Witchcraft Beliefs, Social Relations, and Development[*]

Boris Gershman[†]

American University

December 2022

Abstract

Beliefs in witchcraft, or the ability of certain people to intentionally cause harm via supernatural means, have been documented across societies all over the world. Extensive ethnographic research on this phenomenon over the past century explored the many roles of witchcraft beliefs in communities highlighting both their social functions and detrimental consequences. Yet, empirical evidence based on systematic statistical analyses or experiments has been lacking until very recently. This chapter reviews the nascent literature on witchcraft beliefs in economics and other quantitative social sciences and summarizes the main directions and results of this research to date. The major themes discussed in the chapter include social relations, economic development, and institutions in their connection to witchcraft beliefs.

Keywords: Culture, Development, Institutions, Religion, Social capital, Witchcraft

JEL Classification Numbers: I31, O10, O31, O43, O57, Z10, Z12, Z13

[†]Department of Economics, American University, 4400 Massachusetts Avenue NW, Washington, DC 20016-8029 (e-mail: boris.gershman@american.edu).

1 Introduction

Over the past few decades, the economics of religion has grown to be a well-established, flourishing field of study. The bulk of empirical work in this field examines major world religions and denominations, their origins, spread, and effects, both historical and contemporaneous (Carvalho et al., 2019; Becker et al., 2021). There is also abundant research on religiosity in general and common beliefs in god, afterlife, heaven, and hell in relation to socioeconomic outcomes (Barro and McCleary, 2019; Bentzen, 2021). Meanwhile, economists have largely ignored a plethora of other beliefs in the supernatural and, until very recently, their study has remained in the domain of anthropology, history, and psychology (Gershman, 2017). This chapter focuses specifically on witchcraft beliefs, an ancient but still widespread cultural phenomenon, and reviews the nascent quantitative literature on the subject pointing to the profound implications of these beliefs for social relations and economic behavior.

The issue of definition has long been one of the hurdles inhibiting comparative analyses of witchcraft beliefs. While it is true that the vast ethnographic literature reveals substantial variation in the nuances, witchcraft beliefs share some essential features that have been surprisingly common across space and stable over time (Behringer, 2004; Hutton, 2017). This chapter relies on such commonalities and defines witchcraft as an ability of certain people to intentionally cause harm via supernatural means. Despite its seemingly limiting scope, this parsimonious definition provides a sufficient foundation to formulate hypotheses and explore them empirically. It also enables a construction of survey-based datasets suitable for systematic statistical analysis of witchcraft beliefs in contemporary societies.

From the earliest studies to present day, interdisciplinary research on witchcraft beliefs has been tremendously wide in scope, but several recurring questions stand out. What are the functions of witchcraft beliefs? What are their consequences? Why do they decline, persist, or experience revival? What factors trigger witchcraft accusations and persecutions? These are also the questions discussed throughout the chapter. Before addressing the big puzzles, the stage must be set by laying out basic empirical patterns and a conceptual framework rooted in the fundamental shared characteristics of witchcraft beliefs.

2   Basic patterns

Systematic reviews of ethnographic studies have established the presence of witchcraft beliefs in societies all over the world, with the first written record dating back to ancient Mesopotamia (Hutton, 2017). Given this ubiquity, some scholars suggested that humans actually have a deep-seated cognitive predisposition to believe in witchcraft (Boyer, 2001; Parren, 2017; Singh, 2021). Still, one may wonder whether this apparent universality reflects the focus of ethnographers on small isolated communities, where witchcraft beliefs merely linger before going extinct. A formal analysis of available survey data shows that this is not the case: far from being a relic of the past, witchcraft beliefs are a contemporary global phenomenon.

2.1   Geographic distribution

Gershman (2022) compiled and examined a dataset on witchcraft beliefs based on a string of six surveys conducted by the Pew Research Center over the decade between 2008 and 2017. These surveys explored various aspects of people's religious beliefs and values, with a focus on Christianity and Islam. They also included an array of questions on other beliefs in the supernatural, some of which can be used to identify witchcraft believers. One question in particular was present in every single survey and allows to build the largest sample of both individuals and countries based on a common definition: "Do you believe in the evil eye, or that certain people can cast curses or spells that cause bad things to happen to someone?" Despite the somewhat misleading reference to the evil eye belief, typically linked to the fear of unintentional harm caused by envious glances (Gershman, 2015), the clarifying part of this question corresponds exactly to the concept of witchcraft adopted above. It is thus used to identify believers among more than 140,000 survey respondents.

Figure 1 shows the global distribution of witchcraft beliefs across 95 countries and territories. Clearly, despite the presence of believers in every single country, there is a lot of variation in their population share, from 9% in Sweden to 90% in Tunisia, with an average of 43%. These estimates are conservative, both due to how the survey question is posed and its potential sensitivity for some respondents. Yet, a back-of-the-envelope calculation based on these numbers, along with population sizes, implies that roughly one *billion* adults in just the surveyed countries claim to believe in witchcraft. Note that, although some of the populous countries in Asia including India and China are not part of the sample, there is an extensive literature documenting witchcraft beliefs and practices
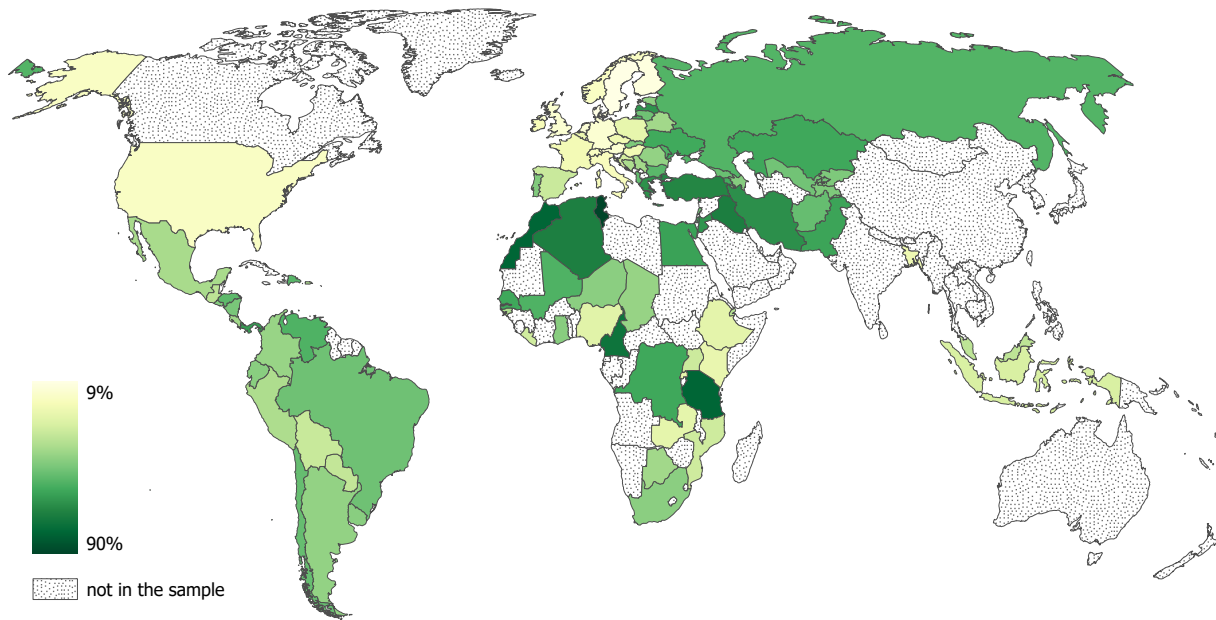
Figure 1: Witchcraft beliefs around the world.

Source: Gershman (2022).

throughout the continent, with persecutions being particularly concerning across India (Kelkar and Nathan, 2020).

Perhaps the clearest regional pattern observed in figure 1 is the relatively low prevalence of witchcraft beliefs in many European countries and the United States. On the other hand, witchcraft beliefs are very common in North Africa, the Middle East, and some countries of Sub-Saharan Africa. But there is also a striking variation within the world regions. For instance, in Europe as a whole, the share of witchcraft believers varies from about 10% in Scandinavia to over 60% in Latvia, Ukraine, and Greece. Furthermore, there are substantial within-country differences across localities and ethnicities (Gershman, 2016; 2020). As will become apparent from the following sections, these data are not just noise. Rather, there are robust patterns linking the variation in witchcraft beliefs to a whole range of relevant characteristics at the individual, regional, ethnic-group, and country levels.

2.2 Sociodemographic correlates

Figure 2 displays the relationship between witchcraft beliefs and key sociodemographic characteristics based on the merged individual-level data from all Pew surveys. The top row shows that witchcraft beliefs are somewhat more prevalent among younger people, females,
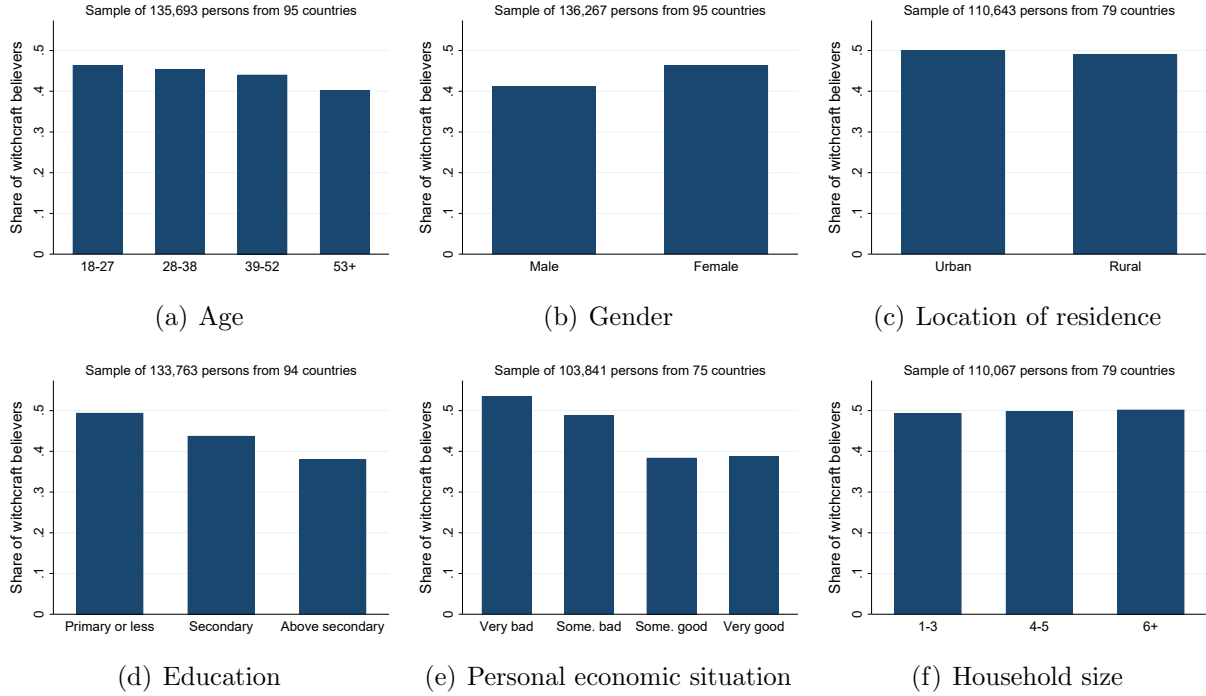
Figure 2: Correlates of witchcraft beliefs at the individual level.

Source: Gershman (2022).

and urban dwellers. The second row further shows that more educated and economically secure individuals are less likely to believe in witchcraft, whereas household size appears to make virtually no difference. These qualitative patterns largely continue to hold in a formal regression setting in which multiple characteristics are included simultaneously and country fixed effects are accounted for, but gender and urban location indicators are rendered statistically insignificant (Gershman, 2022).

Although some of the correlations in figure 2, such as those for education and economic well-being, are in line with simple modernization theory, perhaps a more striking takeaway is how widespread witchcraft beliefs are across all sociodemographic categories and how mild the group mean differences are. This is consistent with abundant anecdotal and ethnographic evidence on witchcraft beliefs cutting through age, class, and educational structures of society rather than being limited to illiterate, poor, or remote rural populations (Kohnert, 1996). The high prevalence of believers among young and urban populations fits the "modernity of witchcraft" literature documenting recent resurgence of witchcraft concerns in societies integrating in the process of globalization and experiencing technological change (Geschiere, 1997).
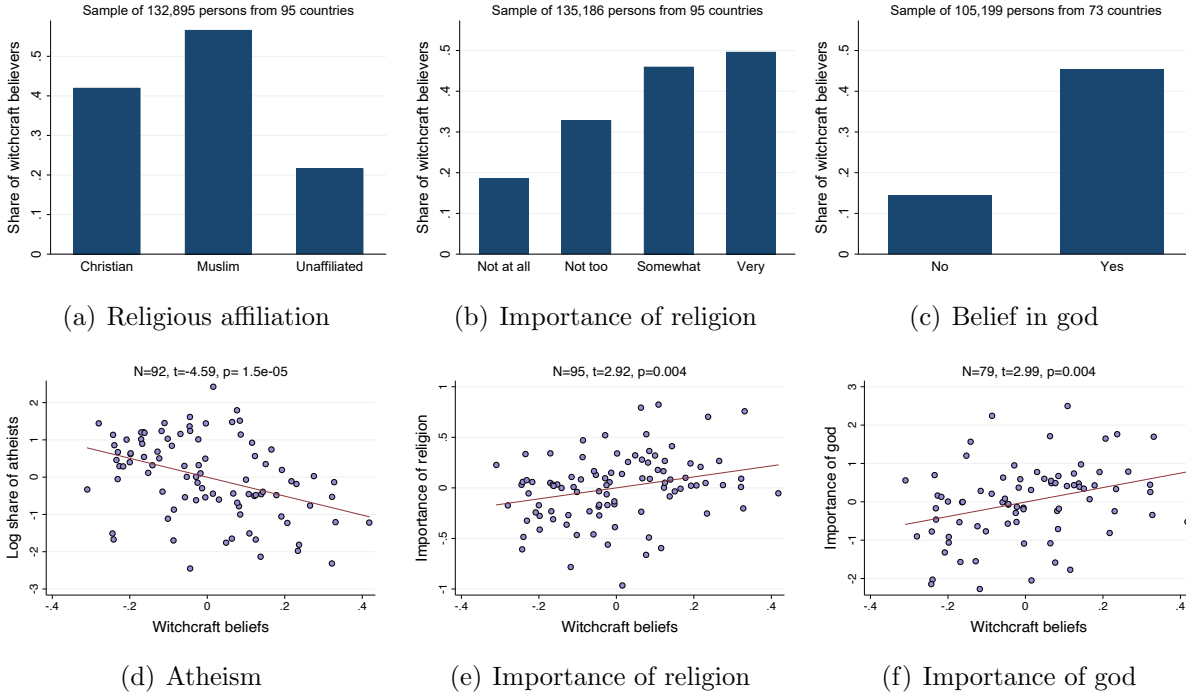
4

Figure 3: Witchcraft beliefs and religion across individuals and countries.

Notes: In the full sample, 62% of respondents identify as Christian, 27% as Muslim, and slightly over 10% are "unaffiliated" including agnostics and atheists. About 0.5% of respondents representing all other religions were excluded from the sample to construct the chart in panel (a). Diagrams in the bottom row represent scatterplots of residuals after accounting for continental fixed effects (added-variable plots). The *t*-statistics are based on heteroskedasticity-robust standard errors. Unless specified otherwise, these reporting conventions apply to all scatterplots below.

Source: Gershman (2022).

Figure 3 summarizes the relationship between witchcraft beliefs and religion. The top three charts show individual-level patterns for religious affiliation, belief in god, and religiosity. Importantly, 95% of witchcraft believers consider themselves either Christian or Muslim showing that respective sets of beliefs and values are compatible. The prevalence of witchcraft beliefs is higher among Muslims, although this pattern is driven by cross-country differences, particularly between Muslim countries in North Africa and the Middle East and predominantly Christian Europe. Not surprisingly, "unaffiliated" individuals, the vast majority of them in Europe, are less likely to believe in witchcraft.

People who believe in god and consider religion to be an important part of their lives are also more likely to believe in witchcraft, and these correlations carry over into the country level, as illustrated in figure 3. Witchcraft beliefs are also positively related to

beliefs in heaven and hell . Overall, there is clearly no rigid divide between religious and witchcraft beliefs. In fact, beliefs in supernatural powers, whether wielded by a high god or evil human beings, appear to go hand in hand.

Historically, some of the big religions, such as Christianity, have been deeply intertwined with witchcraft beliefs. For instance, during the European witch craze, witchcraft was widely believed to involve a pact with the devil, making it a religious crime (Behringer, 2004). Leeson and Russ (2018) further argue that the regional variation in European witch trials reflects competition between Catholicism and Protestantism for religious market share. In contested areas, both churches showed their commitment to eradicating evil by prosecuting witches. In modern times, while mainstream Christian churches tend to deny the existence of witchcraft, new Charismatic and Pentecostal movements eagerly incorporate local beliefs and rituals creating syncretic belief systems (Rio et al., 2017).

Curiously, the patterns presented in this section are largely in line with psychological studies on the individual correlates of beliefs in the supernatural, often based on small samples of college students. These studies typically employ psychometric scales to capture beliefs in "scientifically unaccepted phenomena" such as mind reading, psychokinesis, reincarnation, witchcraft, and existence of soul, god, and devil. A comprehensive summary of this research concludes that supernatural beliefs are typically stronger among females, younger and more religious individuals, as well as people of lower socioeconomic status, although there is substantial heterogeneity across studies and specific beliefs (Irwin, 2009).

To sum up, witchcraft beliefs are present throughout the globe, in villages and cities, among young and old, men and women, rich and poor, Christians and Muslims. At the same time, the apparent variation in their geographic distribution across societies invites a systematic comparative analysis linking witchcraft beliefs to a variety of relevant cultural, economic, and institutional characteristics. Prior to reviewing the outcomes of such analyses, along with other quantitative studies, it is important to summarize the most common features of witchcraft beliefs emerging from the ethnographic and historical literature. These recurring features help to build a conceptual bridge between belief and its behavioral consequences and motivate both coherent theoretical hypotheses and their empirical investigations.

2.3   Core features of witchcraft beliefs

Hutton (2017) conducted a painstaking qualitative analysis of 300 non-European societies pinpointed between 1890 and 2013, along with historiography of European witchcraft, and

identified five core features of a witch. Hutton's list represents an important benchmark and is provided below, along with some qualifications.

1. A witch "causes harm by uncanny means." Witches do this intentionally and are therefore commonly blamed for all sorts of misfortunes that serve as triggers for suspicions and accusations.

2. A witch "is an internal threat to community." Witches are usually insiders and harm those who are close to them. Although this is accurate in many settings, there are important exceptions such as inter-group witchcraft accusations found in Melanesia (Patterson, 1974). Furthermore, recent literature shows that across contemporary communities, potential set of suspected witches has been expanding as the processes of modernization and migration push the scope of daily interactions beyond the immediate circle of relatives and neighbors (Geschiere, 2013).

3. A witch "works within a tradition." Witches do not just randomly come and go. They acquire their malignant supernatural powers through heredity or special training, and these mechanisms are typically well-known to community members.

4. A witch "is evil." Witches are loathed and feared. Their acts are believed to be triggered by hostile feelings such as envy, spite, hatred, and greed.

5. A witch "can be resisted." Strategies for doing so include the use of benevolent counter-magic, convincing the witch to remove the curse, and persecution. Relatedly, most societies have specialists, or "witch doctors," whose job is to identify and counteract witches.

At least one other important pattern frequently comes up in case studies but is not part of the above list, despite being closely related to its items. Commonly, an act of witchcraft is believed to both harm the victim and benefit the witch, where the latter often involves an actual acquisition of wealth or power at the expense of the bewitched. Thus, witchcraft can explain both an individual's success and the lack of it among other community members. Such reasoning reflects the zero-sum mindset typical in societies with widespread witchcraft beliefs, as further discussed in section 4.2. Accusations of using witchcraft to promote one's fortune at the expense of others are best documented in contemporary studies but also appear in historical records of the European witch trials (Briggs, 1996).

Fundamentally, witchcraft beliefs produce two kinds of fear: the fear of bewitchment and the fear of witchcraft accusations. Both fears can be severe: bewitchment may result in great misfortune, according to believers, whereas an accusation of witchcraft may entail severe sanctions, from destruction or seizure of property to ostracism and killing. These witchcraft-related fears force people to regulate their behavior in order to avoid both angering a witch and being labeled as one. Some of the direct consequences involve mutual suspicion, mistrust, anxiety, aversion to individual wealth accumulation, reduced social mobility, low incentives for entrepreneurship, risk taking, and economic self-advancement in general. The same fears and forces also generate an overall tendency towards conformity and preservation of status quo. These basic connections between belief, fear, and resulting incentives represent the main building blocks of a conceptual framework relying on the core features of witchcraft beliefs.

While the above generalizations are sufficient to motivate the study of witchcraft beliefs in a comparative perspective, it is worth keeping in mind that there is substantial variation in the details of local beliefs and rituals. For example, there are different views on the acquisition and intergenerational transmission of witchcraft powers. Evans-Pritchard (1937) famously made a distinction between "witches," possessing an innate ability to cause supernatural harm, and "sorcerers," acquiring their powers through learning, although this dichotomy has been largely abandoned (Hutton, 2017). There is also variation in the typical gender and age of accused witches: although in many societies men and women of any age can be suspected of witchcraft, sometimes there is bias towards either men or women (Peacey et al., 2022; Kelkar and Nathan, 2020). In some cases, elderly women run the highest risk of being accused, while in others, children are often the victims. Other dimensions of heterogeneity include the nuances of rituals and preferred tools used by witches, their inclination for acting alone or in groups, the process of dealing with suspected witches, typical social or family relations between the accusers and accused, the powers possessed by witch doctors, and so on. In addition, it has been widely acknowledged that witchcraft beliefs are fluid and adapt in response to societal changes (Schram, 2010). Although these fine details are undoubtedly helpful in better understanding the local context in any given community, the following discussion is largely independent of them.

3   Social relations

Witchcraft beliefs and accusations are largely about local interpersonal affairs, even if the scope of what constitutes a community has been increasing over time. Not surprisingly, witchcraft beliefs have been shown to deeply affect social interactions, although untangling this complicated relationship is no easy feat. One line of research argues that witchcraft-related fears breed mistrust and erode social capital, whereas a long tradition in anthropology views those same fears as contributing to social cohesion. Evidence indicates that these two positions are not mutually exclusive.

3.1   Mistrust and antisocial culture

Fieldwork across diverse communities provides numerous case studies on the corrosive impact of witchcraft-related fears in the form of diminished cooperation, breakdown of mutual assistance networks, avoidance of joint projects, mistrust, and a general decline in social interactions (Ashforth, 2005; Golooba-Mutebi, 2005; van Bastelaer and Leathers, 2006). Motivated by these observations from the field, Gershman (2016) systematically examines the relationship between witchcraft beliefs and social capital.

The key data used in his study come from the wave of Pew surveys conducted in nineteen countries of Sub-Saharan Africa in 2008-2009. The main outcome variable captures responses to the standard "generalized trust" question: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" Figure 4 shows the distribution of generalized trust and witchcraft beliefs across African regions covered by the survey and reveals a clear negative correlation between the two. Formal regression analysis shows that, indeed, people living in regions with more widespread witchcraft beliefs, are less trusting, a relationship that is highly statistically significant and robust to the inclusion of individual socio-demographic characteristics, regional and ethnicity-level controls, and country fixed effects capturing nation-specific factors. Similar result holds for trust in people with different religious values, which, unlike generalized trust, is also negatively and significantly related to belief in witchcraft at the individual level. Furthermore, additional analysis using the Afrobarometer surveys shows that higher regional prevalence of witchcraft beliefs is associated with lower trust in relatives, neighbors, and other acquaintances, that is, damaged in-group relations.

Beyond trust, a similar qualitative pattern is observed for other metrics of social capital available in the survey sample. For example, people who claim to believe in witchcraft and

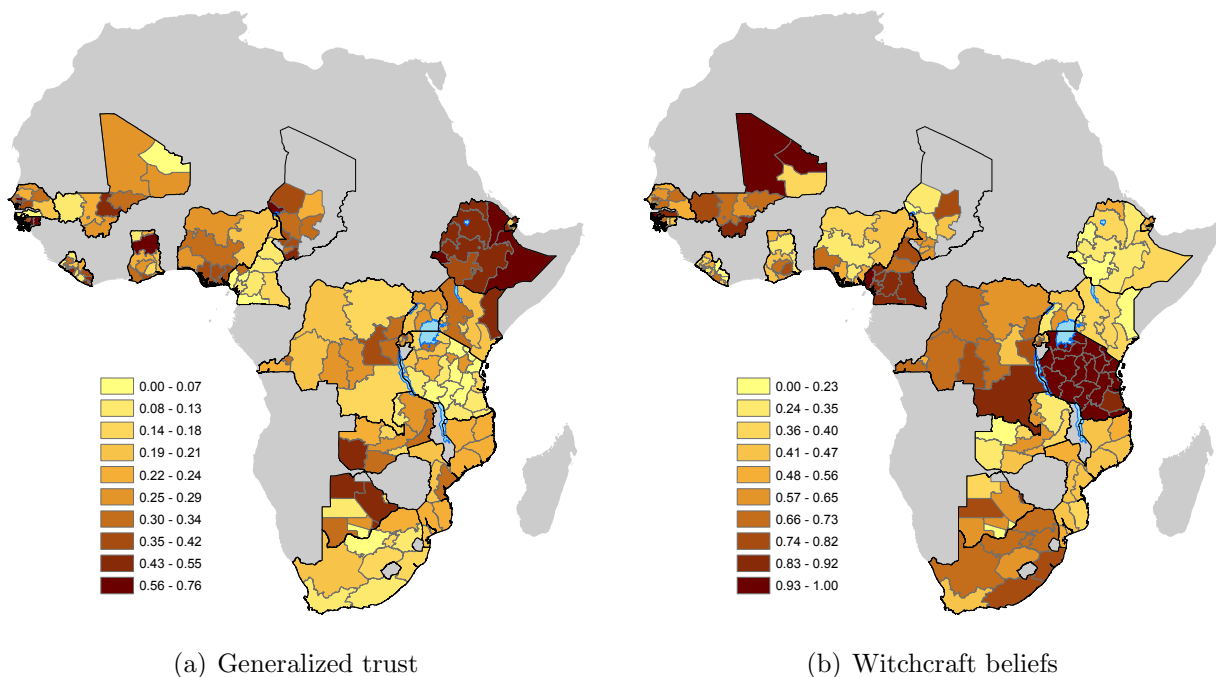(a) Generalized trust   (b) Witchcraft beliefs

Figure 4: Witchcraft beliefs and trust across regions of Sub-Saharan Africa.

Notes. Respondents are assumed to believe in witchcraft if they claim to believe in either "witchcraft" or the "evil eye, or that certain people can cast curses or spells that cause bad things to happen to someone" (or both). The breakdown into ten categories corresponds to deciles of the relevant distributions. Darker shades represent higher trust (left) and prevalence of witchcraft beliefs (right). Black and gray lines reflect national and regional boundaries, respectively.

Source: Gershman (2016).

those who reside in regions with higher prevalence of witchcraft beliefs are significantly less likely to engage in charitable giving (in the form of tithe and zakat for Christians and Muslims, respectively). They are also less likely to participate in religious group activities such as prayer and reading groups, even when explicitly accounting for religiosity and other relevant characteristics.

At the global scale, Gershman (2022) provides cross-country evidence consistent with the patterns for African regions. As illustrated in the top row of figure 5, in countries with more widespread witchcraft beliefs, respondents report lower levels of trust in people in general and neighbors in particular. They are also less likely to have someone outside their family deemed trustworthy enough to start a business together, which shows one of the ways lower trust can restrain economic activity. This negative relationship holds for a broad range of trust metrics, but is particularly strong for out-group trust, pointing to
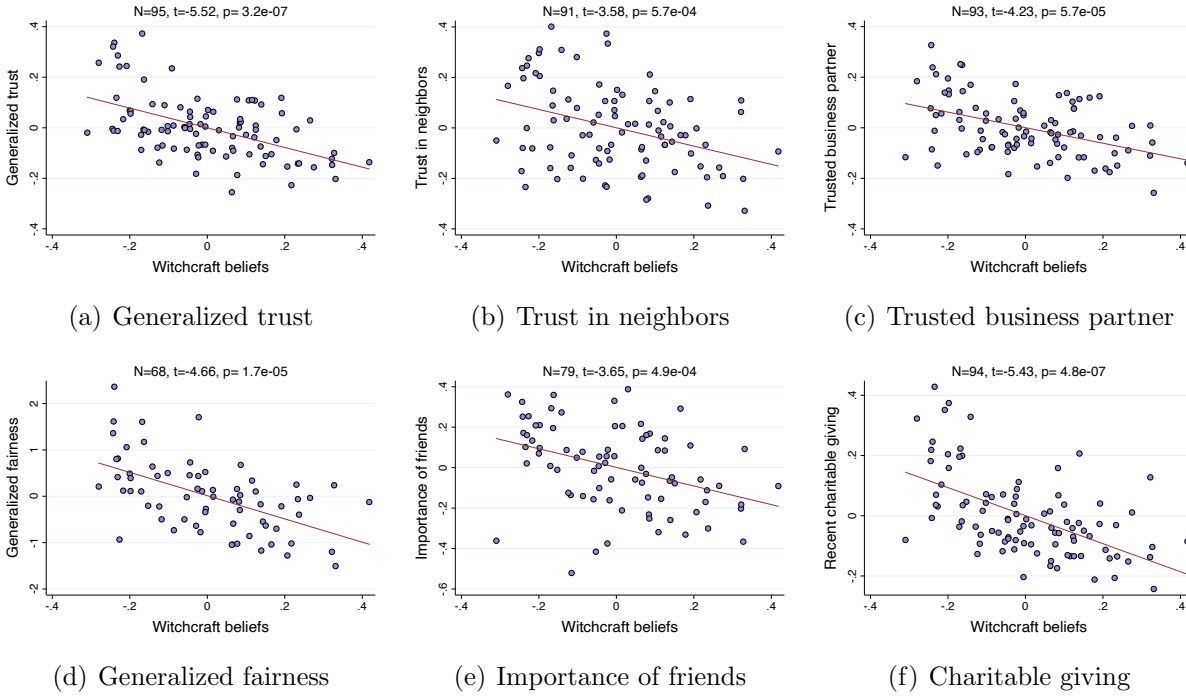
Figure 5: Witchcraft beliefs and social capital across countries.

Source: Gershman (2022).

higher degree of in-group favoritism in societies with more widespread witchcraft beliefs, as discussed in the following section. The bottom row of figure 5 shows that witchcraft beliefs are also negatively related to generalized fairness (that is, a perception that people normally try to be fair rather than take advantage of others), importance of friends, and recent charitable contributions.

In sum, consistent with ethnographic studies, there is substantial survey-based evidence on the robust negative association between witchcraft beliefs and social capital. Furthermore, recent experimental work, reviewed below, suggests that these correlations, at least to some extent, reflect a negative causal impact of witchcraft beliefs. But they may also be capturing other processes. In general, ruptured social relations and witchcraft beliefs likely reinforce each other: witchcraft-related fears generate suspicion and mistrust which in turn trigger accusations and sanctions thereby validating and strengthening witchcraft beliefs in society. Similarly, by hampering cooperation, witchcraft-related anxiety aggravates the living conditions of community members and increases the incidence of misfortunes precipitating mutual accusations which keep witchcraft beliefs alive.

Thus, one may view the reported patterns as reflective of a cultural package of mutually reinforcing beliefs and norms. Interestingly, this "antisocial" package stands in stark contrast to better-studied prosocial culture featuring religions with moralizing high gods (Norenzayan et al., 2016). Viewed from this perspective, cultural group selection would imply that, facing this kind of competition, the antisocial cultural bundle including witchcraft beliefs is bound to lose. However, witchcraft beliefs are widespread throughout the modern world, coexist and interact with big religions, and even experience resurgence in some locations. It is tempting to suggest, given their persistence, that, along with social costs such as depletion of trust and cooperation, witchcraft beliefs may confer certain group-level benefits contributing to their survival. The following section reviews available evidence in support of this idea.

3.2   Conformity and social cohesion

Anthropologists of the functionalist tradition have long argued that witchcraft beliefs contribute to social cohesion by enforcing conformity to local norms in the face of possible supernatural punishment for any violations. The basic idea goes back to Evans-Pritchard's work on the Azande and was further elaborated by Kluckhohn (1944) in his study of the Navaho witchcraft. He argued that witchcraft beliefs represented a technique of social control keeping in check those who threaten an orderly functioning of the community. This role of witchcraft beliefs has since been explored in application to societies from around the world including the Kuikuru of central Brazil (Dole, 1966), the Ibibio of southern Nigeria (Offiong, 1983), and Franconian peasants (Sebald, 1986). An important theme in this literature, discussed further in section 5.1, is that the "social control" function is especially relevant in societies lacking formal institutions and thus having to rely on cultural mechanisms of maintaining order.

Gershman (2022) shows that, across contemporary nations, there is a strong association between the prevalence of witchcraft beliefs and the culture of conformity as captured, for example, by the "embeddedness vs. autonomy" scale of Schwartz (2014) and "individualism vs. collectivism" scale of Hofstede et al. (2010). In "embedded" cultures, individuals are viewed as part of a group that strives to maintain traditional order and prevent actions that might disrupt the status quo. Respect for tradition, security, and obedience are important values in such societies, whereas autonomous cultures value creativity and diversity of individual experiences. Similarly, collectivist cultures emphasize in-group loyalty and expect individuals to focus on contributions to the community beyond their immediate
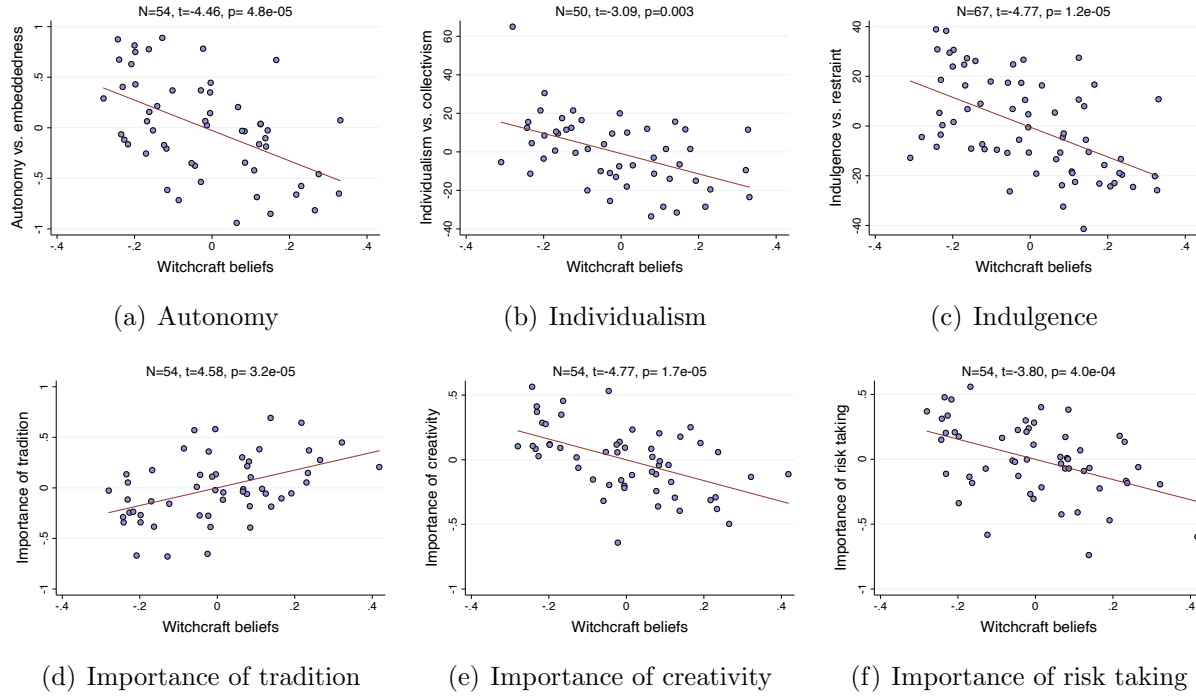
Figure 6: Witchcraft beliefs and the culture of conformity.

Source: Gershman (2022).

family. As shown in the top row of figure 6, countries with widespread witchcraft beliefs tend to be culturally less autonomous and more collectivist. Importantly, individualism has been argued to be a key driver of innovation and economic growth (Gorodnichenko and Roland, 2017).

Other scales in the six-dimensional cultural model of Hofstede et al. (2010) shed further light on the place of witchcraft beliefs in societies. In particular, their prevalence is associated with higher scores on the "uncertainty avoidance" scale and lower scores on the "indulgence vs. restraint" scale, reflecting reliance on rigid norms of behavior, intolerance to unorthodox ideas, and suppression of human drive to enjoy life. In other words, witchcraft beliefs are associated with cultural tightness in the sense of Gelfand (2018). Consistent with these patterns, as shown in the bottom row of figure 6, in countries with a larger share of witchcraft believers, people place higher importance on tradition, while creativity and risk taking are considered to be less valuable, based on responses in the World Values Survey (WVS).

Preference for conformity can also be detected in patterns of child socialization. For example, in countries with widespread witchcraft beliefs, people are less likely to mention
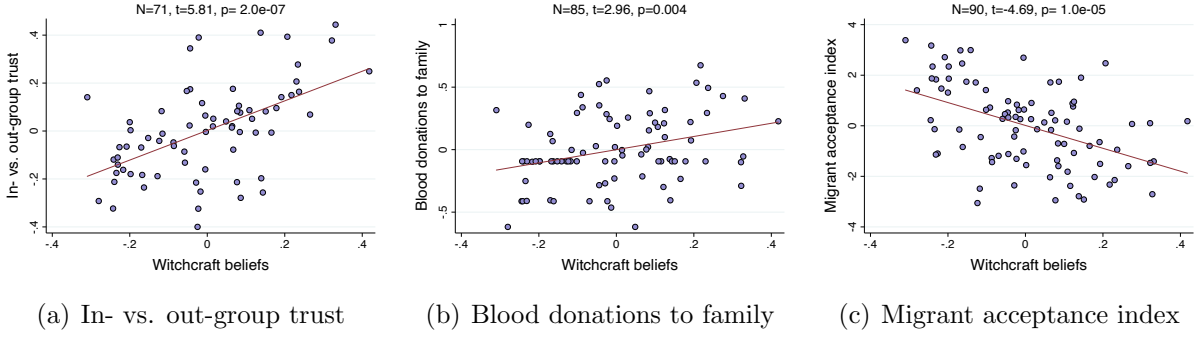
Figure 7: Witchcraft beliefs, in-group favoritism, and xenophobia.

Source: Gershman (2022).

independence as an important trait to cultivate in children (Gershman, 2022). Furthermore, such countries tend to have teaching styles focused on memorizing and rule-following as opposed to those encouraging creative and critical thinking. This is in line with evidence from small-scale preindustrial societies: in communities where witchcraft is recognized as an important cause of illness, obedience and self-restraint are more likely to be inculcated in children compared to prosocial traits such as trust (Gershman, 2016).

Another important dimension related to cultural emphasis on conformity is in-group favoritism. As illustrated in figure 7, witchcraft beliefs are strongly related to in-group preferences and xenophobic attitudes based on three different metrics: 1) difference between in- and out-group trust, measured, respectively, as average trust across in-groups (family, neighbors, and other acquaintances) and out-groups (newly met individuals and people of another religion and nationality), 2) share of blood donations to family members, and 3) migrant acceptance index capturing attitudes towards immigrants in society. Interestingly, although typically the fears of bewitchment and accusations *within* community constitute the basic mechanism of enforcing in-group solidarity, as societies open up to the outside world, witchcraft accusations have been increasingly directed at strangers viewed as a threat, including immigrants (Hickel, 2014). In general, the parochial nature of witchcraft beliefs contrasts the broader-based prosociality characteristic of religions with moralizing, monitoring, and punitive gods (Lang et al., 2019).

Witchcraft beliefs have also been argued to promote group cohesion by supporting redistributive norms within the context of existing social structures (Platteau, 2014). Witchcraft accusations can be deployed both against those falling behind and those getting ahead: the former may be suspected of envy-motivated witchcraft, while the latter may be accused of using witchcraft powers to get rich at the expense of others (Green, 2005). The fears of

accusations operate to preserve social hierarchy by preventing deviations from status quo and encouraging redistribution whenever such deviations occur. In a related argument, Posner (1980) suggested that witchcraft accusations against well-off society members force them to share their surplus and thus provide a simple mutual insurance mechanism in societies lacking better alternatives. Interestingly, envy often emerges both as a driver behind witchcraft accusations and as an emotion presumably motivating the acts of witchcraft. This feature is reminiscent of the evil eye belief which has been argued to promote envy-avoidance behavior and foster welfare-improving redistributive transfers (Gershman, 2015). Witchcraft-related fears may perform a similar role and serve as another cultural mechanism of avoiding destructive envy (Gershman, 2014).

To sum up, witchcraft beliefs are a conservative force that may indeed contribute to social order and in-group conformity. This forced solidarity is based not on trust or mutual respect, but on the fear of bewitchment and threat of accusations for norm violation. While arguably a conformity mechanism of this kind has potential group benefits, particularly as a form of self-governance in an institutional vacuum, it also carries substantial costs in the form of disrupted social relations, violence, and, as discussed below, heightened anxiety and reduced incentives to innovate.

3.3   Experimental evidence

The evidence reviewed in this section so far documents a systematic link between the prevalence of witchcraft beliefs and various aspects of social relations across countries and regions. A recent wave of studies addresses this issue at the micro level using lab-in-the-field experiments in communities around the world.

Le Rossignol et al. (2022) study the effect of witchcraft beliefs on prosocial behavior by conducting a series of experiments in a city in the north of the Democratic Republic of the Congo. Participants played three types of games: dictator game (DG), choose-your-dictator game (CYDG), and joy-of-destruction game (JODG). In a DG, player 1 (P1) chooses how much of the endowment of 1000 Congolese francs to allocate to player 2 (P2). In a CYDG, a DG is played as described, but P2 must first choose P1 out of two presented alternatives. In a JODG, both players receive 2000 francs, and P1 must decide whether to do nothing, in which case players simply keep their initial endowments, or instead pay 200 francs to either reduce or increase P2's endowment by 1000 francs.

Before the games took place, all participants completed a survey which included a question about how strongly they believe in "supernatural powers, such as witchcraft."

The answers to this question were then used to produce the key experimental variation in the strength of witchcraft belief claimed by one of the players. Specifically, participants completed two rounds of each game. In the DG and JODG settings, P1 was matched to a strong believer in one round and a weak believer in the other. In the CYDG case, in each round, the two presented P1 candidates included one weak and one strong believer. The players in each game were anonymous but had information about each other's strength of witchcraft belief and sociodemographic characteristics. They were also aware of this information being shared by the experimenters.

The main finding from these experiments is that, in each game, individuals behaved less prosocially towards strong believers in witchcraft. The latter received less money in the DG, were much less likely to be chosen as dictators in the CYDG, and were more likely to see their endowment reduced (and less likely to see it increased) in the JODG. Furthermore, a follow-up study revealed that these behaviors towards strong witchcraft believers were viewed as socially acceptable. The authors conclude that their results provide strong causal evidence of the antisocial effects of witchcraft beliefs.

Kundtová Klocová et al. (2022) use a different experimental setting to explore the effects of witchcraft-like beliefs on parochial prosociality in a village in northwest Mauritius. They leverage the duality of a widespread local belief in spirits, or *nam*, which can have alternative conceptualizations relating to either ancestor worship or witchcraft. The experimenters asked the participants to provide a list of things that *nam* like and dislike (such as bad deeds, good conduct, and harm) and used these answers to match each participant's concept of *nam* to one of the above two categories. In addition, participants reported whether they performed any rituals to communicate with or appease the *nam*, an indicator capturing the strength of their belief. The revealed mental model of *nam* and its interaction with ritual performance were then linked to individual behavior in experiments, particularly in the random allocation game (RAG).

In a RAG, participants roll a die with three black and three white sides thirty times and, based on the outcome of each die roll, allocate a coin to one of two possible recipients by placing it in a cup marked with either an in- or an out-group label. Prior to rolling the die, participants were supposed to privately associate each cup with respective outcomes (black and white). However, since actual allocations were made secretly, participants could break their commitment and instead distribute the money according to their own preferences, potentially reflecting an in-group bias. Such bias or, alternatively, impartiality can be detected by experimenters through comparison of the actual distribution of allocations to the one (binomial) expected to arise when the rules of the game are followed.

The study reveals that, although participants on average skewed money allocation toward in-groups, this bias was not predicted by different conceptualizations of *nam*. However, the interaction between *nam* type and ritual performance strongly predicted bending the RAG rules toward in-group interests, suggesting that demonstrated commitment to a belief is important for it to have behavioral consequences: only devoted believers in witchcraft-related *nam* showed particularly strong in-group favoritism.

In an earlier experimental study, Hadnes and Schumacher (2012) examine the impact of traditional beliefs in supernatural punishment on prosocial behavior, defined primarily as compliance with egalitarian sharing norms, among microentrepreneurs from villages outside of Ouagadougou, the capital of Burkina Faso. Their experiment involved two stages. In the first stage, qualitative interviews were used as a priming instrument to randomize the salience of traditional beliefs. Specifically, in the treatment group, participants were asked about the "moral codes of the village and the consequences of their disregard and violation" and "their own experiences with charms, mystical powers, witch doctors, and ancestral rites." Thus, the interviewers tried to raise the salience of beliefs in supernatural punishment for norm violation. At the beginning of the interview, participants were asked about their business and, in particular, envy among entrepreneurs, possibly priming the notion of egalitarian sharing. In the control group, any discussion of traditional beliefs was completely avoided.

In the second stage of the experiment, randomly paired participants were given a sum of 1000 West African CFA francs each to play the trust game. In this game, P1 first decides whether to send the entire endowment to an anonymous P2 or not. In the former case, the amount of money sent by P1 is actually doubled to 2000 francs, and P2 next decides how much of the resulting total of 3000 francs to send to P1. If P1 decides to not send the money to P2, both players simply keep their initial endowments.

The study found that the priming of traditional beliefs had a positive effect on sharing. Primed first-movers were much more likely to send their endowments, and primed second-movers returned, on average, substantially larger amounts of money than the non-primed ones. Interestingly, the authors explicitly reject the idea that the treatment increased the level of trust among P1s since both primed and non-primed first-movers actually expected to receive roughly the same amounts of money from P2s. Instead, the most likely explanation is that the priming instrument activated the adherence to prevailing sharing norms in the face of potential supernatural punishment for their violation. Although not focused specifically on witchcraft beliefs, this result shows that the fears of supernatural harm may operate to enforce conformity.

Mace et al. (2018) use a combination of experimental and other methods to explore the impact of belief in *zhu* on cooperation among Mosuo farmers in southwestern China. The *zhu* label in this community is typically applied to female heads of household, believed to be capable of supernatural harm, particularly via food poisoning. The study shows that the *zhu* tag effectively splits the overall community into two groups of households, those with and without the tag, and that prosocial behavior is restricted primarily to within-group members.

The authors measured social relations in three ways. First, they identified kinship networks using demographic data. Second, they conducted gift games, in which participants were allocated a sum of money that they were allowed to share by sending gifts to other households in the study villages. Third, they collected data on working groups for a sample of farms during planting and harvest time to identify mutual help networks. Based on the resulting metrics of social connections, the authors find that the *zhu* households were more likely to send gifts and provide farming help to other *zhu* households. Furthermore, those in *zhu* households did not have sexual partnerships or children with those in non-*zhu* households. Thus, stigmatized individuals interacted preferentially with each other in terms of both mutual help and forming family relationships.

In addition, the authors produced a general measure of cooperativeness by conducting a donation game, in which participants could divide their endowment between themselves and an anonymous person in the same village. They found that the distribution of donation sizes was virtually identical between individuals from *zhu* and non-*zhu* households. Hence, *zhu* households were not generally less cooperative suggesting that the witch-like label was not applied to particularly antisocial individuals or families.

Overall, evidence from experimental studies reveals familiar patterns. Witchcraft beliefs negatively affect trust, inhibit society-wide cooperation, and promote in-group bias, whereas traditional beliefs in the supernatural punishment more generally enforce compliance with sharing norms. This experimental work also shows how local cultural context can be creatively leveraged to generate insights about the role of witchcraft beliefs in communities.

4   Development and well-being

Section 3 summarized the consequences of witchcraft beliefs for social relations. While these are extremely important, the same fears that poison interpersonal relations have much broader implications, both for individual well-being and society-wide development.

4.1 Anxiety and loss of control

As aptly put by Ashforth (2005) in his study of Soweto, South Africa, in societies that view witchcraft as a force to be reckoned with, daily interactions happen under a "presumption of malice." Such paranoid outlook feeds individual and ultimately collective anxiety affecting both social bonds and psychological well-being. Kgatla (2007), among many others, echoes this view by pointing out in particular how the fear of witchcraft accusations and punishment that may follow keeps people in a state of agony.

This paralyzing, stress-inducing impact of witchcraft-related fears was documented in some of the earliest ethnographic studies (Kluckhohn, 1944; Marwick, 1948; Nadel, 1952). Curiously, some of these same studies suggested that causality also runs in the other direction: societies may rely on witchcraft beliefs and related practices to deal with stress, release tensions, and regulate hostilities. An important aspect of this argument is the potential power of beliefs and rituals to reduce anxiety, increase confidence, and lower perceived risks (Lang et al., 2020; Nunn and Sanchez de la Sierra, 2017; Butinda et al., 2021). Witch-finding rituals may play a similar role, even though the reduction of anxiety may come at a steep cost including, in extreme cases, the killings of innocent people.

One specific dimension of anxiety promoted by witchcraft beliefs is the perceived lack of control over life. At the individual level, psychometric studies found that beliefs in scientifically unaccepted phenomena, including witchcraft, are generally associated with an external locus of control, i.e., a perception that personal outcomes are largely determined by outside forces such as luck, other people, or supernatural powers (Irwin, 2009). The fears of being targeted by witches or singled out as one likely contribute to the feelings of helplessness and inability to freely make life decisions. As with anxiety in general, it is possible that causality also runs in the opposite direction: by providing an explanation for the apparent lack of control, witchcraft beliefs may address the basic need for making sense of certain life events and coping with adversity. This would be consistent with research linking magical thinking and ritual behavior to people's desire to regain the sense of control diminished by stress (Keinan, 2002).

Cross-country analysis reveals clear correlations between witchcraft beliefs and measures of subjective well-being, anxiety, and loss of control, some of which are illustrated in figure 8. Residents of countries with widespread witchcraft beliefs occupy lower steps of the Cantril ladder of life satisfaction, score lower on the positive affect scale (capturing experiences of happiness, laughter, and enjoyment) and higher on the negative affect scale (reflecting recent feelings of worry, sadness, and anger). They also report having less
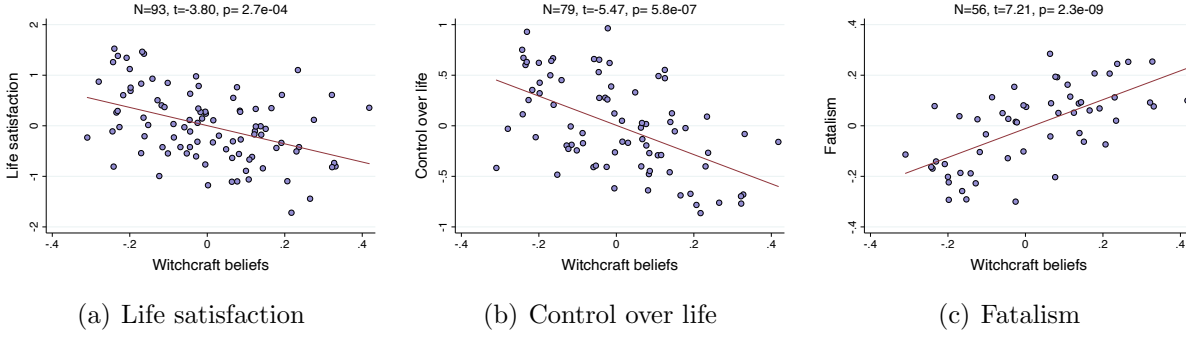
(a) Life satisfaction	(b) Control over life	(c) Fatalism

Figure 8: Witchcraft beliefs, subjective well-being, and loss of control.

Source: Gershman (2022).

control over their lives and display a stronger belief in fate and predestination. Furthermore, using the data from two waves of the Gallup World Poll in Sub-Saharan Africa and the global dataset based on the Pew Research Center surveys, Gershman (2023) shows that these cross-country associations, linking witchcraft beliefs to lower levels of subjective well-being, higher anxiety, and an external locus of control, also hold at the individual level while accounting for country fixed effects and a host of personal socio-demographic characteristics.

4.2 Development and innovation

The relationship between witchcraft beliefs and economic development, broadly defined as increasing standard of living, is a priori complicated, both due to an apparent two-way causality and the many mechanisms at work. The presence of witchcraft beliefs may impede development through various channels including the erosion of social capital, promotion of conservative culture favoring conformity rather than innovation, and generation of anxiety harmful for individual and collective growth. Curiously, some cultures explicitly view witchcraft as antithetical to development and witches as the main obstacles to progress (Sanders, 2003; Smith, 2008; Schram, 2010).

Development, in turn, may also affect the prevalence of witchcraft beliefs, although the overall direction of this impact is not clear. Standard modernization theory would argue that witchcraft beliefs gradually dissipate as societies become richer, healthier, and more educated, presumably due to a rising sense of security, reduced incidence of misfortunes to cope with, and a growing acceptance of natural rather than supernatural forces as ultimate causes of events. The analysis of sociodemographic correlates in section 2.2

N=95, t=-0.76, p=0.449   N=86, t=-0.49, p=0.625   N=94, t=-0.50, p=0.618

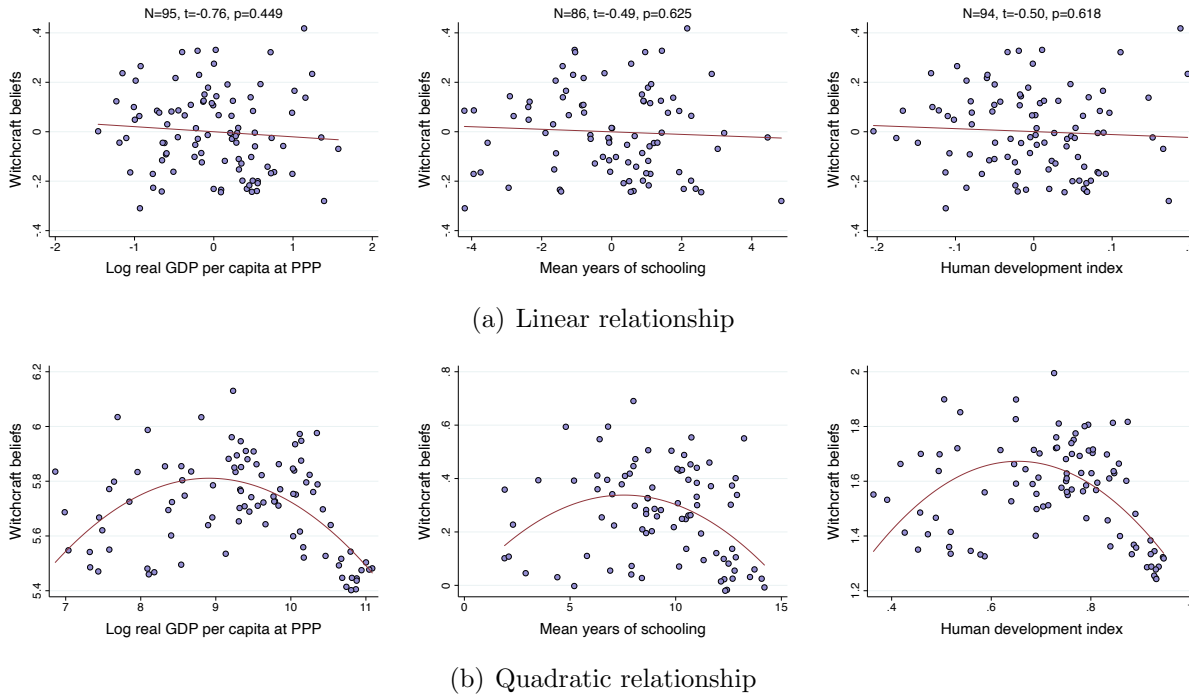(a) Linear relationship

(b) Quadratic relationship

Figure 9: Witchcraft beliefs and basic development indicators.

Notes. The top panel displays regular added-variable plots showing the absence of linear relationships after accounting for continental fixed effects. The bottom panel displays the augmented component-plus-residual plots illustrating the presence of quadratic relationships in the same setting.
Source: Gershman (2022).

is consistent with this prediction, but also shows that witchcraft beliefs are widespread even among people with high levels of education and economic security. In contrast to modernization theory, the literature on modernity of witchcraft has argued that the forces of development may actually contribute to the revival of witchcraft beliefs and accusations by creating inequality, introducing new material goods and technologies, encouraging rural-urban migration, and otherwise disrupting established social order (Geschiere, 1997; Kroesbergen-Kamps, 2020).

Given this variety of mechanisms and causal links, it is not surprising that there is no robust linear relationship between standard development metrics and the prevalence of witchcraft beliefs across countries, as illustrated in the top panel of figure 9 for income, education, and the combined human development index. However, closer examination reveals a systematic inverted-U association between these basic indicators and witchcraft beliefs, as shown in the bottom panel of the figure. This nonlinearity likely reflects the countervailing forces described above.
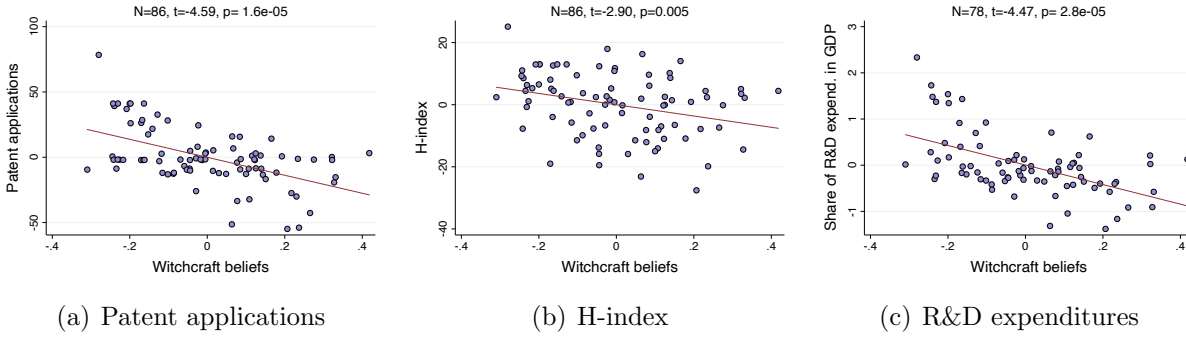
| (a) Patent applications | (b) H-index | (c) R&D expenditures |

Figure 10: Witchcraft beliefs and innovation.

Source: Gershman (2022).

Interestingly, the pattern becomes less ambiguous when looking at a subset of development metrics focused on innovation. As shown in figure 10, countries with more widespread witchcraft beliefs have fewer patent applications per person, a lower H-index capturing both the number of scientific publications and citation counts, and spend a smaller share of GDP on research and development. A similar strong negative relationship holds for expert measures of innovative culture, namely, people's appetite for taking entrepreneurial risk and willingness of businesses to embrace disruptive ideas (Gershman, 2022). This set of results is consistent with the anti-innovative, status-quo-preserving nature of witchcraft beliefs discussed in section 3.2 and is robust to accounting for religiosity which has also been linked to reduced innovation (Bénabou et al., 2022). Overall, these correlations are particularly troubling since scientific and technological progress, along with the underlying innovative mindset, represent the basis of long-term economic growth.

The conservative culture of witchcraft beliefs is further manifested in their tight connection to a zero-sum mindset. As documented in a variety of studies, witchcraft accusations, particularly against wealthier community members, are often based on zero-sum logic, dubbed by Foster (1965) as the "image of limited good" in application to peasant societies: one person's gain is always someone else's loss. Any such gain is thus considered illegitimate and acquired through witchcraft at the expense of other community members. Witches "must destroy to accumulate" and "thrive only if others are deprived," according, respectively, to the Ihanzu of Tanzania (Sanders, 2003) and the Fang of Cameroon (Boyer, 2001). Witchcraft powers are often brought up in situations of real or perceived zero-sum nature of economic interactions, for instance, between farmers (Sanders, 2003), shoe vendors operating in the same market (Malefakis, 2018), immigrants and locals (Hickel, 2014), com-
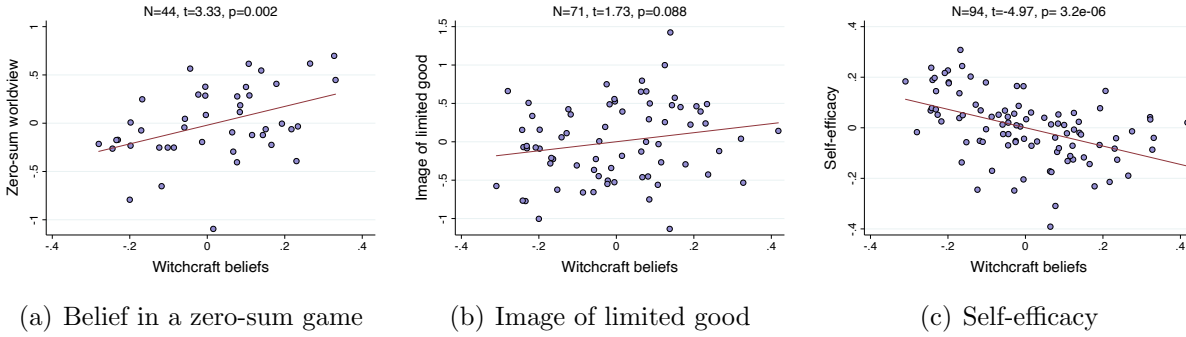
| (a) Belief in a zero-sum game | (b) Image of limited good | (c) Self-efficacy |

Figure 11: Witchcraft beliefs, zero-sum mindset, and self-efficacy.

Source: Gershman (2022).

peting artisanal mining teams (Stoop and Verpoorten, 2020), slave traders and captives (Gershman, 2020).

Systematic cross-country analysis finds a positive relationship between the prevalence of witchcraft beliefs and zero-sum worldview, as shown in figure 11. The chart in panel (a) is based on a multi-item scale of belief in a zero-sum game constructed to capture the notion that one person's gain is only possible at the expense of others (Różycka-Tran et al., 2015). In contrast, the "image of limited good" measure used in panel (b) reflects survey responses to a WVS question asking whether "people can only get rich at the expense of others" or, instead, "wealth can grow so there is enough for everyone." The notion that, in a zero-sum world, one can only get ahead through illegitimate supernatural means such as witchcraft implies a pessimistic outlook on a person's ability to advance in life through effort and hard work, or self-efficacy. Indeed, as shown in panel (c), witchcraft beliefs are negatively related to people's perception that they can get ahead by working hard, which also fits with the earlier discussion of anxiety and loss of control over life.

5 Anarchy and adversity

So far, this chapter has mostly focused on the consequences of witchcraft beliefs, even though two-way causality is plausible for some of the discussed outcomes. This final section examines two distinct sets of factors that have been argued to fundamentally affect the presence and persistence of witchcraft beliefs and persecutions. These are the existence and effectiveness of institutions, or established formal rules for organizing societies and

resolving conflicts, and general exposure to misfortunes, particularly related to climate shocks and disease outbreaks.

5.1   Institutions and governance

The literature stressing the organizing, order-preserving function of witchcraft beliefs and related practices, discussed in section 3.2, views this cultural mechanism not as a universal first-best solution, but as a working substitute for the absent or weak formal system of governance. As Dole (1966) put it, witchcraft beliefs served to maintain "anarchy without chaos" among the Kuikuru, a small-scale society lacking any centralized political authority. More recently, Leeson (2017) made this point broadly in application to all sorts of seemingly bizarre practices that have existed throughout history such as judicial ordeals, and Gershman (2015) argued that weak property rights protection is instrumental for the survival of the evil eye belief. To the extent that effective formal institutions, including trustworthy police, fair courts, and capable centralized state, provide better mechanisms for securing social order, their rise should contribute to the decline of witchcraft beliefs. In contrast, shocks that disrupt existing institutions may trigger a renewed reliance on their cultural substitutes.

Gershman (2022) examines this link using contemporary cross-country data, as illustrated in figure 12. Indeed, in countries with strong institutions, as captured, for instance, by indices of government effectiveness, rule of law, and control of corruption, the prevalence of witchcraft beliefs tends to be substantially lower. The same is true for other metrics of good governance and state capacity such as security of property rights and efficiency of the justice system and tax administration, as well as survey-based measures of confidence in government, courts, and local police. This evidence is consistent with the notion that witchcraft beliefs lose their appeal as a way to organize societies in the presence of better alternatives and persist in cases when government institutions are ineffective and untrustworthy. Unlike standard indicators of material well-being discussed earlier, institutional quality turns out to be the dimension of social development that has a very strong connection to the current distribution of witchcraft beliefs around the globe.

In a historical perspective, state formation and the ability of centralized authorities to impose uniform laws across localities may have been instrumental in the decline of European witch trials (Behringer, 2004; Johnson and Koyama, 2019). Strong states set higher standards for trials, even before outlawing them, and were able to prevent irregular witch hunts at the local level. In contrast, in weak fragmented states, local authorities
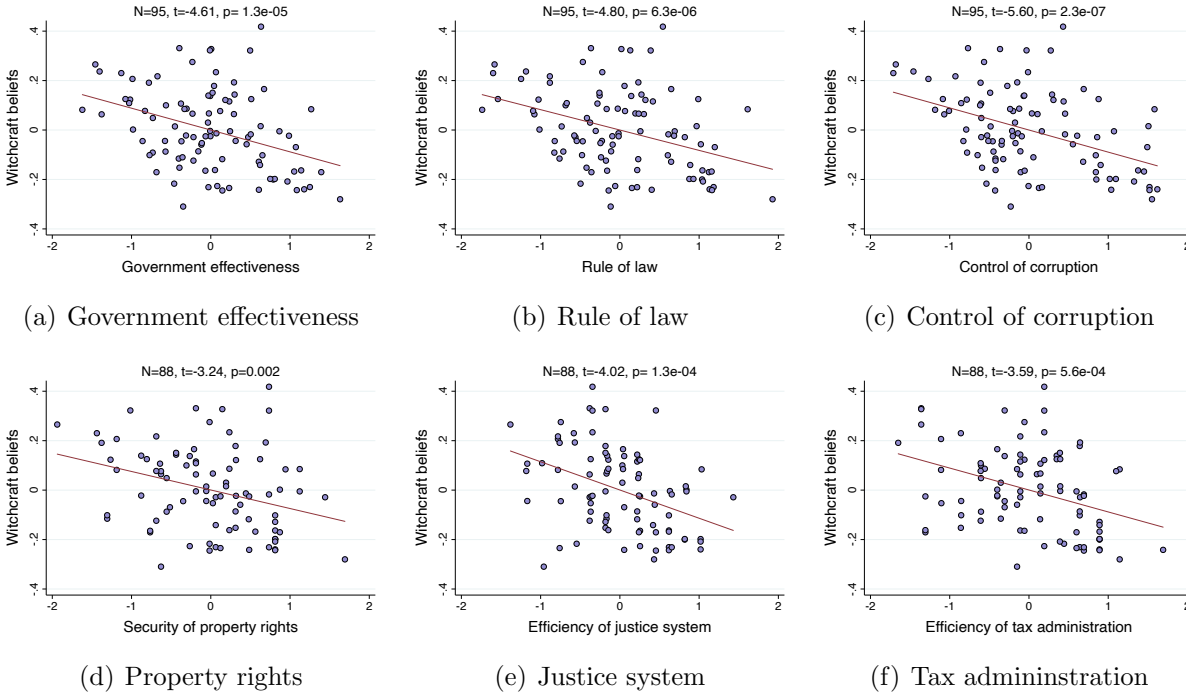
| (a) Government effectiveness | (b) Rule of law | (c) Control of corruption |
| (d) Property rights | (e) Justice system | (f) Tax admininstration |

Figure 12: Witchcraft beliefs and institutions.

Source: Gershman (2022).

had ample discretion and often responded aggressively to popular fears of witches. In a systematic analysis of this idea, Johnson and Koyama (2014) show that the rise of fiscal capacity, measured as tax revenues per capita, was associated with the decline of witch trials across French regions between 1550 and 1700. Furthermore, using Europe-wide data, Johnson and Koyama (2019) show that the likelihood of trials was higher in locations with larger costs of investing in state capacity as captured by geographic isolation and political fragmentation.

Beyond the moderating impact of state capacity on witch trials in early modern Europe, the expansion and strengthening of government institutions contributed to the gradual erosion of witchcraft beliefs in more recent times. For example, in his exploration of the British case, Waters (2019) argues that better policing and law enforcement reduced violence against alleged witches and increased the likelihood of punishment for vigilantes in the nineteenth and early twentieth centuries. Government regulation also made it harder for anti-witchcraft specialists, known in Britain as the "cunning folk," to make a living. The suppression of these crucial elements of support and propagation of witchcraft beliefs contributed to their eventual decline and was arguably more important than the effects of

state policies in such areas as health and education. This experience should be contrasted to the largely unsuccessful and infamous attempts to outlaw witch hunts by the colonial administrations in Sub-Saharan Africa and elsewhere. Such laws often backfired by making the locals believe that witches were being protected and thus free to cause harm without consequences, perhaps even in tacit cooperation with colonial authorities (Behringer, 2004). This illustrates how blind transplantation of foreign institutions may support witchcraft fears instead of assuaging them.

More broadly, just as witchcraft beliefs have been argued to decline in response to orderly and gradual state formation, there is evidence linking their resurgence to periods of disorganization brought about by various institutional and economic shocks including slave trade, colonialism, the rise of markets, rapid technological progress, and globalization (Geschiere, 1997; Behringer, 2004; Gershman, 2020). Even seemingly mild changes to the established order can trigger witchcraft fears and accusations. For instance, a study conducted across villages of eastern Sierra Leone found that witchcraft-related concerns and conflicts were most prevalent in communities where traditional agrarian subsistence economy collided with new market-oriented developments (van de Grijspaarde et al., 2013). Specifically, the authors detected an inverted-U relationship between witchcraft salience and market integration measured as the degree of reliance on cash crop production. Curiously, this result from contemporary Sierra Leone echoes the classic work by Macfarlane (1970) who attributed the rise of witch trials in early modern England to economic change triggering a transition from communal to more individualistic lifestyle. It is also consistent with the nonlinear association between witchcraft beliefs and aggregate development indicators reported in section 4.2.

Institutional vacuum, socioeconomic changes, and subversion of traditional order by outside forces raise uncertainty, insecurity, and anxiety. Under these circumstances, witchcraft beliefs and related rituals have been argued to provide both an outlet for releasing anxiety and a way to contain disorganization. They also perform their basic role of providing a way to "understand" the predicaments in which societies find themselves.

5.2 Drought, disease, and other misfortunes

Over millennia, witchcraft beliefs provided both an answer to the existential question of why unfortunate events happen to people and a guide to dealing with their alleged source. As shown by Evans-Pritchard (1937) in the textbook case of the Azande, believers view witchcraft as the *ultimate* explanation of a misfortune, which does not contradict their understanding of its natural proximate cause. Death, disease, accidents, and crop failure

have been the typical misfortunes attributed to witchcraft, with a more complete and up-to-date list also including generic business problems, joblessness, infertility, marital issues, exploitation, and even enslavement.

Negative weather shocks in particular have been linked to surges of witchcraft persecutions, both historically and presently. Behringer (1999) hypothesized that the spike in witch trials across early modern Europe was triggered by the Little Ice Age. Witches, believed to have an ability to control weather, were presumably scapegoated for bad harvests due to unusually low temperatures. Oster (2004) found support for this link, but more recently, Leeson and Russ (2018) have shown that this result does not hold in a more comprehensive dataset on witch trials. Christian (2019) reports that favorable growing temperatures actually promoted witch trials in early modern Scotland: higher agricultural output raised the tax revenues of local elites providing more resources for witchcraft prosecutions.

The connection between witchcraft and weather shocks has also been explored using survey data from contemporary Sub-Saharan Africa. Miguel (2005) finds that extreme rainfall, either drought or flood, increased witch killings across villages in rural Tanzania. He concludes that negative income shocks rather than mere scapegoating are the main cause of killings. In particular, there is no association between witchcraft persecutions and disease outbreaks which would be likely to trigger a scapegoating response while being largely unrelated to income. In their work on Sierra Leone, van de Grijspaarde et al. (2013) found no relationship between either rainfall or disease shocks and measures of witchcraft salience, although they report that unusually large crop yields are associated with a reduction in witchcraft-related conflict.

Gershman (2016) examines regional variation within Sub-Saharan Africa and shows that witchcraft beliefs are unrelated to various climatic variables such as long-run averages of temperature and precipitation or rainfall anomalies. Similarly, there is no link to climatic suitability for malaria at either regional or ethnic-homeland levels (Gershman, 2016; 2020). Across countries, as shown in figure 13, witchcraft beliefs are positively related to exposure to agricultural drought, in line with the main finding of Miguel (2005). On the other hand, there is no relationship to pathogen richness or an aggregate measure of population exposure to natural disasters including earthquakes, storms, floods, droughts, and rising sea levels (Gershman, 2022). In contrast, there is a strong positive correlation with the average unemployment rate. Joblessness is a well-known source of stress in the modern world and one of the more recent additions to the list of misfortunes linked to witchcraft.

The mixed evidence on the relationship between misfortunes and witchcraft likely reflects its complexity. Suspicion, accusation, and persecution in response to a negative shock
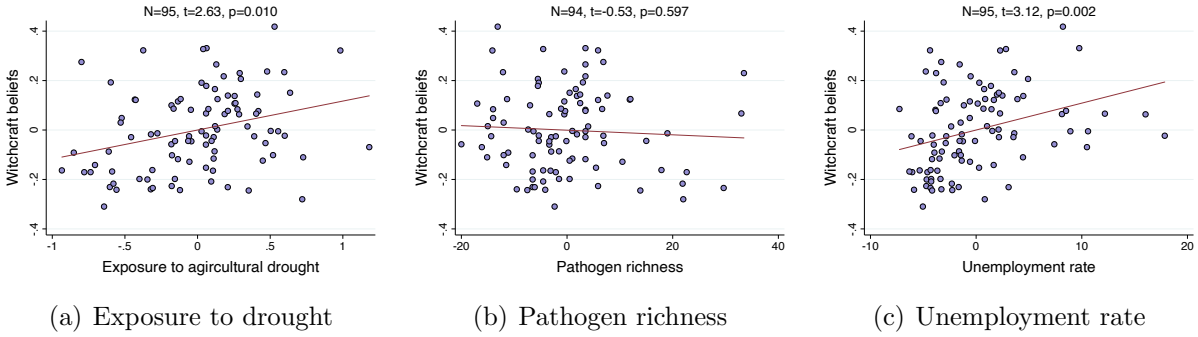
Figure 13: Witchcraft beliefs and exposure to misfortunes.

are not automatic nor unavoidable, and depend on specific context. Some misfortunes, and under certain conditions, are more likely to activate the system of witchcraft beliefs as a cultural framework for making sense of life events and identifying the sources of evil.

Gershman (2020) investigates the role of such a calamity, namely, the transatlantic slave trade, in the propagation of witchcraft beliefs on both sides of the ocean. The study establishes that in Sub-Saharan Africa, representatives of ethnic groups that were more exposed to slave raids in the past, as captured by the volume of slave exports, are more likely to believe in witchcraft today, reflecting the lasting legacy of a historical trauma. This result likely captures the impact of two important channels documented in historical and ethnographic studies. First, since the slave trade was a source of enormous misery for the affected local population, it was interpreted as a form of witchcraft and its perpetrators were labeled as witches. Importantly, the nature of slave trade, whereby Europeans and their local accomplices were literally enriching themselves at the expense of other people's lives, fit right into the zero-sum mindset conducive to witchcraft accusations, as discussed in section 4.2. Second, during the slave trade era, witch trials became a common mechanism for meeting the growing demand for captives: convicted witches were routinely sold into slavery as punishment. Both channels reinforced local beliefs in witchcraft among affected ethnic groups.

At the main destination of African captives, in Latin America, witchcraft beliefs also played an instrumental role in slave communities. Just like the local population in Sub-Saharan Africa, slaves in the New World explained their predicament as an outcome of witchcraft, but, in a twist, traditional African anti-witchcraft practices and rituals also became tools of cultural resistance directed at slave owners. Contemporary survey data show that witchcraft beliefs are more widespread among Afro-descendants, most of whom

trace their ancestry to African slaves, and, more generally, among residents of regions in which slave labor was most heavily exploited.

Overall, these findings show that a powerful historical shock can reverberate through centuries by activating witchcraft beliefs and spreading them across populations. Demonstrating their flexibility, the same set of beliefs and practices was used to explain misfortune, resist a common enemy, and, ironically, enslave people across communities.

6   Summary

Witchcraft beliefs have been an integral part of human culture since time immemorial. They have deep roots and are remarkably widespread in the modern world. Despite important variations in witchcraft beliefs across societies, their common features are salient enough to conduct sensible quantitative analyses based on diverse samples of individuals, regions, countries, or ethnic groups. The core idea that some people have an ability to cause harm supernaturally and that such people deserve punishment for their evil deeds has profound implications for social relations and economic behavior. Witchcraft-related fears have been argued to erode social capital, generate anxiety, and hinder innovation. In some communities, they erupt in witchcraft persecutions resulting in violence against innocent individuals. On the other hand, witchcraft beliefs have been shown to enforce conformity and help maintain social order, particularly when other forms of governance are absent. They also represent a coping mechanism for dealing with misfortunes.

The multiple facets and versatility of witchcraft beliefs must be taken into account when pursuing policy interventions in communities where these beliefs are endemic. Failure to account for the unintended consequences of social programs, institutional changes, and technological innovations in light of the witchcraft-focused worldview of local residents may render these interventions inefficient and, in the worst case, trigger mutual accusations and deterioration of social relations. It would also be naïve to assume that witchcraft beliefs can be quickly eradicated through advances in education, abrupt institutional modernization, or legal reforms. In fact, given their apparent function to preserve traditional order and resist change, such attempts may backfire. The likeliest path to the decline of witchcraft beliefs throughout the modern world is gradual and delicate.

This chapter has shown that quantitative methods can be effectively used to systematically examine various aspects of witchcraft beliefs. The continued rise of this research agenda, complementing traditional fieldwork and theoretical analysis, is essential for advancing our understanding of this ancient and stubbornly persistent phenomenon.

References

Ashforth, Adam, *Witchcraft, Violence, and Democracy in South Africa*, Chicago: University of Chicago Press, 2005.

Barro, Robert J. and Rachel M. McCleary, *The Wealth of Religions: The Political Economy of Believing and Belonging*, Princeton: Princeton University Press, 2019.

Becker, Sascha O., Jared Rubin, and Ludger Woessmann, "Religion in Economic History: A Survey," in Alberto Bisin and Giovanni Federico, eds., *The Handbook of Historical Economics*, London: Academic Press, 2021, chapter 20, pp. 585–639.

Behringer, Wolfgang, "Climatic Change and Witch-Hunting: The Impact of the Little Ice Age on Mentalities," *Climatic Change*, 1999, *43*, 335–351.

____ , *Witches and Witch-Hunts: A Global History*, Cambridge: Polity Press, 2004.

Bénabou, Roland, Davide Ticchi, and Andrea Vindigni, "Forbidden Fruits: The Political Economy of Science, Religion, and Growth," *Review of Economic Studies*, July 2022, *89* (4), 1785–1832.

Bentzen, Jeanet Sinding, "Religiosity and Development," in "Oxford Research Encyclopedia of Economics and Finance," Oxford: Oxford University Press, 2021.

Boyer, Pascal, *Religion Explained: The Evolutionary Origins of Religious Thought*, New York: Basic Books, 2001.

Briggs, Robin, *Witches and Neighbors: The Social and Cultural Context of European Witchcraft*, New York: Viking, 1996.

Butinda, Lewis D., Aimable A. Lameke, Nathan Nunn, Raul Sanchez de la Sierra, and Max Winkler, "Beliefs in the Supernatural and Economic Behavior: Evidence from Beer Retailers in the Eastern DRC," April 2021. Working Paper, Department of Economics, Harvard University.

Carvalho, Jean-Paul, Sriya Iyer, and Jared Rubin, eds, *Advances in the Economics of Religion*, Cham: Palgrave Macmillan, 2019.

Christian, Cornelius, "The Political and Economic Role of Elites in Persecution: Evidence from Witchcraft Trials in Early Modern Scotland," *Review of Economics and Institutions*, 2019, *10* (2).

Dole, Gertrude E., "Anarchy Without Chaos: Alternatives to Political Authority Among the Kuikuru," in Marc J. Swartz, Victor W. Turner, and Arthur Tuden, eds., *Political Anthropology*, Chicago: Aldine Publishing Company, 1966, pp. 73–88.

Evans-Pritchard, Edward Evan, *Witchcraft, Oracles and Magic Among the Azande*, Oxford: Clarendon Press, 1937.

Foster, George M., "Peasant Society and the Image of Limited Good," *American Anthropologist*, 1965, *67* (2), 293–315.

Gelfand, Michele, *Rule Makers, Rule Breakers: How Tight and Loose Cultures Wire Our World*, New York: Scribner, 2018.

Gershman, Boris, "The Two Sides of Envy," *Journal of Economic Growth*, December 2014, *19* (4), 407–438.

――― , "The Economic Origins of the Evil Eye Belief," *Journal of Economic Behavior & Organization*, February 2015, *110*, 119–144.

――― , "Witchcraft Beliefs and the Erosion of Social Capital: Evidence from Sub-Saharan Africa and Beyond," *Journal of Development Economics*, May 2016, *120*, 182–208.

――― , "Long-Run Development and the New Cultural Economics," in Matteo Cervelatti and Uwe Sunde, eds., *Demographic Change and Long-Run Development*, Cambridge: MIT Press, 2017, chapter 9, pp. 221–261.

――― , "Witchcraft Beliefs as a Cultural Legacy of the Atlantic Slave Trade: Evidence from Two Continents," *European Economic Review*, February 2020, *122*, 103362.

――― , "Witchcraft Beliefs Around the World: An Exploratory Analysis," *PLoS ONE*, November 2022, *17* (11), e0276872.

――― , "Witchcraft Beliefs and Subjective Well-Being," May 2023. Working Paper, Department of Economics, American University.

Geschiere, Peter, *The Modernity of Witchcraft: Politics and the Occult in Postcolonial Africa*, Charlottesville and London: University of Virginia Press, 1997.

――― , *Witchcraft, Intimacy, and Trust: Africa in Comparison*, Chicago: University of Chicago Press, 2013.

Golooba-Mutebi, Frederick, "Witchcraft, Social Cohesion and Participation in a South African Village," *Development and Change*, September 2005, *36* (5), 937–958.

Gorodnichenko, Yuriy and Gerard Roland, "Culture, Institutions, and the Wealth of Nations," *Review of Economics and Statistics*, July 2017, *99* (33), 402–416.

Green, Maia, "Discourses on Inequality: Poverty, Public Bads and Entrenching Witchcraft in Post-Adjustment Tanzania," *Anthropological Theory*, September 2005, *5* (3), 247–266.

Hadnes, Myriam and Heiner Schumacher, "The Gods Are Watching: An Experimental Study of Religion and Traditional Belief in Burkina Faso," *Journal for the Scientific Study of Religion*, December 2012, *51* (4), 689–704.

Hickel, Jason, "'Xenophobia' in South Africa: Order, Chaos, and the Moral Economy of Witchcraft," *Cultural Anthropology*, February 2014, *29* (1), 103–127.

Hofstede, Geert, Gert Jan Hofstede, and Michael Minkov, *Cultures and Organizations: Software of the Mind*, 3rd ed., New York: McGraw-Hill, 2010.

Hutton, Ronald, *The Witch: A History of Fear, from Ancient Times to the Present*, New Haven and London: Yale University Press, 2017.

Irwin, Harvey J., *The Psychology of Paranormal Belief: A Researcher's Handbook*, Hertfordshire: University of Hertfordshire Press, 2009.

Johnson, Noel D. and Mark Koyama, "Taxes, Lawyers, and the Decline of Witchcraft Trials in France," *Journal of Law and Economics*, February 2014, *57* (1), 77–112.

_____ **and** _____ , *Persecution & Toleration: The Long Road to Religious Freedom*, Cambridge: Cambridge University Press, 2019.

Keinan, Giora, "The Effects of Stress and Desire for Control on Superstitious Behavior," *Personality and Social Psychology Bulletin*, 2002, *28* (1), 102–108.

Kelkar, Govind and Dev Nathan, *Witch Hunts: Culture, Patriarchy, and Structural Transformation*, Cambridge: Cambridge University Press, 2020.

Kgatla, Selaelo Thias, "Containment of Witchcraft Accusations in South Africa: A Search for a Transformational Approach to Curb the Problem," in Gerrie ter Haar, ed.,

Imagining Evil: Witchcraft Beliefs and Accusations in Contemporary Africa, Trenton: Africa World Press, 2007, chapter 12, pp. 269–292.

Kluckhohn, Clyde, *Navaho Witchcraft*, Boston: Beacon Press, 1944.

Kohnert, Dirk, "Magic and Witchcraft: Implications for Democratization and Poverty-Alleviating Aid in Africa," *World Development*, August 1996, *24* (8), 1347–1355.

Kroesbergen-Kamps, Johanneke, "Witchcraft After Modernity: Old and New Directions in the Study of Witchcraft in Africa," *HAU: Journal of Ethnographic Theory*, Winter 2020, *10* (3), 860–873.

Kundtová Klocová, Eva, Martin Lang, Peter Maňo, Radek Kundt, and Dimitris Xygalatas, "Cigarettes for the Dead: Effects of Sorcery Beliefs on Parochial Prosociality in Mauritius," *Religion, Brain & Behavior*, 2022, *12* (1-2), 116–131.

Lang, Martin, Benjamin G. Purzycki, Coren L. Apicella, Quentin D. Atkinson, Alexander Bolyanatz, Emma Cohen, Carla Handley, Eva Kundtová Klocová, Carolyn Lesorogol, Sarah Mathew, Rita A. McNamara, Cristina Moya, Caitlyn D. Placek, Montserrat Soler, Thomas Vardy, Jonathan L. Weigel, Aiyana K. Willard, Dimitris Xygalatas, Ara Norenzayan, and Joseph Henrich, "Moralizing Gods, Impartiality and Religious Parochialism Across 15 Societies," *Proceedings of the Royal Society B: Biological Sciences*, 2019, *286* (1898), 20190202.

———, **Jan Krátký, and Dimitris Xygalatas**, "The Role of Ritual Behaviour in Anxiety Reduction: An Investigation of Marathi Religious Practices in Mauritius," *Philosophical Transactions of the Royal Society B: Biological Sciences*, 2020, *375* (1805), 20190431.

Le Rossignol, Etienne, Sara Lowes, and Nathan Nunn, "Traditional Supernatural Beliefs and Prosocial Behavior," January 2022. NBER working paper 29695.

Leeson, Peter T., *WTF?! An Economic Tour of the Weird*, Stanford: Stanford University Press, 2017.

——— **and Jacob W. Russ**, "Witch Trials," *Economic Journal*, August 2018, *128* (613), 2066–2105.

Mace, Ruth, Matthew G. Thomas, Jiajia Wu, QiaoQiao He, Ting Ji, and Yi Tao, "Population Structured by Witchcraft Beliefs," *Nature Human Behaviour*, January 2018, *2*, 39–44.

Macfarlane, Alan D. J., *Witchcraft in Tudor and Stuart England*, London: Routledge & Kegan Paul, 1970.

Malefakis, Alexis, "Gridlocked in the City: Kinship and Witchcraft Among Wayao Street Vendors in Dar es Salaam, Tanzania," *Africa*, 2018, *88* (S1), S51–S71.

Marwick, Max G., "African Witchcraft and Anxiety Load," *Theoria: A Journal of Social and Political Theory*, 1948, (2), 115–129.

Miguel, Edward, "Poverty and Witch Killing," *Review of Economic Studies*, October 2005, *72* (4), 1153–1172.

Nadel, Siegfried F., "Witchcraft in Four African Societies: An Essay in Comparison," *American Anthropologist*, 1952, *54* (1), 18–29.

Norenzayan, Ara, Azim F. Shariff, Will M. Gervais, Aiyana K. Willard, Rita A. McNamara, Edward Slingerland, and Joseph Henrich, "The Cultural Evolution of Prosocial Religions," *Behavioral and Brain Sciences*, 2016, *39*, 1–65.

Nunn, Nathan and Raul Sanchez de la Sierra, "Why Being Wrong Can Be Right: Magical Warfare Technologies and the Persistence of False Beliefs," *American Economic Review Papers & Proceedings*, May 2017, *107* (5), 582–587.

Offiong, Daniel A., "Social Relations and Witch Beliefs Among the Ibibio of Nigeria," *Journal of Anthropological Research*, Spring 1983, *39* (1), 81–95.

Oster, Emily, "Witchcraft, Weather and Economic Growth in Renaissance Europe," *Journal of Economic Perspectives*, Winter 2004, *18* (1), 215–228.

Parren, Nora, "The (Possible) Cognitive Naturalness of Witchcraft Beliefs: An Exploration of the Existing Literature," *Journal of Cognition and Culture*, April 2017, *17* (5), 396–418.

Patterson, Mary, "Sorcery and Witchcraft in Melanesia," *Oceania*, December 1974, *45* (2), 132–160.

Peacey, Sarah, Olympia L. K. Campbell, and Ruth Mace, "Same-Sex Competition and Sexual Conflict Expressed Through Witchcraft Accusations," *Scientific Reports*, April 2022, *12* (1), 6655.

Platteau, Jean-Philippe, "Redistributive Pressures in Sub-Saharan Africa: Causes, Consequences, and Coping Strategies," in E. Akyeampong, R. Bates, N. Nunn, and J. Robinson, eds., *African Development in Historical Perspective*, Cambridge: Cambridge University Press, 2014.

Posner, Richard A., "A Theory of Primitive Society, With Special Reference to Law," *Journal of Law and Economics*, April 1980, *23* (1), 1–53.

Rio, Knut, Michelle MacCarthy, and Ruy Blanes, eds, *Pentecostalism and Witchcraft: Spiritual Warfare in Africa and Melanesia*, Cham: Palgrave Macmillan, 2017.

Różycka-Tran, Joanna, Paweł Boski, and Bogdan Wojciszke, "Belief in a Zero-Sum Game as a Social Axiom: A 37-Nation Study," *Journal of Cross-Cultural Psychology*, May 2015, *46* (4), 525–548.

Sanders, Todd, "Invisible Hands and Visible Goods: Revealed and Concealed Economies in Millennial Tanzania," in Harry G. West and Todd Sanders, eds., *Transparency and Conspiracy: Ethnographies of Suspicion in the New World Order*, Durham: Duke University Press, 2003, chapter 5, pp. 148–174.

Schram, Ryan, "Witches' Wealth: Witchcraft, Confession, and Christianity in Auhelawa, Papua New Guinea," *Journal of the Royal Anthropological Institute*, 2010, *16* (4), 726–742.

Schwartz, Shalom H., "National Culture as Value Orientations: Consequences of Value Differences and Cultural Distance," in Victor A. Ginsburgh and David Throsby, eds., *Handbook of the Economics of Art and Culture*, Vol. 2, Amsterdam: Elsevier, 2014, chapter 20, pp. 547–586.

Sebald, Hans, "Justice by Magic: Witchcraft as Social Control Among Franconian Peasants," *Deviant Behavior*, 1986, *7* (3), 269–287.

Singh, Manvir, "Magic, Explanations, and Evil: The Origins and Design of Witches and Sorcerers," *Current Anthropology*, February 2021, *62* (1), 2–29.

Smith, James Howard, *Bewitching Development: Witchcraft and the Reinvention of Development in Neoliberal Kenya*, Chicago: University of Chicago Press, 2008.

Stoop, Nik and Marijke Verpoorten, "Risk, Envy and Magic in the Artisanal Mining Sector of South Kivu, Democratic Republic of Congo," *Development and Change*, September 2020, *51* (5), 1199–1224.

van Bastelaer, Thierry and Howard Leathers, "Trust in Lending: Social Capital and Joint Liability Seed Loans in Southern Zambia," *World Development*, October 2006, *34* (10), 1788–1807.

van de Grijspaarde, Huib, Maarten Voors, Erwin Bulte, and Paul Richards, "Who Believes in Witches? Institutional Flux in Sierra Leone," *African Affairs*, January 2013, *112* (446), 22–47.

Waters, Thomas, *Cursed Britain: A History of Witchcraft and Black Magic in Modern Times*, New Haven and London: Yale University Press, 2019.