, T. R., Lustik, M., Marshall, M. G., Ulfeder, J., & Woodward, M. (2005). A global forecasting model of political instability. Political Instability Task Force (PITF). *Paper prepared for the presentation at the Annual Meeting of the American Political Science Association, Washington, DC, September 1–4*.

Goldstone, J. A., Haughton, J., Soltan, K., & Zinnes, C. (2004). *Strategy framework for the assessment and treatment of fragile states* (unpublished report to USAID). The IRIS Center at the University of Maryland.

Graves, C. M., Haakenstad, A., & Dieleman, J. L. (2015). Tracking development assistance for health to fragile states: 2005–2011. *Globalization and Health*, *11*(1), 2005–2011. https://doi.org/10.1186/s12992-015-0097-9

Harttgen, K., & Klasen, S. (2013). Do fragile countries experience worse MDG progress? *Journal of Development Studies*, *49*(1), 134–159. https://doi.org/10.1080/00220388.2012.713471

Heydemann, S. (2018). Beyond Fragility: Syria and the Challenges of Reconstruction in Fierce States. Middle East Studies: Faculty Publications, Smith College, Northampton, MA. https://scholarworks.smith.edu/mes_facpubs/3

Hope, K. R. (2019). The police corruption "crime problem" in Kenya. *Security Journal*, *32*(2), 85–101. https://doi.org/10.1057/s41284-018-0149-y

IEG. (2006). Engaging with fragile states. An IEG review of World Bank support to low-income countries under stress. *Independent evaluation group*. World Bank.

Ilinca, S., Di Giorgio, L., Salari, P., & Chuma, J. (2019). Socio-economic inequality and inequity in use of health care services in Kenya: Evidence from the fourth Kenya household health expenditure and utilization survey. *International Journal for Equity in Health*, *18*(1), 1–13. https://doi.org/10.1186/s12939-019-1106-z

Justino, P., Brück, T., & Verwimp, P. (2016). New developments in measuring the welfare effects of conflict exposure at the micro-level. In D. Backer, R. Bhavnani, & P. Huth (Eds.), *Peace & conflict 2016*. Routledge.

Kebede, S. W., & Bokelmann, W. (2017). African indigenous vegetables and their production practices: Evidence from the HORTINLEA survey in Kenya. *Agrotechnology*, *6*(170), 2.

Khan, M. H. (2004). State failure in developing countries and institutional reform strategies. In B. Tungodden, N. Stern, & I. Kolstad (Eds.), *Towards pro-poor policies: Aid, institutions and globalization*. The International Bank for Reconstruction and Development/The World Bank.

Kimosop, P. K., Otiso, K. M., & Ye, X. (2015). Spatial and gender inequality in the Kenya certificate of primary education examination results. *Applied Geography*, *62*, 44–61. https://doi.org/10.1016/j.apgeog.2015.04.006

KNBS. (2007). *Basic report on well-being in Kenya: Based on the Kenya Integrated Household Budget Survey 2005/06*. Ministry of Planning and National Development, Kenya: Kenya National Bureau of Statistics.

Maina, W. (2020). *Kenya: The state, donors and the politics of democratization* (pp. 134–167). Routledge.

McKay, A., & Thorbecke, E. (2019). The anatomy of fragile states in Sub-Saharan Africa: Understanding the interrelationship between fragility and indicators of wellbeing. *Review of Development Economics*, *23*(3), 1073–1100.

Milliken, J. (Ed.) (2003). *State failure, collapse & reconstruction*. Blackwell.

Moreno Torres, M., & Anderson, M. (2004). *Fragile states: Defining difficult environments for poverty reduction* (PRDE Working Paper, 1). Department for International Development.

Murunga, G. R. (2011). *Spontaneous or premeditated?: Post-election violence in Kenya*. Nordiska Afrikainstitutet.

Musalia, J. (2018). Household decision making among married women in Kenya: A latent class analysis. *Sex Roles*, *78*(3), 182–193. https://doi.org/10.1007/s11199-017-0788-1

North, D. C. (2007). *Limited access orders in the developing world: A new approach to the problems of development* (Vol. *4359*). World Bank Publications.

OECD. (2015). *States of fragility 2015: Meeting post-2015 ambitions*. OECD Publishing. https://doi.org/10.1787/9789264227699-en

OECD. (2020). *States of fragility 2020*. OECD Publishing. https://doi.org/10.1787/ba7c22e7-en

Picciotto, R., Olonisakin, F., Clarke, M., & Freedman, F. B. S. L. (2005). Global development studies no. 3. Global development and human security: Towards a policy agenda. *A policy review commissioned by the Ministry for Foreign Affairs, Sweden, Global Development Studies, EGDI Secretariat, Ministry for Foreign Affairs, Sweden.*

Pingali, P., Alinovi, L., & Sutton, J. (2005). Food security in complex emergencies: Enhancing food system resilience. *Disasters*, *29*, S5–S24. https://doi.org/10.1111/j.0361-3666.2005.00282.x

Review of Development Economics, *23*(3), 1073–1100..

Rice, S.E. (2006). Global poverty, weak states and insecurity. *Brookings Institution, Washington, DC*. https://www.brookings.edu/wp-content/uploads/2016/06/08globaleconomics_rice.pdf

Shifa, M., & Leibbrandt, M. (2017). Urban poverty and inequality in Kenya. *Urban Forum*, *28*(4), 363–385. https://doi.org/10.1007/s12132-017-9317-0

USAID. (2005). *Fragile states strategy*. PD-ACA-999. Retrieved from http://pdf.usaid.gov/pdf_docs/PDACA999.pdf

World Bank. (2005). *Low income countries under stress: Update*. World Bank. Retrieved from. http://documents.worldbank.org/curated/en/458871468328174684/pdf/34789.pdf

World Bank. (2012). *Devolution without disruption: Pathways to a successful new Kenya: Executive summary*. World Bank. Retrieved from http://documents.worldbank.org/curated/en/385211468088448074/Executive-summary

Zartman, W. (1995). *Collapsed states: The disintegration and restoration of legitimate authority*. Lynne Rienner Publishers.

Ziaja, S., Grävingholt, J., & Kreibaum, M. (2019). Constellations of fragility: An empirical typology of states. *Studies in Comparative International Development*, *54*(2), 299–321. https://doi.org/10.1007/s12116-019-09284-3