From hunger to distrust: How food insecurity degrades institutional trust

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Abstract

In a time where Food Insecurity is at an all-time high, gaining a better understanding of its consequences is crucial for states to adopt the right policies. Existing literature highlighted the causes of food insecurity as well as its consequences in times of sudden unrest. However, no research has investigated the gradual consequences of low food availability on institutions. This study aims at closing this gap by answering the question "*How is institutional trust affected by food insecurity?"*. More precisely, this paper applies the social contract theory to the issue of food insecurity in Tanzania, Uganda and Kenya. A new index regarding institutional trust is used to differentiate between institutions. The analysis is carried out through a multivariate linear regression and data is retrieved from the Afrobarometer round 7. Findings support a significant negative effect, confirming that food insecurity leads to a decrease in institutional trust, more severely in representatives one.

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Introduction

For close to 50 years, since the 1974 World Food Conference, the World has attempted to solve global hunger, rephrasing and postponing its goals in both the Millennium Development Goals and the Sustainable Development Goals. (UN General Assembly, 1974, 2000, 2015). Yet, the international community is still far away from reaching its goal of ‘’Zero Hunger’’. In spite of the progress that had been made for several decades, over the last ten years the tide has been reversed. As of today, 783 million people in the World face chronic hunger, the highest number up to date (WFP, 2023). Moreover, in a time of increasing climate disasters and resurging global conflicts threatening food supply, most prominently the Russo-Ukrainian war, the prospects of reducing food insecurity are bleak (Behnassi & El Haiba 2022). Estimates put forward the possibility that close to a billion people will be food insecure by the end of the decade (Fig. 1)

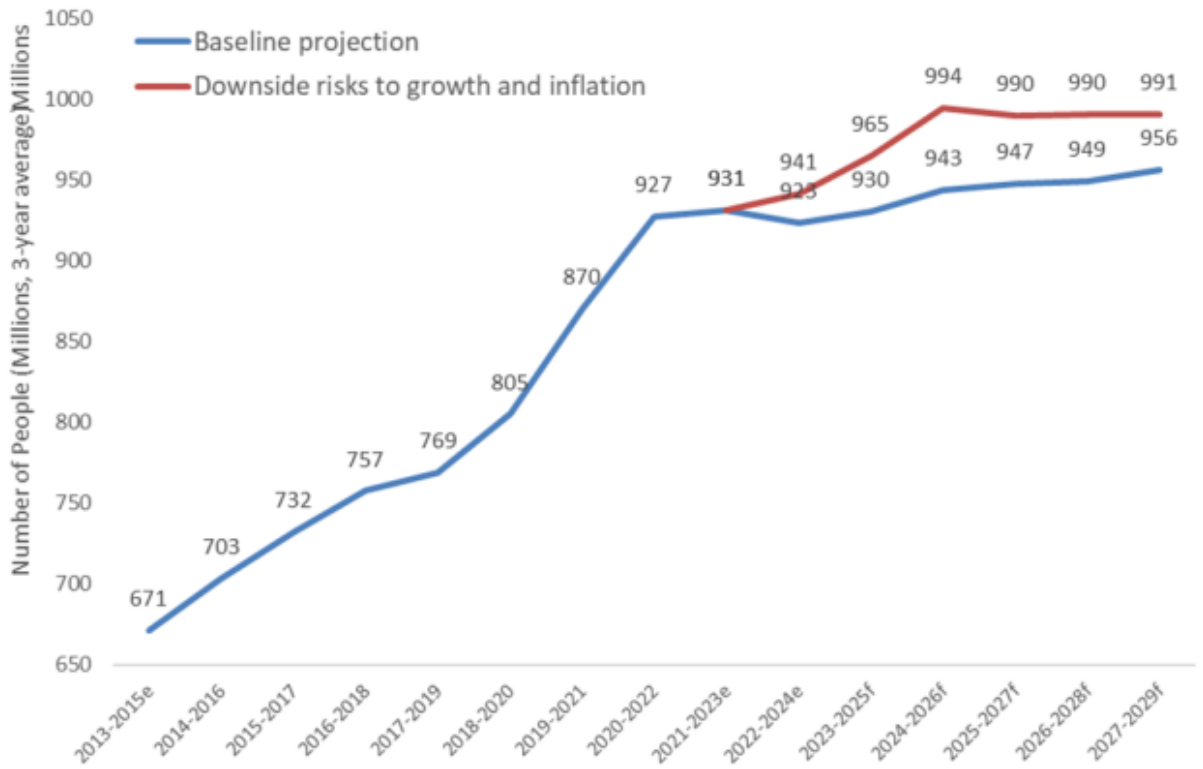

Fig. 1. Projection of number of severely food insecure people worldwide. Calculated by summing World Food Security Outlook country data as of October 2023 and scaling to 216 countries and territories by matching the latest UN global population count. e = estimate, f = forecast (Andrée, 2023).

While the current body of research has identified many causes of food insecurity in the developing world. For instance, geographical features, inadequate agricultural policy or distorted world markets, the consequences have remained relatively understudied (Hajdu, 2009; Bowen et al., 2021; Smith et al., 2000). Consequences have rarely been assessed outside times of crises, such as violent conflicts. In a vicious cycle, food insecurity drives instability, which in turn drives food insecurity (CSIS, 2023). Therefore, a more comprehensive and gradual approach to understanding the effects food insecurity has on institutions is vital to ensure the well-functioning of a state and reduce instability.

Central to adequate institutional performance is the trust citizens have in their institutions. Trust resolves uncertainty in interactions, lowering transaction costs of implementation and support for policy. In the case of low trust, transaction costs increase, however, when an individual turns to active distrust, the implementation of policies might be halted (Van De Walle & Six, 2014). The disastrous effects of both low trust and distrust in government became clear during the Covid-19 pandemic. As a result of vaccines and face masks rejection in low trust settings, the number of infections and fatalities escalated in some subsets of the population (Caplanova et al., 2021). Understanding causes for eroding trust is both key to strong and stable institutions but also to improving populations' quality of life.

Furthermore, existing literature relating to food security highlighted the absence of an approach fitted to institutional trust. While both the community and global level have featured in studies, the national level processes have been understudied (Agneman et al., 2023; Kassa, et al., 2023). Moreover, when addressing trust in institutions, the approaches did not specify between distinct types of trust such as in state and representative institutions. However, investigating possibly different responses of citizens is central to adequately reducing the trust deficit in specific institutions.

This study seeks to address these issues and expand the literature on trust by providing new insights on the interaction between food insecurity and institutional trust. It does so by answering the following research question: *How is institutional trust affected by food insecurity?* Results provide a new understanding of institutional trust for academia and can also give policymakers new insights, to adopt the right approach to build resilient institutions in developing countries.

In search of answering the research question, a multivariate regression will be fitted to survey data from the Afrobarometer (2019). Endogeneity risk is accounted for through the inclusion of

control variables that are based on the general determinants of trust and alternative explanations. The results, apart from confirming the negative relationship, highlights the dissimilar effects food insecurity has on different institutions.

Theory

In the first section, the existing literature is highlighted, and the main independent and dependent variables are defined. General determinants of institutional trust are identified, and applied to the context of food insecurity, before explaining social contract theory. Subsequently, trust in institutions was disaggregated into trust in representative and state institutions. Alternatively, various confounders through which food insecurity impacts institutional trust are discussed. Finally, the literature was be transformed into two testable hypotheses.

Conceptualisation of Food Insecurity and Institutional Trust

Two main definitions exist to conceptualise food insecurity: the United States Development Agency one and the FAO one.

On the one hand, the United States Development Agency considers part of food security to be a ‘’socially acceptable access to food’’ (Schroeder & Smaldone, 2015). In spite of being broad enough to accept different measurement, the usage of “socially acceptable” in the definition induces a lack of comparability between countries and societies. Furthermore, this social element does not fully presents the different levels of food (in)security, which is not fitted for evaluating variation that runs from food secure to being severely malnourished.

On other hand the FAO as the leading organization on food security, focussing mostly on developing countries, has defined food insecurity as: *‘’lack of regular access to enough safe and nutritious food for normal growth and development and an active and healthy life.”* (FAO, 2023). There are several elements to be taken away from this definition, for example, the nutritional value of food and the ability to utilize food for an active life. However, availability of food does not mean it is accessible for all due to social or economic barriers. Institutions play a role in managing these barriers and carry responsibility for implementing food security policies. Resultingly, food insecurity exists in varying degrees, ranging from mild food

insecurity where there is worry of running out of food, to severe, where people are experiencing chronic hunger (Cafiero et al., 2016). As a multifaceted and complete definition, it is fitted for examining food insecurity in relation to trust (Kassa et al., 2023). Additionally, with no consensus on the measurement of food security, the definition of the FAO is broad enough to facilitate different methods such as caloric intake measurement or self-reported surveys.

Secondly, the concept of trust does not accept a single definition. Starting broadly, two dimensions of trust are present in the literature. One centred around trust among peers, ‘’horizontal trust’’, and another focussed on trust towards government and other institutions, ‘’vertical trust’’ (Sztompka 2006). This study uses the vertical dimension, as the focus is on the knowledge gap between food insecurity and institutional trust. Although horizontal trust is vital to the functioning of society, and subsequently of institutions, its exclusion makes it possible to understand the effect of food insecurity on different types of institutions.

The vertical dimension is interchangeably used with various terminologies, such as ‘’political trust’’, ‘’institutional trust’’ and ‘’trust in government’’ (Afrobarometer, 2023a). There are nuanced, but substantive differences between the terms, for example, trust in government solely concerns the executive branch of the political structures, while political trust alludes to trust in the entire political system (OECD, 2013). Institutional trust implies differentiation between institutions of the state and representative institutions, and it therefore used in this project (Mattes & Moreno 2018). Trust in representative government institutions denotes trust in the elected organizations of which some belong to the executive branch such as the president, and others to the legislative branch, namely parliament. Whereas trust in state institutions represents trust in the segments responsible for enforcing the rules and adjudicating, for instance, the police or judiciary (Afrobarometer, 2023a). The term institutional trust is used in this study, following Mattes and Moreno’s definition: *‘’Institutional trust refers to the vertical bond of confidence that citizens place in the organizations that make, adjudicate, and enforce the rules that govern society.”* (2018, p. 367).

Determinants of Trust in the Context of Food Insecurity

To begin, general determinants of trust are examined. Theories of horizontal trust are applied to, and combined with vertical trust processes, identifying the relevant mechanisms that were not yet present in the literature. Prerequisite to building trust between a government and its

citizens is *interaction*. For a citizen to see its government as legitimate, the state needs to be efficient in interacting with its population, fulfilling their expectations of performance. The primary pathway for exchange that increases trust, is through taxation, Hutchison and Johnson (2011) find that policies increasing regulation of economic activity increase confidence in the capability of the institutions to fulfil their function. In contrast, rentier states, rushing to attain riches of natural resources, neglect institutions capable of interacting with civilians, decreasing trust.

Even when interaction is frequent, several individual level factors determine how institutional trust is affected. These factors are often context dependent and will therefore be adjusted to the context of food insecurity. Three of them have been identified by Alesina and La Ferrara (2000): individual characteristics, ethno-racial group dynamics and community or region.

Individual characteristics encompass among others, education, recent history of traumatic experiences and income. *Education*, while having a limited effect on food insecurity, is more strongly related to trust. While generally improving a citizen's understanding of governmental processes, it has an ambiguous effect on trust, which will be explained in detail in the alternative explanations section. In short, where in developed countries it is associated with increasing trust, in developing countries it can be the opposite (Dalton, 2005). Alesina and La Ferrara's (2000) examination of *traumatic experiences* is more generally applicable. Trauma, being understood as witnessing a major negative experience, has an adverse effect. The experience of severe food insecurity, or hunger, is also perceived as traumatic, being found to influence behavioural processes for years to come (Christelis & Dobrescu, 2018). Finally, an individual's *income* has mixed effects on levels of institutional trust. While a lower income is generally associated with more food insecurity and lower trust, citizens with a lower income can be more trusting towards institutions (Burchi et al., 2018). Medve-Bálint and Boda (2014) find that those with a lower income are more dependent on the state for survival. Subsequently, they are less critical of its functioning, while the wealthier end of the population, thus, independent, sees its flaws. In assessing shortcomings such as corruption, the institutional trust declines.

Another factor is captured by *ethno-racial group dynamics.* Ethnic groups that claim to have been discriminated against are less trusting in general. Being part of such a group negatively affects the position in the socio-economic structure, due to discriminatory treatment by institutions (Smith, 2010). Exemplified by ethnic favouritism, influencing both trust and food security (Hutchison & Johnson, 2011). More precisely, the distribution of food assistance programmes can be highly dependent on co-ethnicity between the communities in need and

those in power. As such, marginalised ethnic groups, which are not benefiting from state funded programmes, will have a higher tendency to distrust the institutions and remain food insecure. Contrary, ethnic favoured groups will benefit from more assistance from the state, increasing their food consumption and yielding higher levels of trust (Akbari et al., 2020).

Lastly, the *community or region* an individual lives in determines the relationship of trust. Living in a more unequal community is found to decrease trust through similar mechanisms as race and ethnicity (Alesina & La Ferrara, 2000). Those living in the periphery, both geographically far away or not of interest to the state, deal with a lower quality of services (Blair, 2000). Marginalised individuals thus develop a negative perception of the state as it does not provide support for them. While other regions might receive infrastructure capable of transferring food and reducing food insecurity, their region's development is obstructed. Similarly, Kaasa and Andriani (2022) find that the perceived distance to power of a region is a strong determinant of trust. Being far from power, and therefore unable to influence policy choices, leads to feelings of vulnerability. Culminating in a perceived relationship of subordinance that limits the effectiveness of government in implementing policy. Individuals thus have the perception that the government is not working for their interests, weakening trust.

The Social Contract in Food Insecure Settings

The lack of clarity around the definition and operationalisation of institutional trust results in a divide in literature. Another complicating factor is the absence of broad scholarship relating food insecurity to behavioural processes. In search of a more generally applicable approach, this section will apply social contract theory to the context of food insecurity.

Generally, as observed in the determinants of trust, a feeling of relative deprivation is found to decrease trust in institutions. The perception that the government is not fulfilling its function of caring for its citizens, is best captured by social contract mechanisms. A social contract was defined by the World Bank in 2019 as ''*the implicit, mutual bargaining over what citizens expect from the state, and what the state can legitimately demand of citizens in return*'' (p. vii). In practice, citizens in situations of malnutrition see their deprivation as a failure of the government. While paying taxes, or even just cohering to regulation - in case there is no functioning taxation system - the government does not provide for their well-being, which decreases institutional trust (OECD, 2013). Citizens might become fully discouraged, halting

the push for accountability. This lack of engagement disincentivises officials to improve the service delivery or the formulation of new policies. Actions of the executive institutions that increases food provision, are thus of major importance in determining trust, while below par performance decreases both well-being and trust (Catterburg & Moreno, 2006; Hutchison & Johnson, 2011).

Due to its policy choices, the government and its institutions, play a central role in ensuring food security. Disrupted markets can lead to price hikes, endangering populations and food systems (Timmer, 2017). For example, in the Maghreb countries where the social contract is partly based on religion, governments, looking for national economic growth, implemented policies supportive of large agricultural entrepreneurs. These policies have led to conflict about water rights, resulting in degradation and increased food insecurity (Houdret et al., 2017). Yet, real-world processes put forward that citizens might not directly voice their concerns to the institutions, instead they seek accountability through informal methods. Trust in institutions will therefore still be affected and decrease, although not through the classical social contract (Brixi et al., 2015).

Nonetheless, even if accountability can be demanded through different channels, the functioning of the social contract depends on the attribution of responsibility for food insecurity to institutions. There are several elements in the causes of food insecurity and the make-up of the social contract that can lead individuals not to attribute responsibility to institutions. The nature of the social contract in developing countries likely differs from the ideal type described above. It could be based on different terms, in which the government only carries responsibility for law and order or is assigned based on religious terms (Loewe et al., 2021). This could mean that individuals do not blame the government when they are food insecure. The responsibility of food insecurity can be assigned to a different actor, perhaps through religion, self-blame or attributing it to an undefined actor such as “the West” (Yilmaz et al, 2022).

Furthermore, even if the institutions are seen as responsible, the context in which food insecurity appears can influence citizens 'behaviours. For instance, in the case of extreme weather leading to the failure of a harvest, the government is unlikely to be blamed, as it was powerless in preventing the event. Still, there might be blame for not safeguarding a reserve of food, or unproper crisis management (Slavin, 2016). In contrast, food insecurity originating from corruption or economic mismanagement can directly be linked to government performance. Those who feel relatively deprived during an economic crisis are more likely to engage in protests and strikes, showing a higher amount of dissatisfaction and less trust (Giugni

& Grasso, 2019) Overall, if citizens see that the government is unable to address, or, is at the origin of a crisis, they blame their situation on the government and trust declines (Halikiopoulou & Vasilopoulou, 2018).

Alternately, even in case of social contract failure, food insecurity can lead to a decrease in trust. Individuals living rurally might not interact with the governing institutions. Employing Hutchison and Johnson's (2011) interaction-based reasoning, if an individual does not have the opportunity to interact with institutions, trust is unlikely to increase and, thus, stays low. In remote areas the government is not often present, and individuals might rely on alternative service providers, such as the village community or even rebels (Krönke et al., 2022). By falling outside of government influence food insecurity leads to reliance on different actors, reducing the number of interactions between the government and its citizens. In cases of absolute isolation from the government, trust cannot decrease further, presenting a floor effect. In addition, since alternative service providers are less effective, the populations dependent on them suffer of food insecurity more frequently (Stavropoulou et al., 2017). Therefore, while the sporadic interaction with the government decreases levels of institutional trust, the subpar service provision leads to food insecurity.

Representative Institutions VS State Institutions

Fundamentally, the attribution of blame to an institution relates back to the democratic principle of separation of powers between legislative, judicial and executive power. This system ensuring partition and preventing the formation of absolute power, is still entrenched in many constitutions of Sub-Saharan Countries (Fombad, 2016). Yet, currently in various countries the segments have blended, possibly leading citizens to attribute responsibility for governmental tasks to the wrong institutions (Afrobarometer, 2023b). Therefore, before specifying between the different institutions, it should be assessed whether or not citizens attribute the different fundamental tasks to the correct institutions.

For instance, while the military has the capacity to attain absolute power, in case of separation of powers, citizens perceive this as beyond its mandate, and do not attribute responsibility for governmental processes with the military. Figure 2 displays responses to the question: *Would you disapprove or approve of military rule?* For the three countries examined, Uganda, Tanzania and Kenya, over 80% disapproves of military rule (Afrobarometer, 2019). While there

are several other reasons to disapprove of military rule, it is clear that citizens prefer a balanced system in which powers are separated.

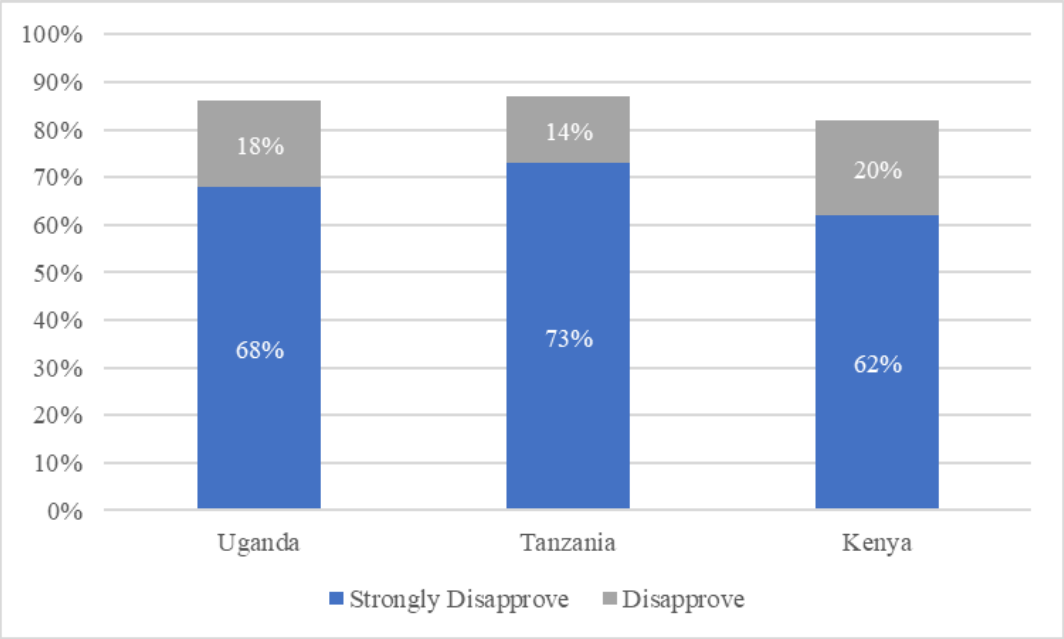

Fig. 2. Response to the question: 'Would you disapprove or approve of military rule?'. For the countries Uganda, Tanzania, Kenya, 2019

Consequently, as citizens differentiate between institutions, employing the social contract mechanism, the effects of food insecurity on trust in different domestic institutions can be specified. Previous work of Mattes and Moreno (2018) indicates that institutions can be separated in two groups. On the one hand, representative institutions, comprising parliament, president, ruling party and electoral council. On the other hand, state institutions as courts, police and the military. In inequality leading to a feeling of relative deprivation, representative institutions are blamed more than state institutions. The blame is assigned to the former as they are perceived to have the ability to address problems of inequality through policymaking. While the latter is seen as responsible for ensuring implementation. Resultingly, trust in state institutions decreases less than trust in representative institutions.

Particularly, food insecurity, as a symptom of both relative and absolute deprivation can be attributed to the representative institutions. On the absolute side, food insecurity is closely linked to poverty, which the government is held responsible for. In Zimbabwe, economically stagnating, respondents regarded food security as one of the main challenges the country faced. Trust ratings, showcase that representative institutions, local governmental councillors, members of parliament and the president, receive lower levels of trust than state institutions, here the courts of law (Fig. 3) (Afrobarometer, 2021, 2022).

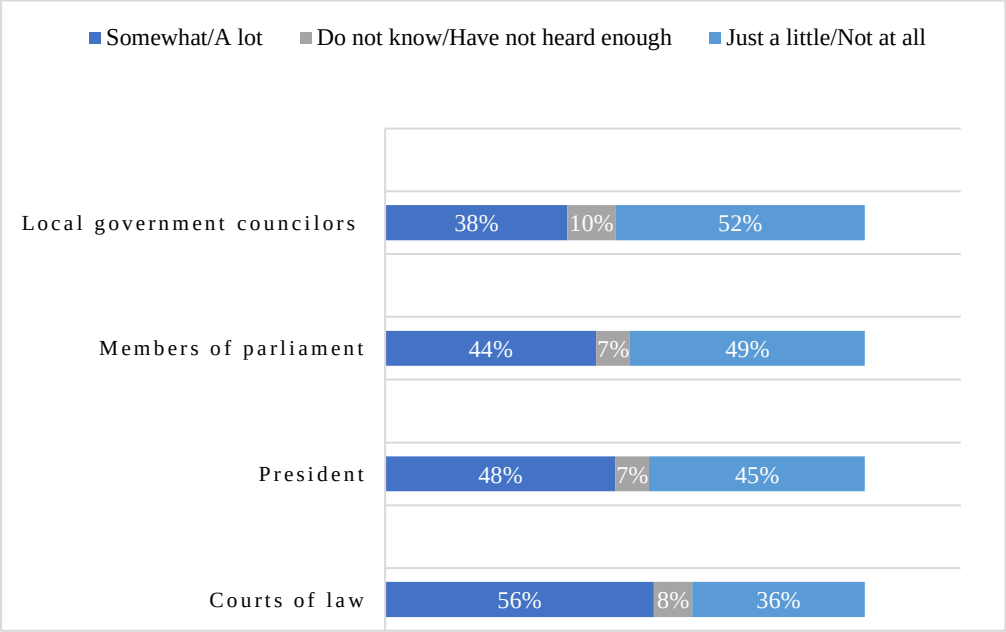

Fig. 3 Trust in key institutions and public figures, Zimbabwe, 2021.

Following from the theoretical linkages, with the majority theory expecting a negative relationship between food insecurity and institutional trust, two hypotheses have been defined:

H1: An increase in food insecurity will decrease trust in institutions.

H2: Food insecurity affects trust in representative institutions more than trust in state institutions.

Alternative Explanations

Alternatively, the relationship between food insecurity and institutional trust might be explained by confounders. These confounders could lead to a spurious relation, in which both the variation in the independent and dependent variable is explained by a third variable. The following

section considers three relevant confounders that could serve as alternative explanation. In order, education, violence and the rural-urban divide are explored.

Commencing with the *individual characteristic* of education, as citizens get more educated, their expectations of the government change. The more educated an individual, the likelier they are to have high expectations of the government. Though these expectations might be hard to fulfil as developing countries often deal with overlapping crises (Dalton 2005). Therefore, when expectations of citizens rise more quickly than policy performance, trust decreases (OECD, 2013). This leads to individuals that might have not has a change in food insecurity to blame their government for the remaining times they go hungry. In addition, Mishler and Rose (2001) confirm that political and economic government performance is still a central determinant for institutional trust. However, a more educated individual might be better able to understand the reasons for government performance, making them more critical. Education is thus considered as a strong determinant of institutional trust, capable of explaining a decrease of trust while food security does not change.

Furthermore, violence, often the result of *ethno-racial factors*, may explain the relationship between food insecurity and institutional trust. Starting with the effect of violence on trust, which is disputed. On the one hand, scholars find higher collective action among those affected by war. An extreme example by Blattman (2009) finds higher voting and political action in Ugandan former child soldiers. On the other hand, Kenyan citizens impacted by violence report lower trustworthiness (Becchetti et al., 2011). For this project, building on the work of Cassar et al. (2013) it is assumed that trust is negatively impacted by violence. Victims of violence are more likely to turn to a traditional leader for adjudication of a conflict than to the formal legal procedure. In addition, they are less likely to report someone to the police in case of misconduct. These two state institutions are less trusted, complicating their efforts and lowering the quality of services delivered, further degrading trust.

The negative effect of violence on food security is more straightforward. The occurrence of violence affects decreases crop yields and raises prices of food. States that are in conflict are also less well integrated into world markets, decreasing the amount of imports, while the demand is larger. Government spending is also more focussed on the military, reducing budgets available for social welfare. As a result, as all elements occur simultaneously food insecurity increases (Brinkman & Hendrix, 2011). On top of that, individuals affected by violence are less well integrated in markets for food, depending on self-produced food or even on donations (Cassar et al, 2013). This harms access to food, making them more susceptible for future food

insecurity. Consequently, those affected by violence are more food insecure and possess less institutional trust.

Lastly, *community or region factors* can serve as an alternative explanation. In Sub-Saharan Africa, rural populations are more trusting of the government than urban ones. Urban residents are more likely to believe that their representative institutions lack integrity. Limited exposure to media in the rural areas can in part explain this divergence in trust level (McKay et al., 2023). In contradiction, non-democratic leaders might have an ‘’urban-bias’’, which prioritises support of the population in urban areas. Scared of an uprising, leaders invest in cities as they are most likely to start revolting against the regime, potentially increasing the trust in government there (Ballard-Rosa, 2020).

In terms of food security, the rural-urban divide affects both access to and availability of food. Scholars point out the many interlinkages between urban and rural households, with some rural individuals depending on remittances for access to food in dry periods, as they are more susceptible to weather influences (Crush, 2013). In contrast, the urban poor cannot fall back on subsistence agriculture, and as through urbanization the ratio food producers to consumers changes, price shocks can make them vulnerable (Brinkman & Hendrix, 2011). Yet, large scale urban food insecurity can be more easily prevented, as there is infrastructure present capable of supporting an influx of food (Ballard-Rosa, 2020). In short, the unpredictable effects on both food insecurity and institutional trust makes it necessary to control for the rural-urban divide, as a potential confounder.

Research Design

This project seeks to expand the literature by assessing a theoretical mechanism, nevertheless, this can be achieved in several manners. Where small-N approaches such as process tracing or comparative analysis are excellent for in-depth analysis, reducing risks of reverse causation and capable of identifying specific processes. The absence of in-depth literature regarding the effect food insecurity on trust, leads to prefer a design providing more comprehensive conclusion. Furthermore, the many factors found to possibly influence the relationship cannot be as systematically accounted for in a qualitative design.

Consequently, a large-N quantitative model is chosen. More precisely, a multivariate linear regression. This design can be used to address the risk of confounding, endogeneity being the main challenge to successfully answering the research question. A large number of variables is taken into account, resulting in more generalisable results. Additionally, it provides exact measurements, which allows comparison of the different variables and their effects. Furthermore, the possibility to replicate or build on this study through the addition of controls or case allows for higher validity of the research .

Another challenge in the relationship between food insecurity and institutional trust is reverse causation. For example, someone might reject food aid on the basis of distrusting the providers, making them more food insecure. An additional process that might introduce bias is a self-selection cycle, in which those distrusting of the government are less likely to move to urban areas where the government has more presence. Consequently, those left in the rural areas are more distrusting of the government, while also being subject to greater risk to food insecurity. However, reliable results are sought after by having identified the relevant theoretical mechanisms.

Case selection

The case selection of individuals in Kenya, Tanzania and Uganda is motivated by both theory and availability of data. To support a linear regression, there is a need for variation in both the dependent and independent variable, this variation is present in many Sub-Saharan countries. Still, to ensure comparability between the cases, countries from one sub-region were selected.

The countries in Eastern Africa, already suffering from the effects of climate change and will be harmed more in the future, assessing the effects of food insecurity there is thus highly relevant (WFP, 2023). Specifically Kenya, Tanzania and Uganda are chosen as they are geographically close and share a similar colonial history that impacts the formation of institutions (Thompson, 2016).

Data from 2017 is used, being the last Survey Round of the Afrobarometer unaffected by the Covid-19 pandemic. The Covid pandemic might have caused disruptive effects on both trust and food security, hence more recent data is not suitable for this study. The study utilizes individual level data, no national averages are used, difference in circumstances is thus captured better without averaging out effects.

Data and Operationalisation

Data for the analysis is taken from international providers. The Afrobarometer (2019) data is employed for nearly all of the controls, a proxy for food insecurity and trust indexes, while ACLED (2023) tracks the control of violence. Where subnational data is scarce, these agencies provide data down to the local level. The Afrobarometer program measures attitudes of individuals on a wide range of topics. Moreover, the focus on Africa, hosting the majority of developing countries, ensures generalisable use of the method on the continent. In contrast, the World Values Survey could also have been used, is less fitted to the African context, possibly introducing bias. ACLED, records violence on a regional level and divides them in subtypes. This allows for isolation of data specifically related to for attacks on civilians. Alternately, the Uppsala Conflict Data Program, does not contain events without fatalities making it less suitable for this project.

The measures of concepts are based on theory and previous research to ensure correct operationalisation. While some proxies are used, for instance, income being estimated through employment, the availability of data did not permit other options. Moreover, due to the time limitations of this project it was not possible to construct a survey that could be used.

Commencing with *Food Insecurity*, using a question from the Afrobarometer, phrased as: *Over the past year, how often, if ever, have you or anyone in your family gone without enough food to eat?* The responses range from 0, ‘’never’’, to 4, ‘’always’’. While capturing only the access dimension of food insecurity, it serves as a proxy as it is also part of the Food Insecurity Experience Scale-method. This method composed by the FAO contains eight questions to assess the experience of an individual with food insecurity. The data did not allow for full analysis of food security according to the FAO methodology.

Following Mattes and Moreno (2018), *Institutional trust* will be disintegrated into two indexes. *Trust in representative government institutions* will be calculated by adding the scores for trust in the President, Parliament, Local Governmental Council and the Ruling Party. Scores per institution can differ from ‘’not at all’’ to ‘’a lot’’, varying from 0 to 3, the combined index can take values ranging from 0, no trust in any institution, to 12, fully trusting all institutions. The second index, *Trust in state institutions*, is calculated in a similar manner, by adding scores for trust in the police, army and courts of law. Resultingly, the index runs from 0 to 9. The

deconstruction of the variable of *Institutional trust* into these two indexes supports the identification of the effects food insecurity might have on different institutions.

The controls represent both determinants of institutional trust and alternative explanations enhancing validity. *Income* is included through a proxy that measures employment, ranging from 0, ‘’not looking for employment’’, to 3, ‘’Full-time employment’’. To account for *Ethnicity*, a score of 1 indicates the individual feeling fully national (e.g. Kenyan), while a score of 5 indicates the individual feels fully ethnic (e.g. Masai). This was chosen, as opposed to separating the ethnicities, to enhance generalisability.

As for the alternative explanations, the effect of changing expectations is measured by the highest level of *Education*, on a scale from 0 to 9, signifying ‘’no’’ to ‘’post-graduate’’ levels. The occurrence of *Violence* is coded as a binary, with 1 indicating presence, and 0 absence. As there was a low number of reports present in the surveyed areas, the years of 2015 and 2016 have been included, to limit reverse causation. Lastly, the *Rural-Urban* divide is a binary, with 0 being rural and 1 being urban.

Kassa et al. (2023) identify several other general control variables for trust processes. *Gender* and *Age*, are found to have effects on trust processes, with males more likely to trust institutions and trust decreasing with age. Both are covered straightforwardly, with 0 indicating male, and 1 female and age starting at 18 years. Additionally, they identify *Religiosity*, having a positive effect on trust, with a binary estimation, 0 indicating not religious, and 1 religious.

Country fixed effects are also added to the analysis. These fixed effects account for unobserved heterogeneity between the different countries in the analysis. More precisely they control for time-invariant characteristics, as cultural, historic or geographic factors. As such, using country specific fixed effects allows for producing more credible causal inferences about the relationship between food insecurity and trust.

Models

Ultimately, the variables were translated into five models. The first only considers the relationship between institutional trust and food insecurity, while those that follow add country effects and controls. Model 4 and 5, compare the effects on the two subtypes of trust, namely trust in representative and state institutions. In the models α indicates the intercept of the

respective response variable. The change in mean in response to a unit increase in variable x is denoted by βx. Residuals Ɛ of model i are indicated by Ɛi.

Model 1: $Institutional\ Trust = \alpha + Food\ Insecurity * \beta_1 + \mathcal{E}i.$

Model 2: $Institutional\ Trust = \alpha + Food\ Insecurity * \beta_1 + Tanzania * \beta_2 + Uganda * \beta_3$

Model 3: $Institutional\ Trust = \alpha + Food\ Insecurity * \beta_1 + Tanzania * \beta_2 + Uganda * \beta_3 + Education * \beta_4 + Violence * \beta_5 + Rural\text{-}Urban * \beta_6 + Ethnicity * \beta_7 + Income * \beta_8 + Religion * \beta_9 + Age * \beta_{10} + Female * \beta_{11} + \mathcal{E}i.$

Model 4: $Institutional\ Trust: Representative = \alpha + Food\ Insecurity * \beta_1 + Tanzania * \beta_2 + Uganda * \beta_3 + Education * \beta_4 + Violence * \beta_5 + Rural\text{-}Urban * \beta_6 + Ethnicity * \beta_7 + Income * \beta_8 + Religion * \beta_9 + Age * \beta_{10} + Female * \beta_{11} + \mathcal{E}i.$

Model 5: $Institutional\ Trust: State = \alpha + Food\ Insecurity * \beta_1 + Tanzania * \beta_2 + Uganda * \beta_3 + Education * \beta_4 + Violence * \beta_5 + Rural\text{-}Urban * \beta_6 + Ethnicity * \beta_7 + Income * \beta_{8+} Religion * \beta_9 + Age * \beta_{10} + Female * \beta_{11} + \mathcal{E}i.$

Assumptions

To ensure a high internal validity of the study, assumptions regarding the models should be verified. The multivariate regression warranted testing for multicollinearity, autocorrelation, normal distribution of errors, homoscedasticity, linearity, outliers and influential cases. The several measures observed did not indicate any violation of assumptions, ensuring that valid conclusions can be drawn.

Results

Having clarified the theoretical foundations and operationalising the theory, this section contains the interpretation of results. It also considers the limitations and scope of the project. Prior to seeking causal relations, correlation is established between the independent and dependent variables. To test for correlation, a scatterplot was composed (Fig. 4.). With little variation in the food insecurity, due to the ordinal ranking, the jitter function was used for the visualisation. Although weak (R2=0,004), there is a slight negative correlation, meaning the more food insecure an individual is, the less likely they are to have trust in institutions.

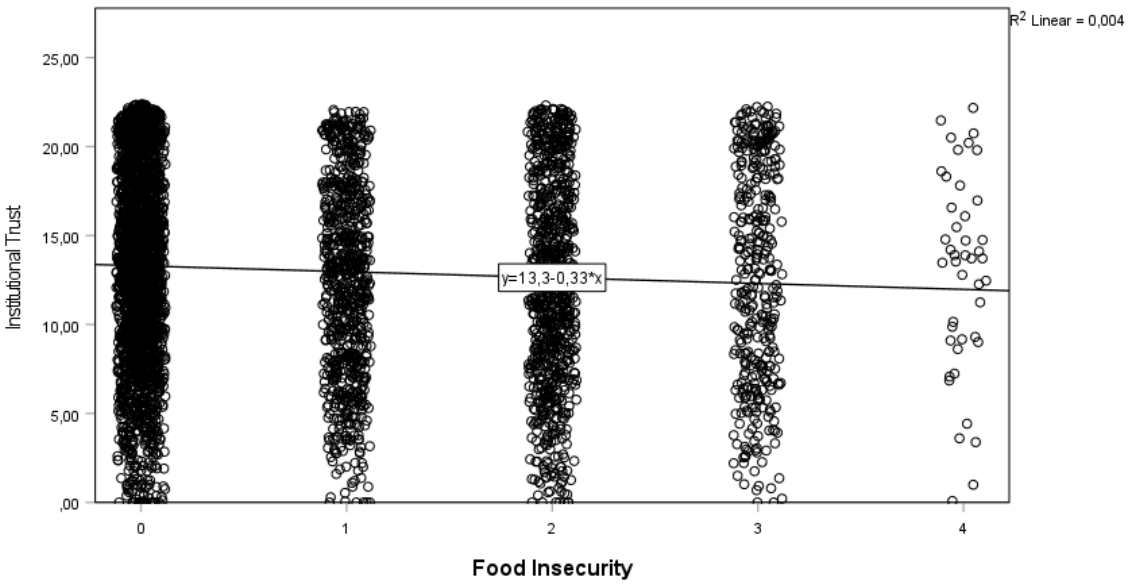

Fig. 4. Scatter plot of the relation between institutional trust and food security.

Table 1: Linear regression model of Food Insecurity on Institutional Trust

	Model 1	**Model 2**	**Model 3**
(Constant)	13,301***	10,823***	13,612***
	(0,112)	(0,160)	(0,680)
Food Insecurity	-0,322***	-0,243**	-0,470***
	(0,082)	(0,077)	(0,077)
Tanzania		4,493***	4,102***
		(0,191)	(0,203)
Uganda		1,476***	1,042***
		(0,233)	(0,225)
Education			-0.406***
			(0,050)
Violence			0,005
			(0,235)
Urban-Rural			-1,142***
			(0,175)
Ethnicity			-0,063
			(0,073)
Income			-0,224***
			(0,071)
Religion			-1,050
			(0,542)
Age			0,026***
			(0,006)
Female			0,390*
			(0,164)
R^2	0,004	0,128	0,175
Adjusted R^2	0,003	0,127	0,173
N	4172	4172	4172

Note: OLS regression coefficients with standard errors in brackets.
***p < 0,001; **p < 0,01; *p <0,05

Table 2: Linear regression model of Food Insecurity on State and Representative Institutional Trust

	Model 4: Representative Institutions	**Model 5: State Institutions**
(Constant)	7,516***	6,156***
	(0,434)	(0,297)
Food Insecurity	-0,383***	-0,091**
	(0,049)	(0,034)
Tanzania	4,171***	1,987***
	(0,130)	(0,089)
Uganda	0,414**	0,682***
	(0,144)	(0,099)
Education	-0.245***	-0.145***
	(0,032)	(0,022)
Violence	-0,132	0,120
	(0,150)	(0,102)
Urban-Rural	-0,764***	-0,416***
	(0,113)	(0,077)
Ethnicity	-0,024	-0,051
	(0,047)	(0,032)
Income	-0,127**	-0,096**
	(0,045)	(0,031)
Religion	-0,510	-0,650**
	(0,346)	(0,234)
Age	0,020***	0,006**
	(0,346)	(0,003)
Female	0,317*	0,108*
	(0,105)	(0,072)
R^2	0,144	0,159
Adjusted R^2	0,142	0,157
N	4375	4481

Note: OLS regression coefficients with standard errors in brackets. ***p < 0,001; **p < 0,01; *p < 0,05

Commencing with Table 1, containing the complete index of institutional trust on food insecurity and the various controls. The common trend throughout the models is a negative effect of food insecurity on institutional trust, as expected in the theory. However, due to controlling for country and the addition of control variables, the models improve in their explanatory power. The most complete model explains more than 17% of variation in institutional trust (Adj. R2=0,173). While still having a weak effect size, it improves considerably compared the simple model (Adj. R2=0,003).

Similarly, the size of the coefficient for food insecurity differs in size, becoming larger when keeping the other variables constant. Despite the seemingly small difference in the effect of food insecurity, from –0,322 points to –0,470 points, the consequences of this shift are substantial and significant at the 99,9% level. In model 1, a one unit increase of food insecurity, for instance, from going without food just once or twice, to many times, is associated with a decrease in institutional trust of 0,322 points (t=-3,935, p<0,001) on a scale of 0 to 21. While in model 3, controlling for all other variables, the same one unit increase in food insecurity, decreases institutional trust by 0,470 (t=-6,074, p<0,001). By addition of the controls, trust levels decrease almost 1,5 times as quickly in the respective countries. Mirroring findings of Kassa et al. (2023) the models support the first hypothesis: *An increase in food insecurity will decrease trust in institutions.*

The inclusion of the control variables highlights interesting relations. Holding the other variables constant, a one unit increase in education is associated with a 0,406 point decrease in trust, being significant at the 99,9% level (t=-8,123, p<0,001). The urban-rural divide also proves influential, keeping the other variables constant, those living in urban areas trust institution 1,142 points less than those living rurally (t=-5,629, p<0,001). This coefficient confirms the theoretical expectation of McKay et al. (2023), while finding no evidence for the urban-bias theory (Ballard-Rosa, 2020). While the coefficients for the variable of violence are not significant, they show an intriguing relation, while being non-statistically significant. Keeping the other variables constant, the occurrence of violence is associated with a decrease of 0,132 points in trust in representative institutions (t=-0,881, p>0,05), but with a 0,120 increase in trust in state institutions (t=1,174, p>0,05).

Continuing, table 2 contains the specified indexes for trust in representative and state institutions. The specification did not improve the explanatory power of the models, with model 4 explaining 14% of variation in trust levels (Adj. R2= 0,142), and model 5 explaining close to 16% of variation (Adj. R2= 0,157). Both models present a weak effect size.

Another distinction between the indexes is present in the strength of the effect of food insecurity, again holding the other variables constant. On the one hand, trust in state institutions decreases with 0,091 points on a 0 to 9 scale for every increase in food insecurity, and is significant at the 99% confidence interval (t=-2,700, p<0,01). On the other hand, trust in representative institutions decreases with 0,383 points on a 0 to 12 scale for a one unit increase in food insecurity, being significant at the 99,9% level (t=-7,740, p<0,001).

After correcting for the number of institutions in each index, 3 for state and 4 for representative institutions. Trust in representative institutions decreases more than three times as quickly as trust in state institutions, -0,383 compared to -0,121, matching expectations and supporting the second hypothesis: *Food insecurity affects trust in representative institutions more than trust in state institutions.* Individuals differentiate between institutions when assigning blame for food insecurity, and it has strong consequences for trust levels, as anticipated from combining Afrobarometer's (2021, 2022) and Mattes and Moreno's findings.

Ultimately, the null hypotheses that food insecurity does not influence institutional trust can be rejected and causation concluded. However, there are some limitations to this conclusion. The availability of data restricted the measurement of food insecurity as a proxy needed to be employed. While the non-significance of some control variables could indicate issues with measurement, narrowing the scope of the project. The relatively weak effect size highlights that there are still numerous influential variables missing from the regression, potentially missing important confounders. In addition, limitations of the data carry over in this project, the Afrobarometer is based on face-to-face interviews, which could contain a social desirability bias in the measurement of trust or food insecurity.

Conclusion

While food insecurity is at an all-time high, understanding its negative consequences is more relevant than ever to ensure good governance. A survey of literature revealed a gap in the field of institutional trust. No clarity existed as of to what extent food insecurity proved influential, and which types of institutions were affected. To assess the relationship, a multivariate regression was employed with individual level Afrobarometer data from a subset of Sub-Saharan countries. Answering the research question: *How is institutional trust affected by food*

insecurity? The social contract theory was fitted to the context of food insecurity, pointing towards a possible decrease in trust as people got more food insecure.

Both hypotheses were supported by the analysis: higher levels of food security increase trust in institutions, similar to the general direction identified by Kassa et al. (2023). Furthermore, the magnitude of the relationship depends on what institutions are considered to be responsible, trust in representative institutions was observed to be affected more severely by food insecurity than trust in state institutions. These results corroborate Mattes and Moreno's (2018) theory, signalling that individual citizens do not see all elements of the state as belonging to one entity, allowing for more focus on accountability processes.

While being statistically significant and supporting the hypotheses, the model and research do possess certain limitations. By employing a large-N analysis containing countries specifically from East-Africa, generalisability is somewhat limited. Even within the region, results might not be fully applicable, where the countries compared are similar in many aspects, other countries in the region differ substantially. For instance, they suffer from active conflict, in the case of Ethiopia and South-Sudan, or they have different political culture, as Rwanda. On a larger scale, processes determining institutional trust could be context dependent as the political regimes of the countries study are all relatively unfree, findings could differ in more democratic regimes.

Regarding the internal validity of the study, the unit of analysis of the project: the individual, can be influenced by a wide range of factors, making it difficult to control for all. Many confounders were included, building on existing theory of trust, yet individuals might respond differently depending on their surroundings. As such the addition of supplementary controls could reveal new relationships.

While this project has extended the field of research on the governmental consequences of food insecurity, the exact nature of the processes is still unknown, providing future avenues for research. This study put forward the perceived role of representative institutions in food security, however, specifying what other political challenges affect which institutions can help determine trust building efforts. On the policy side, these results participate in a broader comprehension of factors influencing institutional trust, allowing for more effective trust building efforts. Strong institutions are vital for effective governance, when trust is absent, policy implementation comes to a halt and development stops, possibly creating a vicious cycle of decreasing trust and well-being.

In conclusion, this research provided new insights regarding the consequences of food insecurity. Results point out to a clear negative effect of food insecurity on trust in different national institutions. In a time where institutional trust is under increasing pressure, more should be done to safeguard the legitimacy the institutions hold. While food insecurity has been on the international agenda for almost 50 years, preventing instability due to food insecurity is another motivation for the international community to invest more resources in tackling this issue.

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