ECONSTOR
Make Your Publications Visible.

A Service of
ZBW
Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

Voigt, Stefan

Working Paper

Determinant of Social Norms

ILE Working Paper Series, No. 58

Provided in Cooperation with:
University of Hamburg, Institute of Law and Economics (ILE)

Suggested Citation: Voigt, Stefan (2022) : Determinant of Social Norms, ILE Working Paper Series, No. 58, University of Hamburg, Institute of Law and Economics (ILE), Hamburg

This Version is available at:
https://hdl.handle.net/10419/251574

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

WWW.ECONSTOR.EU

Mitglied der Leibniz-Gemeinschaft

Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

FAKULTÄT
FÜR RECHTSWISSENSCHAFT

INSTITUTE OF LAW AND ECONOMICS
WORKING PAPER SERIES

Determinant of Social Norms

Stefan Voigt

Working Paper 2022 No. 58

March 2022

Photo by UHH/RRZ/Mentz

NOTE: ILE working papers are circulated for discussion and comment purposes.
They have not been peer-reviewed.

© 2022 by the authors. All rights reserved.

Determinant of Social Norms

STEFAN VOIGT*

Institute of Law & Economics, University of Hamburg and CESifo, Munich, Germany

Abstract

It is now abundantly clear that social norms channel behavior and impact economic development. This insight leads to the question: How do social norms evolve? This survey examines research that relies on geography to explain the development of social norms, and suggests that religion and family organization are potential mediators. It turns out that many social norms are either directly or indirectly determined by geography and can, hence, be considered largely time invariant. Given that successful economic development presupposes the congruence between formal institutions and social norms, this insight is highly relevant for all policy interventions designed to facilitate economic development.

Keywords: *social norms, internal institutions, informal institutions, Institutional Economics, geography, religion, family*

JEL classification: A13, D90, K00, O10, Z10

1. Introduction

In his survey on the emergence of norms, Jon Elster (1989) does not exclude the possibility that the emergence of social norms might be determined entirely by chance, thus admitting that there is no convincing theory regarding their emergence. Given the large number of studies published in recent years dealing with this topic, it is hard to believe that Elster's equivocation was written a mere 30 years ago. For a long time, economists paid little attention to social norms, but a growing interest in the "deep" determinants of economic development has kindled a renewed relevance and rapid progress in the discussion of social norms.

Many studies analyze the potential effects of geography on development. An important debate ensued on whether these effects are direct or mediated by institutions. Formal or external institutions are the main focus of many scholars examining how institutions mediate the effects of geography (e.g., Acemoglu et al.

---

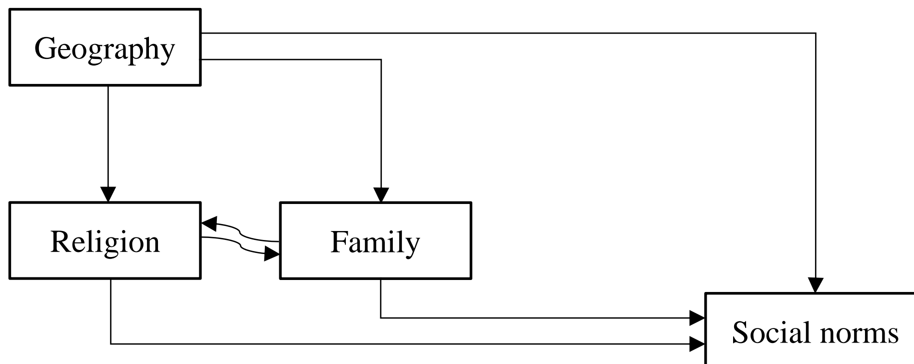
* Email: Stefan.Voigt@uni-hamburg.de
The author thanks Anne van Aaken, Niclas Berggren, Christian Bjørnskov, Jerg Gutmann, Sherif Khalifa, Mahdhi Khesali, Anastasia Litina, Katharina Luckner, Raphael Maesschalck, Eva Nissioti, Patrick Peltz, Roee Sarel, Betül Simsek, Eva van der Zee, and Karol Zdybel for constructive critique and suggestions on how to improve the paper.

2002, Easterly and Levine 2003, or Rodrik et al. 2004). More recently, however, the possibility that the effects of geography on development are also mediated by informal or internal institutions has received more traction. In this paper, because social norms are a special type of informal institutions, I survey many of the recent contributions that connect geography to social norms. More specifically, I ask how geography shapes those institutions that are not enforced by representatives of the state. I also accept a conjecture espoused by many other scholars (e.g., Basu 2019, Hayek 1973, Platteau 1994, and Weingast 1997) that social norms are crucial for the actual implementation and enforcement of formal law.

It is frequently observed that formally identical institutions can have very different consequences. Tabellini (2010), for example, conjectures that culturally transmitted norms may be more important than formal ones for the public goods provided by states, and asks whether largely time-invariant traits of culture can explain differences in the economic development of regions that share formally identical external institutions. If social norms are crucial for development, the factors influencing the social norms shared by members of different groups move to center stage.

There is ample evidence that the suitability of land for certain crops, the regularity of rainfall, ruggedness of terrain, the disease environment and other geographical factors critically influence human interactions. While geography is clearly exogenous, there are man-made factors that resist far-reaching modification by groups or individuals. These include religious practices and traditions of family organization, among others. Although these man-made factors are probably influenced by geographic conditions, they might, in turn, impact on the development of internal institutions above and beyond the effects of geography. To examine the interplay of these exogenous and endogenous influences, this paper also surveys studies that establish a link between geography and religion or family structure, both of which have an impact on social norms. Figure 1 shows the interplay between geography, and religion and family structure. There is a sizable literature dealing with the little arrows indicating the existence of a relationship between family structure and religion.

Figure 1: The Impact of Geography on Social Norms



The rest of the paper is organized as follows: In Section 2, besides defining our key terms, we specify a list of social norms. Section 3 discusses geographical factors identified as playing causal roles in generating social norms. the aspects dealt with include the dominant subsistence mode, pathogen prevalence, volatility of weather conditions, prevalence of natural disasters, terrain characteristics, and climate change. Section 4 focuses on how religious practices are shaped by geography and how they influence social norms. Section 5 asks the same questions about family structures. Section 6 summarizes our survey and discusses its relevance for policy decisions.

2. Social Norms

In his 1989 paper, Jon Elster observes that for "norms to be *social*, they must be shared by other people and partly sustained by their approval and disapproval. They are also sustained by the feelings of embarrassment, anxiety, guilt, and shame that a person suffers at the prospect of violating them" (Elster 1989, 99f.).[1] Based on this definition, social norms consist of a rule (do x, don't do y, etc.) and the threat of a sanction, which includes disapproval by others, if the rule is violated.

I proposed to define institutions as consisting of a rule endowed with a sanction and to distinguish between different types of institutions based on who does the sanctioning (Voigt 2019). If the sanctioning agent is a representative of the state, I

[1] Social norms have been defined in many ways, but there is consensus on their basic traits. For example, compare Elster's definition with the description proposed by Bicchieri (2006, 8): "By the term social norm, I shall always refer to informal norms, as opposed to formal, codified norms such as legal rules. Social norms are, like legal ones, public and shared, but, unlike legal rules, which are supported by formal sanctions, social norms may not be enforced at all."

am referring to an external institution. In contrast, if the sanctioning agent is a conventional member of society, I am referring to an internal institution.[2] The organizing criterion of this taxonomy relies on who sanctions non-compliance. Others (e.g., North 1990) propose a distinction based on the formality of the rule, and suggest that there are formal and informal institutions. If we combine the distinction of informal vs. formal institutions (i.e., referring to the rule component) with those of internal vs. external institutions (i.e., referring to the sanctioning component) we can design a matrix shown in Table 2.

Table 2: Combining Two Taxonomies

		Sanction	
		Internal	External
Rule:	Informal	Social norms	Vague legal concepts
	Formal	Private Arbitration	Most legislation

The matrix shows that social norms are an informal rule with an internal sanctioning mechanism. In her book on the emergence of norms, Ullman-Margalit (1977) quips that trying to explain the origin of a specific norm would be as futile as trying to identify the origin of a particular folk joke. In other words, it is types or classes rather than particular social norms that should be researched.

Our interest in social norms is motivated by the possibility that they impact economic development. Quite generally speaking, different social norms may induce different equilibria to be realized. This is why I focus on those social norms that have been shown to affect economic development, and are likely to also have an effect on the implementation and enforcement of formal law. Here is a list of types of social norms I focus on in this survey.

(1) *Norms endorsing individualism (or its opposite, collectivism).* Individualism describes cultural orientations in favor of a loosely knit social framework in

---

2 “Internal” does not refer to the individual but to society. The distinction between “society” and “state” used to be well-established, but had fallen into oblivion but the most recent book by Acemoglu & Robinson (2020) brings the distinction back into focus. Translated into English, the German subtitle of the book is “On the perpetual conflict between state and society”.

which individuals are expected to take care of themselves and their immediate family. In contrast, collectivism describes cultural orientations in favor of a tightly knit social framework in which individuals expect their relatives or members of their in-group to look after them in exchange for loyalty (Hofstede 1980). Neither individualism nor collectivism are social norms themselves. But both individualism and collectivism are backed up by a variety of social norms. We here follow Robinson (2013) who argues that while trying to identify specific individual norms makes little sense, focusing on their functions is more relevant. In a number of papers, Gorodnichenko and Roland (2011, 2017, 2020) have shown that individualism not only explains cross-country differences in growth and productivity, but also in innovativeness and the establishment of democracy.

(2) *Cooperation norms*. Encouraging people to voluntarily cooperate helps create value. Cooperation also helps citizens to act collectively which is a precondition for monitoring government and thus conducive to the implementation of formal laws. It has been shown that to sustain rule-complying behavior, the threat of being sanctioned if a rule is violated is key (Fehr & Gächter 2002). Such norms are also referred to as prosocial punishment norms and deserve particular attention. On the other hand, antisocial punishment behavior has been observed frequently (Herrmann et al. 2008). This occurs when people are punished even though they cooperated, and it is probably detrimental for development. Norms endorsing antisocial punishment, therefore, also deserve attention. In a much-cited paper, Knack & Keefer (1997) show that norms of civil cooperation are, indeed, closely associated with economic growth. Woolcock & Narayan (2000) discuss the economic effects of social capital, of which cooperation norms are an explicit aspect.

(3) *Sharing norms.* These norms imply that those hit hardest by some exogenous event, say a natural disaster, enjoy the solidarity of those relatively better off. More generally, charitable giving and altruistic behavior can be grouped under the heading of sharing norms. Yet, as a number of studies on African societies have shown (e.g., Platteau 2009, 2015), strict sharing norms can engender a common pool problem: If a lot of people expect to share someone else’s wealth, their own achievement incentives may be reduced.

(4) *Equality norms*. Equality norms can refer to different kinds of equality, such as gender equality or equality between ethnic groups. A society implementing social norms of equality is less likely to discriminate against anybody on insufficient grounds, and is more likely to profit from the efficiency-enhancing contributions of very different people. Delineated as such, equality norms should be conducive to the rule of law. Morrison et al. (2007) is a careful survey of the intricate transmission channels through which gender equality impacts economic growth, both in the short and the long term.

(5) *Norms of honesty*. When honesty is enforced, it is less risky to interact with others and reduces transaction costs. These norms make complex and multiple interactions profitable, and are conducive to (economic) development. The degree to which they are enforced also influences the behavior of state representatives, and might lead to lower corruption levels and improved government efficiency. Emphasizing that honesty is an important aspect of social capital, Bjørnskov (2012) shows that higher levels of social capital affect both schooling and the rule of law which, in turn, lead to higher growth rates.

Some scholars rely on trust and social capital as proxies for informal institutions. I think this is not helpful. Social trust can be understood as shared expectation of honest and cooperative behavior in a community (Fukuyama 1995). As such, trust itself is not a social norm, but rather a consequence of the degree to which norms of cooperation and honesty are upheld in a society. However, since high trust societies enjoy enhanced development, I include studies establishing a link between geography and social trust in an effort to ascertain its determinants. A voluminous literature documenting the relationship between trust and a number of desirable outcomes suggests that high trust levels are associated with higher economic growth (Knack & Keefer 1997, Zak & Knack 2001, Berggren et al. 2008, Algan & Cahuc 2013), better governance (Knack 2002), and higher democratic stability (Uslaner 2003).

We now turn to a brief discussion of the potential determinants of the five groups of social norms listed above. Many economists consider geography to be a deep determinant of economic development (Spolaore & Wacziarg 2013, is an early survey). The various dimensions of geography include: climate, soil quality, terrain and natural disaster prevalence. It is assumed to be "deep" because it is exogenous to human behavior and very time-invariant. This survey includes studies that

identify a relationship between a dimension of geography and the emergence of a particular norm.

I focus on religion and family organization – interchangeably used with family structure - as variables that mediate between geography and social norms. Recently, religion has emerged as an important subject of analysis in economics. Research shows that religious beliefs and practices impact economic development (Barro and McCleary 2003, with a survey). As different religious beliefs can have an impact on social norms, I choose a broad definition of religion and rely on Émile Durkheim (1912) who separated the sacred from the profane, and defined religion as a "unified system of beliefs and practices relative to sacred things." This definition is broad enough to include very different kinds of worship such as nature worship, animism, totemism, and ancestor worship.

Family organization refers to the way families are structured. French anthropologist Emmanuel Todd (1985) proposes three dimensions to differentiate family types: do married children continue to live with their parents, who receives an inheritance and is cousin marriage encouraged or prohibited. Although some economists focus more on family *ties* rather than family *types* (e.g., Alesina and Giuliano 2011, 2014), I choose to focus on the economic consequences of differences in family types.

3. Geography

To establish a connection between geography and social norms I distinguish six aspects of geography: (1) predominant (historic) subsistence mode, (2) pathogen prevalence, (3) volatility of weather conditions, (4) proneness to natural disasters, (5) terrain characteristics, and (6) historic climate change.

3.1. Predominant (Historic) Subsistence Mode

Geographic conditions were probably the single most important determinant for the predominant subsistence mode of historic societies. The soil, in combination with the climate, makes the cultivation of some crops more profitable than others. Although the historic subsistence mode is not completely exogenous, numerous studies show a high fit between theoretically ascertained land suitability and the actually observed type of subsistence mode.

First introduced in the 1960s, the Ethnographic Atlas (EA; Murdock 1967) is an indispensable tool for anthropologists. The EA includes more than 1,200 historic

societies and provides information about, for example, family organization, political structure, or dominant subsistence mode. It is also an important data source underlying many of the studies summarized here.[3] The EA distinguishes five subsistence modes: (1) collection of wild plants and small land fauna, (2) hunting (including trapping and fowling), (3) fishing (including shell-fishing and pursuit of large aquatic animals), (4) animal husbandry, and (5) agriculture. Today, the last three categories have overwhelming contemporaneous relevance. Picking up on the fourth and fifth mode proposed by Murdock, I distinguish between animal raising vs. non-animal raising agriculture, i.e., between herders and farmers. I also propose to distinguish between irrigation vs. non-irrigation farming, and between crops that are grown using the plough vs. the hoe stick (Alesina et al. 2013).

Fishermen's Norms

Fishing is one of the subsistence modes named by Murdock (1967). Gneezy et al. (2016) conduct an interesting study that relies on the similarities of each fisherman's behavior to infer whether or not a norm exists. Comparing the cooperative behavior of open sea fishermen with that of fishermen working on lakes, they find that norms of cooperation are significantly more pronounced with fisherman who work in the open sea and, due to the heightened danger there, depend on cooperation with others. Gneezy et al. (2016) construct a simple index of cooperation based on four games: the trustworthiness in a trust game, the offer in an ultimatum game, donations in a donation game, and the contribution in a public good game. Using this indicator, the authors find that the distribution of cooperation among the open sea-going fishermen is highly compressed (all players hover between the 40% to 45% level); this indicates a significant similarity in how sea-going fishermen engage in cooperative behavior. Based on this observation, the authors conclude that a norm must exist prescribing the appropriate share that one should contribute. The cooperation levels of lake fishermen are a lot more dispersed, indicating a lack of similar behaviors and making the existence of a specific social norm unlikely. When the wives of the two different groups of fishermen play the same games, unlike their husbands, they all share a similar approach to cooperation. This finding suggests that the norms found among the men are not transmitted horizontally between male and female family members. The

---

[3] Murdock also introduced the Standard Cross-Cultural Sample (SCCS). It reports key traits of 186 cultures that were chosen such that they would be most independent from each other. Some of the results reported here rely on the SCCS for some of their data.

authors of this study are, hence, able to establish a direct link between a specific mode of subsistence – fishing – and the prevalence of specific norms.

But fishing has also been shown to determine one important aspect of family organization, namely whether property is inherited via the male (patriliny) or female (matriliny) family line. BenYishay et al. (2017) find that if fishing is the most important means of subsistence, matrilineal inheritance rules are significantly more likely. Their study is based on primary data collected in the Salomon islands. Data from the Ethnographic Atlas reveals that their findings can be generalized to the rest of world. When they extend their analysis, BenYishay et al. (2017) find that matriliny does not confer women with higher bargaining power or more political agency. Previous research has, however, shown that matriliny does have other far-reaching effects, e.g., on labor productivity (Goldstein and Udry 2008), on welfare (La Ferrara 2007), and the effectiveness of land right reforms (Deininger et al. 2013).

Herders vs. Farmers

Behavior deviating from a narrowly defined norm is often greeted with an aggressive response in the South of the U.S., but not in the North. Nisbett and Cohen (1996) suggest that this difference exists because livestock herders settled in the South, and farmers settled in the North. Herders are more vulnerable and operate in areas with low population density. Their (economic) survival depends on thwarting potential criminals themselves because a sheriff may be hours away. An initial aggressive response to deviant behavior may have had positive returns. These differences in behavior still exist in the U.S. today, even though occupations have changed.[4]

Nisbett and Cohen (1996)'s findings are specific to the U.S. A recent study by Cao et al. (2021) asks whether individuals belonging to groups that historically relied on herding are more violent even today on a global scale. Once again using information from the Ethnographic Atlas, the authors find that the folklore of traditional herders mentions violence, punishment, and retaliation more than the folklore of other groups. This discovery establishes a historical connection between herding and aggressive norms. Cao et al. (2021) also find that groups whose ancestors were herders are not only involved in more conflicts, but also in more

4 Recently, Bazzi et al. (2020) found that historical frontier experience impacts social norms long after the frontier has vanished. For example, people living in U.S. counties that once had a frontier are more likely to share individualist values, and oppose redistributive policies.

intense conflicts.[5] This clearly shows the persistence of a social norm similar to that found in the U.S.

Becker (2019) examines the potential consequences of pastoralism on the sexual traditions of women. In pastoral societies, men are often away from their families for extended periods and unable to monitor the behavior of their wives. Since fatherhood is essentially uncertain, men had an interest in restricting female sexuality. Relying on a survey of around 80,000 women living in 13 African countries, Becker finds that the historical prevalence of pastoralism is associated with a higher prevalence of female genital cutting. Extending her analysis to some 500,000 women from 275 ethnic groups and 35 countries in Africa, Asia, Europe, and South America, she finds that women who descend from historically pastoralist areas think it is extremely important that women be faithful. Since the answers might reflect experimenter demand effects rather than actual behavior, Becker checks whether the number of HIV infections correlate with these declared norms and finds that this is, indeed, the case. Here, a particular historical subsistence mode – pastoralism – has clearly discernible effects on one group of social norms, namely equality norms.

Schulz (2018) is one of several scholars who argues that both animal husbandry and religious rules have an effect on family organization. Based on Mitterauer (2015) he claims that because of a camel's long gestation period, herds are subject to a minimum size below which the maintenance of the entire herd is endangered. Islamic inheritance law prescribes that both sons and daughters inherit, implying an imminent danger to the continued existence of camel herds. He argues that the need to maintain a minimum herd size and Islamic inheritance law are mutually responsible for the practice of cousin marriage as it keeps the livestock in the family. In this context, cousin marriage is a consequence of the interaction between

---

[5] In comparative psychology, one often finds a distinction between "collectivist" Asians and "individualist" Westerners. According to this simple taxonomy, Asians would not only be collectivist, i.e., stressing the importance of interdependence, but also non-self-assertive as this would be a hindrance to in-group harmony. In the West, on the other hand, individualism and self-assertiveness would go hand in hand. In their study on Arab culture, San Martin et al. (2018) hypothesize that due to the prevailing living conditions on the Arab peninsula, Arabs are likely to be self-assertive in order to protect members of their in-group, yet collectivist at the same time. Their experiments confirm this novel combination of traits, and show that religion is not a key factor, as Christian and Jewish participants who are not recent immigrants display very similar behavior. A possible interpretation of this study is that geography is more important than religion as a determinant of central personality traits and the social norms connected to them.

a specific kind of herding subsistence and religious norms. Cousin marriage is also associated with more racist attitudes and, hence, incompatible with equality norms (Gutmann & Voigt 2021). It has also been found to correlate with lower levels of democracy, lower levels of political participation, and a lower quality of external institutions (Schulz 2018).

Irrigation

Karl Wittfogel (1957) famously argued that agricultural systems dependent on a centrally controlled distribution of water, either for irrigation or flood protection, were bound to end up with autocratic rulers. Thirty years later, Elinor Ostrom (e.g., 1990) pointed out that irrigation can also be coordinated horizontally and does not necessarily lead to autocracy. Wittfogel's theory has been challenged by many and is still discussed today. We focus on only those studies that address the consequences of irrigation systems on social norms.

Certain crops, such as rice, need constant irrigation. Since this presupposes collective action, it can be argued that groups relying primarily on rice or similar crops must have developed cooperation norms to be successful. Based on evidence from China, Talhelm et al. (2014) even try to establish a "rice theory of culture." Developing their argument, they point out that the cultivation of rice requires twice as much labor as the cultivation of wheat. Due to varying geographical features, China has both wheat growing and rice growing regions. Talhelm et al. (2014) expect the rice growing regions to display higher levels of interdependence and wheat growing regions higher levels of independence.

To test their hypotheses, Talhelm et al. (2014) ran lab experiments with students from six different regions in China. Participants from rice provinces are "more holistic-thinking, interdependent, and loyal/nepotistic than participants from the wheat provinces" (ibid., 607). Interestingly, the authors find that differences in behavior can be attributed to all participants from the various regions independently of whether they were involved in rice or wheat cultivation themselves. This result is markedly different from the results reported by Gneezy et al. (2016) on the social norms of lake fishermen vs. open sea fishermen. They found that their norms only applied to fisherman and not, for example, their wives. The results by Talhelm et al. (2014), however, show that the prevalent mode of farming has far-reaching consequences regarding the degree of individualism / collectivism even for those who have never been farming. Taking the results of these two studies into account, a follow-up question naturally suggests itself: under what circumstances is the

activation of social norms constrained to the setting in which they (supposedly) emerged (fishing) and under what circumstances are they activated beyond (irrigation)?

Talhelm et al. (2014)'s claim that cultivating rice might drive a number of basic social norms has found a number of critics. Hu and Yuan (2015)'s critique is that both corn and soybean producing areas are grouped with the wheat producers. They propose a modified dichotomy simply separating "rice" from "non-rice agriculture." This implies that many people from the Americas and the Middle East should be more like Westerners (i.e., grouped as "non-rice agriculture"), an implication not in accordance with established findings. Ruan et al. (2015) criticize sample bias, measurement error, and model misspecification. Based on rice vs. wheat farming in India, von Carnap (2017) claims that the equations "wheat = no irrigation" and "rice = irrigation" are incorrect at best. In India, 64% of rice cultivation does not require irrigation, whereas 56% of wheat cultivation does require irrigation. In addition, there are different kinds of irrigation that might have different consequences on cooperation norms.[6] Drawing on a large Indian household survey, von Carnap finds that different types of irrigation are associated with fewer communal conflicts and higher participation in public meetings. In spite of these findings, he states (ibid., p. 316) that "it is not possible to establish a broad and consistent relationship between agricultural indicators and social capital", which should be the case according to the theory proposed by Talhelm et al. (2014).

There are, however, other studies largely in line with the "rice theory of culture". In the Philippines, for example, some farmers rely only on rain to grow rice, and others who rely on irrigation. What makes Tsusaka et al. (2015)'s comparison of the behavior of the farmers particularly interesting is the fact that the respective irrigation systems were introduced only two years before the survey. The study supports their basic hypothesis that since the management of an irrigation system requires cooperation between its users, the degree of both cooperation and altruism will be higher in irrigation system areas than in rainfed areas.

The most comprehensive study on irrigation's impact on individualism/collectivism is written by Buggle (2020). It is a worldwide survey using irrigation data derived from the Ethnographic Atlas. Buggle finds that irrigation agriculture robustly predicts social norms associated with collectivism. The effect is considerable. For example, had the South Koreans not practiced irrigation agriculture, collectivism

---

[6] Von Carnap (2017) names four, namely (1) tanks, (2) canals, (3) tube wells, and (4) other wells.

would be 22% to 43% lower depending on the estimation approach. This would translate into South Koreans having the same level of collectivism found among Uruguayans or Israelis (ibid., 149). In addition, he finds that irrigation agriculture is associated with higher levels of in-group favoritism and more tightness (i.e., the leeway in interpreting social norms).[7] He digs deeper into the individualism/collectivism dichotomy by differentiating between horizontal and vertical versions of both. Whereas horizontal collectivism is characterized by strong norms of cooperation between equals, vertical collectivism is characterized by the acceptance of hierarchical authority described by Wittfogel (1957). Buggle's results reveal that small-scale irrigation produces horizontal collectivism, whereas large-scale irrigation produces vertical collectivism.

In principle, it is possible that people who have collectivist norms choose irrigation culture. In other words, the causality could run from culture to the type of agriculture practiced. Buggle (2020) controls for causality issues by using instrumental variables that indicate the geographical suitability for different types of agriculture. It appears that irrigation agriculture is responsible for establishing collectivism as a social norm that is transmitted across generations, and that persists in individuals who are no longer involved in agriculture, and who no longer live in the relevant regions. To wit, collectivist norms are still found in second generation migrants born in countries other than the origin countries of their parents or grandparents. The effects of irrigation agriculture are, moreover, not limited to social norms. Buggle (2020) shows that people originating from such regions are also less innovative and more likely to work in routine-intensive occupations.

Litina (2016) assumes that constructing irrigation systems requires a high degree of cooperation and she uses the fraction between irrigation potential and actual irrigation as a proxy for cooperation on a societal level. The main hypothesis of her study is that highly productive agricultural land made investment in a collective agricultural infrastructure less necessary and less likely. Her empirical evidence supports this conjecture. She extends her study by suggesting that successful industrialization requires a substantial investment in infrastructure, and regions with low arable land were more likely to industrialize. Although this sounds like the reversal of fortunes à la Acemoglu and Robinson, Litina (ibid.) insists that her

---

7 The concept of tightness is used to describe how tight or loose the rules and norms are that members of a society are supposed to follow (Pelto 1968; Triandis 1995). Tight cultures have many strong norms and a low tolerance of deviant behavior, whereas loose societies have weak social norms and a high tolerance of deviant behavior (Gelfand et al. 2011).

theory is less far-reaching because it does not claim that variations in arable land is the dominating factor for economic outcomes.

Plough vs. Hoe

Alesina et al. (2013) observed that the degree to which societies relied on the plough in traditional agriculture is a good predictor for today's role of women in society. The argument that specific agricultural practices could have an important influence on gender role differences was first advanced by Ester Boserup (1970). The argument is straightforward; cultivation of the soil relying on the plough requires a lot of body strength to either pull the plough or control the animal that pulls it, giving men an advantage over women. Agriculture that relies more on the hoe and the digging stick requires less strength and is more labor-intensive allowing women to actively participate in farming. Work with these tools can easily be interrupted and resumed again, a characteristic that is compatible with child caring, a task performed by women almost everywhere. Ploughs are used to grow wheat, barley, and rye, hoes are used to grow sorghum, millet, root, and tree crops. Plow-using societies include Egypt, India, and Pakistan; hoe-using societies include Burundi, Rwanda, and Kenya.

Relying on information about whether or not the use of a plough is suitable for a particular area, Alesina and his co-authors show that norms about the appropriate role of women in society and the participation of women in the workplace, can be predicted based on the use of the plough vs. the hoe. In this context, geography exerts a lasting impact on culture by influencing the norms and beliefs regarding the proper role of women in society. Alesina et al., citing the World Development Indicator Data on female labor force participation, show figures that range from 16.1% in Pakistan (relying on plough agriculture) to 90.5% in Burundi (relying on hoe agriculture). In countries relying on the plough, women are less likely to work outside the home, to be elected to parliament, or to run a business. This study also reveals that societies relying on plough agriculture accept inequality to a higher degree. Similar to some of the studies surveyed above, this study also investigates second generation immigrants to the U.S., and confirms that the norms are culturally transmitted and do not depend on the context of their origin.

3.2. Pathogen Prevalence

Pathogens are organisms that cause diseases. Important pathogens include malaria, dengue, typhus, and tuberculosis. Sachs & Maleney (2002) show that the countries

most prone to malaria are also the least economically developed and suffer from the lowest growth rates. Alsan (2015) offers another example of a pathogen negatively influencing economic development. He shows that areas plagued by the tsetse fly are less likely to domesticate animals and use the plough, less likely to be politically centralized and have a lower population density.

The prevalence of pathogens might also influence social norms. In regions where pathogens are prevalent, contacts with others can lead to serious illness or even death. It is plausible to assume that ethnocentrism, xenophobia, and other forms of prejudice might be part of an antipathogen defense strategy. A high degree of collectivism could also be caused by pathogen prevalence, because collectivists make a sharp distinction between in-group and out-group interactions. Being cautious about mingling with people who do not belong to one's own group makes the import of pathogens by members of an out-group less likely. People sharing collectivist social norms also insist on conformity (as opposed to tolerance for deviance), making deviating behavior (such as being in contact with potential infectors) less likely. Fincher et al. (2008) analyze the relationship between pathogen prevalence and collectivism. Based on 98 countries and taking into considerations up to nine pathogens, they find a strong correlation between pathogen prevalence and four collectivism measures widely used in the literature, among them the well-known Hofstede measure.[8]

In a modified Prisoners' Dilemma experiment conducted in 42 countries, Romano et al. (2021) find that cooperation is higher in countries with a (historically) low prevalence of infectious diseases. While this evidence suggests that pathogen prevalence has a direct effect on social norms, others have asked whether it can also be a determinant of family organization. Pathogen prevalence can be deadly. To increase chances that at least some of their offspring will survive the childhood years, women will tend to select healthy males as fathers. Low (1990) hypothesizes that pathogen stress increases the likelihood of polygyny, and that sororal polygyny (where the cowives are sisters and is a preferred form) is unlikely as this does not increase variable offspring. Low finds empirical support for both hypotheses.

---

[8] In Thornhill & Fincher (2014), this is referred to as the "parasite stress theory of cultural values". Morand & Walther (2018) examine the flipside of this theory and hypothesize that more individualistic societies suffer from a higher number of infectious disease outbreaks. Their results do confirm the hypothesis.

Henrich (2020, pp. 263-274) discusses the societal problems that polygyny can create. If some men get to marry more than one woman, other men may not get the chance to marry. Getting married and becoming a father reduces testosterone levels; this phenomenon is associated with lower crime rates (Henrich 2020, with numerous references). If pathogen prevalence influences marriage patterns and marriage patterns influence crime rates, we have a straightforward link between pathogen prevalence and conflict in society.

3.3. Volatility of Weather Conditions

For their well-being and sometimes even their survival, traditional agricultural societies depend on weather conditions. Too little or too much rain could ruin a crop. Dell et al. (2014) survey the effects of weather variation on outcome variables such as economic growth, agricultural output, labor productivity, energy consumption and so forth, but do not survey how weather variation influences social norms.[9]

Platteau (2015), for example, conjectures that volatile weather conditions inspire risk-pooling and mutual insurance schemes. Assuming the absence of a state-enforced systems of property rights, these mechanisms need to be self-enforcing. Social norms with specific traits might ensure self-enforceability, and Platteau (ibid., p. 196) argues that equality norms are likely to emerge where volatile weather conditions exist.

Extending this thought, Buggle and Durante (2021) ask whether people living in European regions that were subject to high weather variability in pre-industrial times display high levels of general trust today. Whether a harvest was successful depended in large part on the weather, and high variability might result in bad harvests. In order to reduce the effects of a bad harvest, cooperation measures like food storage and the arrangement of cultivated plots may have evolved that showed how other people are reliable and can be trusted. Buggle and Durante are able to show that people living in those European areas subject to higher year-to-year variability in precipitation and temperature between 1500 and 1750, still display

[9] It has been proposed that the (local) adoption of the neolithic revolution was a function of temperature variability (Ashraf & Michalopoulos, 2015). Neither highly stationary nor extremely volatile weather conditions are conducive to development of new tools used in sedentary agriculture. Moderate variability in weather conditions, however, encourages sedentary agriculture. Based on temperature variability observed during the 20th century, the authors do indeed find a hump-shaped relationship between temperature variability and the adoption of sedentary agriculture.

higher trust levels today. Interestingly, high trust levels are only found in locals and not immigrants. Also, including the timing of the Neolithic revolution as a confounder neither reduces the significance of the variability variables nor is the timing itself significantly correlated with contemporaneous trust levels.[10]

Buggle and Durante (2021, p. 1951) summarize the underlying hypothesis as "norms of trust developed because they facilitated collective action and risk-sharing among subsistence farmers exposed to weather-related risk in pre-industrial times." Although the findings are impressive and survive a number of robustness tests, the hypothesized mechanism is dangerously close to a functionalist fallacy. It would be nice if trust regularly and reliably emerged whenever it was needed. But here, it seems to have been the case. A particular aspect of geography has, hence, induced mutual insurance schemes that have taught people to trust each other. The enhanced levels of trust in these regions lower transaction costs to this very day.

Dang & Dang (2021) report similar findings for farmers in Vietnam. Individuals who are threatened by weather variability display higher levels of trust in their neighbors and those who are close to them. As logical and straightforward as these results may seem, the precise opposite may also be plausible. If someone suffers because of weather conditions and receives no help, trust in others may be reduced. It has been shown (Nunn and Watchekon 2011, Nunn and Puga 2012; will be discussed in Section 3.5 below) that those African regions that suffered most from the extraction of slaves have low levels of general trust even today. In a paper relying on data from 17 African countries, BenYishay (2013) asks if low levels of precipitation during the first five years of childhood negatively impacts children's trust in others during adulthood. Although he finds this effect, it is only significant in areas that were heavily affected by the slave trade. It seems that in this case, the impact of weather on trust level is affected by a man-made determinant of trust, namely the extraction of slaves. BenYishay (2013) also finds that the propensity to share food is negatively affected by abnormally low levels of rainfall during early childhood, implying an effect on cooperation norms.[11]

---

[10] High variability in climatic conditions implies the necessity to cooperate with others far beyond the narrow realm of the family, which is why Buggle and Durante (ibid.) conjecture that family ties in regions of high variability might be lower. They find evidence that this is, indeed, the case.

[11] These studies are concerned with the effects of weather variability on general trust. But weather variability can also have long-lasting effects on the trust that citizens put in politicians. By now, there seems to be general consensus that large famines are primarily due to inadequate policy responses – and not droughts (Sen 1982). So, it makes sense to ask if famines lead people to distrust politicians.

There is strong evidence from both Europe and Asia that a bad harvest caused by unfavorable weather conditions encourages farmers to cooperate and trust each other. There is also evidence that these effects are persistent, even if individuals living in these regions have never been to a farm. On the other hand, there is evidence that unfavorable weather conditions can have long-lasting negative effects on trust and cooperation. If there are (at least) two possible equilibria, future research must identify the conditions under which mutual cooperation (mutual defection) is more likely to emerge. Although the evidence reported by Buggle and Durante (2021) is strong, it is necessary to specify the underlying mechanism that may have induced the emergence of a particular equilibrium.

3.4. Proneness to Natural Disasters

Lisbon was hit by an earthquake on November 1, 1755. The earthquake triggered a tsunami and widespread fires that caused between 30,000 and 100,000 deaths (out of a population of 275,000). The earthquake had a profound impact on contemporary philosophy. The text of Voltaire's poem *poème sur le désastre de Lisbonne* argues against Leibniz' belief that we live in the best of all possible worlds. In the 20th century, Adorno created an analogy between the earthquake and the Holocaust claiming that both were large enough to transform European philosophy and culture.

The eruption of the Tambora volcano on the Indonesian island of Sumbawa in April 1815 is considered to be the largest and most deadly eruption in history. As a direct consequence, more than 70,000 are said to have died on Sumbawa and the surrounding islands. There is evidence that the eruption is responsible for a temporary change in climate, and why 1816 is called "the year without summer". Not only was there a noticeable drop in average temperatures, but there were also crop failures and famines.

Earthquakes, volcanic eruptions, tsunamis, floods, droughts, and pandemics have numerous effects both on the individual and collective level. Méon et al. (2021), for example, show that "a minute of earthquake" can buy "years of patience" in the sense that those who experienced an earthquake reduce their time discount rates.

This is exactly what Chen & Yang (2015) do in their study on the effects of the large Chinese famine that is said to have caused around 30 million deaths. They find that regions where people experienced personal hunger but were not subject to a particularly pronounced drought, are distrustful of politicians even today. This is also true for their children who did not experience the famine themselves.

Belloc et al. (2016) show that each earthquake in Italy retarded the development of political institutions.[12]

There is ample evidence that pathogen prevalence is conducive to social norms connected to collectivism (Section 3.2). Natural disasters endanger survival in a similar way, and it is straightforward to ask whether they are also conducive to social norms associated with collectivism. Oishi & Komiya (2017) find a strong correlation between natural disasters and collectivism. However, when they run a multiple regression analysis and simultaneously include pathogen prevalence, distance from the equator and income per capita, natural disaster risk ceases to be a significant predictor for collectivism. This result shows that pathogen stress is more relevant in predicting collectivist norms than natural disasters.

Natural disasters remind people how powerless they are. Experiencing such an unbearable and unpredictable event induces many people to increase their religiosity.[13] Bentzen (2019) finds that people who experience earthquakes become more religious. The effect decreases over time, but children of immigrants who experienced earthquakes still display higher levels of religiosity. Other unpredictable disasters have similar effects. Interestingly, these effects are found everywhere for adherents of all religions, except for Buddhists. Bentzen (ibid., p. 2315) speculates that this may be due to Buddhist beliefs being "more efficient in providing stress relief than other beliefs, thus reducing the need for religion in the long term."

Similar effects have been identified as a consequence of the COVID-19 pandemic. Bentzen (2020) finds that Google searches for "prayer" significantly increased as a portion of all searches on Google in the early phases of the pandemic. Such an uptick was observed globally but it was particularly pronounced in poorer, more insecure, and more unequal societies. Religiosity as a determinant of social norms will be dealt with in Section 4 below.

---

12 Based on a large panel dataset, Rahman et al. (2017) uncover two contracting effects of earthquakes. On the one hand, they drive transitions toward democracy, and on the other, they can also stabilize autocratic regimes as short-term emergency aid raises the opportunity cost of challenging the (autocratic) incumbent.

13 Religiosity refers to how strongly someone believes and is often measured by how many times one participates in religious rituals.

3.5.Terrain Characteristics

There are a number of analyses dealing with economic development in landlocked countries (Faye et al. 2004, is but one example). Landlocked countries are said to be at a disadvantage because higher transportation costs thwart their integration into the world economy. Being landlocked also slows down the exchange of ideas, hampering the adoption of and inducing low levels of innovation. Musitha (2021) argues that landlocked countries have higher levels of ethnocentrism and xenophobia. Although being landlocked is a consequence of how national borders are drawn and not a specific geographical feature, a number of terrain characteristics are highly correlated or have very similar effects with being landlocked. Mountainous regions, for example, have higher transportation costs and are at a disadvantage compared to regions with flatter terrain.

It is estimated that some 18 million Africans (out of a total population of 50 to 70 million at the time) were sold as slaves. Nunn and Watchekon (2011) hypothesize that African regions heavily raided in search of slaves suffer from lower trust between family members, neighbors, and political office holders. One reason for developing a lack of trust is because chiefs, neighbors, and family members were involved in procuring and selling slaves. They confirm their hypothesis, and show that the negative impact on trust is measurable today.

Because extracting slaves from rugged areas is more difficult, individuals living in these areas were protected due to geography. Nunn & Puga (2012) find that in Africa rugged terrain is not only correlated with a lower percentage of people being raided, but that also offers advantageous income effects. Their finding that ruggedness in all other continents has income-reducing effects adds credibility to the transmission channel they proposed. They show that the interaction of an aspect of geography ("ruggedness") with a historical event ("slave raids") can have long-lasting effects.

Nunn and Watchekon (2011) examine how slave raids in Africa impacted trust in Africa. But slaveholding might also have enduring effects on social norms at the receiving end, i.e. the Americas. Sokoloff and Engermann (2000) argue that the differences between slaveholding in the South and in the North was a direct consequence of the prevalent geographical conditions and the relevant resource endowment, rather than a historical accident. Their study establishes a direct link between geography and institutions, in this case the institution of slaveholding.

But are there also studies showing that the prevalence of slaves has had an impact on social norms? In their study on the political legacy of American slavery, Acharya et al. (2016) conduct a county-level analysis of political attitudes in Southern states, and compare pre-Civil War attitudes with post-Civil War attitudes. They show that whites who live in counties that had a high proportion of slaves in 1860 hold political attitudes today that are markedly different from whites living in counties with a low proportion of slaves. They also show that these differences did not exist before the Civil War. Specifically, before the war whites that lived in different counties held similar political attitudes, but after the war whites living in counties that had a larger number of slaves developed attitudes significantly more critical towards blacks than whites living in counties with a low number of slaves. Acharya et al. (2006) propose that these differences evolved because the sudden enfranchisement of blacks following the Civil War was perceived as a threat to whites, both politically and economically. This perceived threat motivated white elites to promote racist norms that existed before the Civil War. This shows that a political event – here the civil war and the subsequent formal equality under law – can strengthen pre-existing social norms, in this case (in)equality norms.

3.6. Long-Term Change in Climate

Section 3.3 discusses the effects of weather variability. Here, I am concerned with changes in climate, i.e., more long-term events. Climate change is thought to have caused some of the most significant changes in the organization of human life on earth. Perhaps the most important change is the transition from hunter-gatherer to agricultural societies spawned by the Neolithic revolution. A significant and long-term change in the climate of the earth occurred some 12,000 years ago, and has been identified as the catalyst for humans to settle. There seems to be consensus that becoming sedentary initially decreased, rather than increased, average calorie intake. This is why Diamond (1987) referred to it as “the worst mistake in the history of the human race.” Matranga (2019) suspects that becoming sedentary might have been a two-step process. As hunters and gatherers became more adept at storing food, they were able to survive winters in their primary hunting grounds and gradually became more stationary. Sedentary agriculture and permanent settlement was the logical next step.

It is well accepted that the transition to settlement did not occur simultaneously in all regions of the world. In general, it is assumed that the Fertile Crescent, i.e. the boomerang shaped region in the Middle East spanning from Egypt via Israel, Jordan

and Lebanon to Syria and Iraq, is the region where the first large-scale practice of sedentary agriculture occurred. From there, it slowly spread to other regions of the world. Because the initial practice of sedentary agriculture required a lot of cooperation, Olsson and Paik (2016) conjecture that people engaged in this form of subsistence developed more collectivist norms. Individuals unwilling to abide by these collectivist norms and preferring individual autonomy moved elsewhere. Olsson and Paik (ibid.) believe that this process repeated itself until individuals with the most individualistic attitudes ended up in northwestern Europe or the former British colonies.

Their empirical results seem to confirm the theory that the divergence of collectivist and individualist norms is contemporaneous with the development of sedentary agriculture. Inhabitants of regions with a long history of agriculture display more collectivist values, such as extolling obedience or perceiving a low control over their own lives. Since the early adoption of agriculture is correlated with lower standards of living today, Olsson and Paik (ibid.) consider this to be another "reversal of fortunes."[14/15]

Although the last glacial period ended around 12,000 years ago, the so-called "little ice age" was a much more recent phenomenon, taking place between ca. 1300 and 1860. These climate variations may lead to the cultivation of different crops which might impact development. Mitterauer (2010) states that worsening climatic conditions in Western Europe during the early Middle Ages led to an increase in the cultivation of both rye and oats. The cultivation of rye requires the use of heavy ploughs which, in turn, makes the use of draft animals more likely. As shown above in Section 3.1, use of the plough has been identified as being instrumental in determining gender roles.

Climate change may also have an impact on the benefits associated with social norms. In previous sections, I surveyed articles that show that geography is an

---

14 Echoing the reversal of fortune idea introduced by Acemoglu et al. (2002), based on the observation that societies enjoying favorable geographic conditions and that were comparatively rich back in 1500 tend to be rather poor today.

15 It had long been assumed that places of religious worship such as temples were only constructed after hunters and gatherers had turned into subsistence farmers. This assumption has been questioned by the temple ruins that were found in southeastern Turkey. It is estimated that Göbekli Tepe is some 11,500 years old definitely antedating stationary agriculture in that region. It could, hence, be that humans became sedentary to stay close to their places of religious worship as suggested by Schmidt (2010).

important determinant of social norms. If geographical conditions change, the value of certain norms may diminish and individuals may be less inclined to stick to those norms. This is exactly the hypothesis that Giuliano and Nunn (2021) test in a recent paper using four different groups of outcome variables. First, they elicit the importance that those surveyed by the World Values Survey attach to tradition. Second, they ask how persistent two culturally maintained practices are, namely beliefs regarding polygamy and the participation of females in the labor force. Third, they examine the extent to which immigrants refrain from adopting the values and norms of their new institutional environment. Fourth, and in order to alleviate possible self-selection concerns regarding their third outcome, they look at indigenous populations of both Canada and the U.S. and their ability to withstand pressure to modify some of their beliefs and norms. Their results suggest that groups living in more stable climates are more conservative and cling on to their values and norms significantly more than groups subject to unstable climates.

This concludes our overview regarding the effects of various aspects of geography on various groups of social norms. The next two sections of this survey deal with the (possibly additional) effects that religion and family organization may have on social norms. Religious practices are dealt with in Section 4 and family organization in Section 5.

4. Religion as Mediating Factor

4.1. Preliminary Remarks

This survey is primarily concerned with the effects of (various aspects of) geography on the social norms shared by a society. In the introduction, I allude to the possibility that religion might be an important factor that mediates geography's influence on the development of social norms. The possibility that geography may influence religious beliefs and practices is taken up in Section 4.2. This possibility implies that religion in and of itself might be an important factor directly affecting (not just mediating) social norms, which is dealt with in Section 4.3.

As mentioned earlier, my definition of religion is broad. Nonetheless, the distinction between local or tribal religions and world or universal religions plays an important role in our discussion. The concept of so-called "Big Gods" or moralizing high gods is a critical aspect of our discussion as well. These are supernatural beings that created and/or govern all reality, intervene in human

affairs, and enforce or support human morality (Roes & Raymond 2003; for the concept of Big Gods, see Norenzayan 2013).[16]

Countless studies spanning more than a century show time and again that religion and religious practices have important effects on economic development and beyond. In a well-known paper, Barro and McCleary (2003) show that religious beliefs and economic growth are positively correlated, whereas church attendance and growth are negatively correlated.[17] This distinction between beliefs and practices was established quite some time ago. Durkheim (1912) established a functionalist interpretation of religion by stating that its function was to create social glue and societal identity. Religious beliefs and practices can be thought of as enhancing the compliance with social norms in two distinct ways. (1) Individuals who believe that God constantly monitors them might be more norm-abiding. (2) People actually practicing their religion might monitor each other (or cooperating with each other) because they practice the same religion or belong to the same congregation. In the first case, God is the monitor, in the second, it is coreligionists. The active practice of religious beliefs is commonly referred to as religiosity, and has positive effects on prosocial behavior. I also survey priming experiments where participants receive more or less subtle reminders of their religious beliefs that may elicit adjustments in their behavior. For this sort of "reminding" technique to work, the subjects must have certain existing norms.

4.2. Religion as Endogenous

4.2.1. Religion as Determined by Geography

There is a long list of famous scholars who have argued that climate influences religion, ranging from Hippocrates and Ibn Khaldun to Montesquieu and Ellsworth Huntington. Huntington (1959) was convinced that people living in the desert would lean toward monotheism, whereas people living in the forest would lean toward polytheism. Huntington also believed that the rise of Islam was a consequence of climate change. People subject to heightened stress because of a dryer climate were willing to accept Islam as their new religion. Today, his views are largely treated with contempt. But more recently, this train of thought has been

---

[16] Swanson (1960) introduced the concept of "high gods" who are "considered ultimately responsible for all events, whether as history's creator, its director, or both."

[17] Although Durlauf et al. (2012) were able to replicate these findings, the results are not robust to changes in the baseline specification.

revived again. In this section, I discuss studies dealing with three issues: (1) the temporal sequence in which different types of religion have been successful throughout the history of mankind, (2) the geographic factors that are associated with moralizing or big gods, and (3) geographic events that can spur religious intensity.

The analysis of the sequence and spread of religions and the emergence of prosocial religions is closely tied to the emergence of sedentary agriculture. Although the religious beliefs of hunter-gatherers are more esoteric, a paper by Peoples et al. (2016) is a first step to shed some light on these belief systems. The study uses the Standard Cross-Cultural Sample and the Ethnographic Atlas to create a sample of 33 hunter-gatherer societies. The study focuses on seven aspects of the religious beliefs of hunters-gatherers: (1) animism, (2) belief in afterlife, (3) shamanism, (4) ancestor worship, (5) high gods, (6) active ancestor worship, and (7) active high gods. The paper states that animism is the oldest trait of religion, but not a religion in itself. Rather, animism is “a feature of human mentality, a by-product of cognitive processes” (ibid., p. 274).

Norenzayan et al. (2016) deal with the competition between various religious beliefs and attempt to explain how world religions (that have many traits in common) spread to the detriment of local religions. They claim that a belief in a powerful, omniscient god who is believed to monitor social interactions contributes to the cultural success of a group in three distinct but re-enforcing ways: (1) “By outsourcing some monitoring and punishing duties to these supernatural agents, prosocial religions reduce monitoring costs and facilitate collective action”. (2) “Ritual and devotional practices that effectively elevate prosocial sentiments, galvanize solidarity, and transmit and signal deep faith.” (3) “Additional beliefs and practices that exploit aspects of psychology to galvanize group cohesion and increase success” (ibid., p. 6).

Durkheim (1912) argues that particular religious beliefs are, at least to a degree, reflective of the concrete societal structure in which a particular religion is being practiced. Using this as his starting point, Swanson (1960) argues that high god or monotheistic religions are likely to arise when social complexity necessitated a supreme authority to pacify conflicts. In his theory, “sovereign organizations”, defined as organizations that “exercise original and independent jurisdiction over some sphere of social life”, play a central role. If at least three types of sovereign organizations are hierarchically ordered in a society, a high god is likely to arise.

Based on data from 50 societies, Swanson finds evidence supporting this hypothesis.

In an early study of this more recent research wave, Snarey (1996) hypothesizes that societies suffering from water scarcity are more likely to establish a morally concerned deity. Drawing on William James and Max Weber, Snarey points out that societies suffering from water scarcity are in need of cooperation norms making sure that single individuals do not use up significantly more water than their fair share. Economists refer to this problem as the tragedy of the commons (Hardin 1968; Ostrom 1990, with options to deal with it by relying on informal norms). To make sure this does not happen, a monitoring agent that is omniscient and powerful would be ideal. The monitoring agent needs to be powerful enough to sanction those who have not complied, and it needs to be omniscient so that those who have complied with the water extraction norms are not sanctioned. In theory, an omniscient and powerful deity would be ideal for monitoring people's behavior. The desirability of such a deity is, of course, not sufficient for its creation. On the other hand, societies that were able to create such a deity might have enjoyed advantages over those societies that did not. Snarey uses the Standard Cross-Cultural Sample (Murdock and White 1969) to test his hypothesis and finds that societies with a low water budget (defined as a natural environment in which neither precipitation nor surface water was abundant) are significantly more likely to believe in a morally concerned high god.[18]

A common observation is that cooperation norms based on kinship and/or reputation are probably not sufficient to structure societies beyond a rather small size (e.g., Henrich et al. 2010). A god that could take care of the necessary monitoring and sanctioning of uncooperative people would, hence, come in very handy. Formulated differently and as a hypothesis: larger societies are more likely to believe in moralizing gods than smaller societies because it is exactly this trait that enabled them to become large in the first place.

---

[18] It is a bit of a stretch to include belief in witchcraft as a specific form of religion. Yet, belief in witches has been identified as one means of re-enforcing social norms. Several decades ago, anthropologist Paul Baxter (1972) argued that societies relying on pastoralism were less likely to believe in witchcraft. Pastoralists were not stuck to a particular plot of land and conflicts could, thus, be avoided by simply moving elsewhere. Recently this hypothesis has been put to an empirical test, and Araujo et al. (2022) do not only find a negative correlation between historical reliance on pastoralism and beliefs in witchcraft, but also a positive association between historical reliance on pastoralism and trust.

Following the Ethnographic Atlas, Roes & Raymond (2003) define a high god as "a spiritual being who is believed to have created all reality and/or to be its ultimate governor, even though his/her sole act was to create other spirits who, in turn, created or control the natural world." In their study, the size of societies is proxied by the number of jurisdictional hierarchies. They find that larger societies are, indeed, positively correlated with high gods. They also hypothesize that only sufficiently large groups are able to engage in conflicts with other groups competing for habitats that sustain for human life. This implies that: (1) preferred habitats are populated by larger groups, and (2) the frequency of conflict is higher among larger groups. Notice that this conjecture is very different from the one by Snarey (1996) just discussed. Nevertheless, Roes & Raymond (2003) claim to have found evidence in favor of these hypotheses too. They also expect the presence of high gods in larger societies to be correlated with less internal conflict, but fail to find this association.

These findings have not remained undisputed. Brown & Eff (2010) challenge all of Roes & Raymond (2003)'s findings, and point out a number of weaknesses in their paper. In fact, Brown & Eff (2010) find that moralizing gods are less likely in resource-rich environments. This contradicts the Roes & Raymond's findings, but confirms Snarey's. They also find that the relationship between the presence of moralizing gods and the size of society has an inverted u-shape, and suggest that the monitoring function of moralizing gods can also be provided by well-functioning states.

Taking up the concept of moralizing high gods, Botero et al. (2014) find that belief in high gods is more likely to be found in societies inhabiting poorer environments that are more prone to ecological duress. In a sense, then, their paper can be read as a generalization of Snarey (1996). They include two components in their principal component analysis. The first component is dubbed "resource abundance" and includes: abundant rainfall, higher primary productivity, and greater biodiversity. The second component is dubbed "climate stability" and is defined as: "exposure to more predictable annual cycles of precipitation and temperature, as well as to warmer, more stable temperatures throughout the year" (ibid., 16785). This study shows that belief in moralizing high gods is associated with a higher presence of animal husbandry, as well as with less access to food and water.

Our discussion in Section 3.2 shows that pathogen stress encourages the development of collectivist social norms. Fincher & Thurnhill (2012) find that parasite stress and religiosity are positively associated both cross-nationally and

across the states of the U.S. They refer to the idea that members of close-knit religious communities can easily recognize their in-group as "in-group assortative sociality".

Ager & Ciccone (2017) analyze the degree to which weather variability impacts church membership. They assume that mutual insurance against idiosyncratic risks is more valuable in regions where such risks are more common. They focus on the late 19th century, and analyze whether U.S. regions with higher rainfall risks are associated with higher church membership. At that time, agriculture was the dominant occupation almost everywhere in the U.S., and rainfall risk an important common risk. The authors find a significant association between rainfall risk and church membership and interpret it as one way of insuring against the vicissitudes of idiosyncratic risk.

New Zealand was hit by two earthquakes in 2010 and 2011. It would be fascinating to know whether those affected were more likely to become religious. A study by Sibley & Bulbulia (2012) addresses this query and finds that at the national level the number of apostates was higher than the number of converts between 2009 and 2011. However, in the Canterbury region, which was hit by the earthquakes, the number of converts outnumbers the number of apostates. This is yet another example that natural disasters, as one aspect of geography, can make people more religious.

Another study focusing on the effects of natural disasters on religiosity is based on Canada. Canada and New Zealand are interesting because both countries have well-functioning institutions, offer welfare services and are not very disaster prone. In case religiosity is increased subsequent to a disaster, it is, hence, unlikely to be the consequence of demanding ex post insurance or similar (discussed in Section 4.3). In his study on the effects of climate disasters in Canada, Zapata (2018) finds that such disasters impact religious preferences in two opposite directions: the number of annual disasters as well as their economic costs tend to erode the belief in God whereas the number of human losses tends to increase religiosity among the believers.

Gelfand has popularized the idea of drawing a distinction between tight and loose cultures. She describes tight cultures as having strong norms and a low tolerance for deviant behavior and loose cultures as having weak social norms and a high tolerance for deviant behavior. In a cross-country study covering 33 countries, Gelfand et al. (2011) are interested in both the effects and the determinants of

tight/loose cultures. They find tight cultures are associated with higher degrees of religiosity. Tightness itself is significantly associated with the number of years lost due to communicable diseases (a measure of pathogen stress) and with the prevalence of natural disasters. Based on these insights, it appears that the correlation between parasite stress and a high likelihood of natural disasters (aspects of geography) and religiosity is mediated via tightness norms, i.e. norms displaying little tolerance vis-à-vis people deviating from them.

4.2.2. Religion as Influenced by Family Organization

The question of whether religion impacts family organization and/or family organization made the success and diffusion of particular religions more likely has been discussed for a long time. Todd (1985), for example, emphasizes that family organization is less time-variant than religion. He points out that, in order to be successful in East Asia, Islam had to become more liberal on some of its doctrines regarding inheritance (ibid., p. 137). Henrich (2020) suggests that the West got rich (and its people got WEIRD[19]) by accident because of marriage reforms implemented by the Catholic church, i.e., an aspect of family organization.[20] In all likelihood, religion and family structure have a mutual impact on each other.

Mitterauer (2010, p. 80ff.) argues that changes in family organization in Europe can best be traced by analyzing changes in the words used to describe family relations. He proposes three ways that Christianity could have influenced family practices, namely: (1) directly and intentionally; (2) through structural changes that were mediated through core elements of Christianity; (3) the impact of ancient traditions that are not specifically Christian but have been transmitted by Christianity. But he remains skeptical that Christianity is a driving force behind the development of family organization. He observes that people living in South Eastern Europe continue to use terms for family relations that predate conversion to Christianity, implying that the Christian influence is negligible (ibid., p. 86). Relying on the use of language, one could even point out that some successful religions explicitly rely

---

[19] WEIRD being the acronym for western, educated, industrialized, rich, and democratic. The concept was first introduced by Henrich et al. (2010). More recently, Henrich (2020) claims that WEIRD people share a number of psychological traits.

[20] The argument that European family structure was decisively shaped by the Catholic Church can be traced back to Goody (2000). The specifics of the European Marriage Pattern are identified and described by Hajnal (1965).

on terms used to describe family relationships to address co-believers ("brother" and "sister") potentially reflecting the impact of family structure on religion, and not vice versa.

Enke (2019) also establishes a connection between kinship structures, i.e., an important aspect of family organization, and religious beliefs. Harkening back to Gelfand, he distinguishes between tight and loose structures and hypothesizes that in loose structures members of the in-group did not closely supervise norm compliance. More loosely knit groups needed a "cheap supervisory agent". A moralizing god, i.e., a god rewarding prosocial behavior and punishing wrongdoing, was, thus, more likely to be found in loose-knit than in tight-knit groups.

Chaney (2020) argues that cousin marriage explains the spread of traditionalist interpretations of Islam, rather than the other way around. Regarding inheritance norms, Ekelund et al. (2002) find that during the Protestant Reformation societies relying on primogeniture by and large remained Catholic, whereas those with partible inheritance were more likely to become Protestant. It is beyond the scope of this analysis to disentangle the causal relationships between family types and other forms of culture. In all likelihood, the two influenced each other in various ways.

4.3. Religion as a Determinant of Social Norms

All world religions uniformly praise mercy, charity, and other traits conducive to peaceful harmony. Here, I assume that religions encourage cooperative and prosocial behavior in general. Of course, this does not imply that believers actually behave more cooperatively and prosocially either with fellow believers or even everyone. Rather than focusing on the emergence of social norms based on religions, I focus on the question of whether adherence to a religion is associated with more prosocial behavior. Because not all religions are identical in the social norms they encourage or even demand their followers to adhere to, I try to take this into account by focusing on the following five aspects:

1. Are different beliefs connected to different social norms and, at the end of the day, to different behavior? A focus will be on belief in afterlife, in heaven or hell, but also on whether gods are believed to be moralizing and/or omniscient.
2. How are religions practiced? It seems to make sense to distinguish between: (1) simply belonging to a religion; (2) actively participating in its meetings and, thus, experiencing a sense of belonging; (3) praying, i.e., a bilateral contact

between a believer and god (the combination of the last two is often referred to as religiosity or religious intensity).

3. Given that believers are united by sharing similar norms, one question is whether these norms are universally applied or only vis-à-vis coreligionists. If the latter, then all issues related with in-group/out-group phenomena become relevant.
4. Religion, in particular when a big god is involved, has been interpreted functionally: by delegating monitoring tasks to god, it enabled, e.g., larger societies. In that sense, it increased the orderliness of society. Today, well-functioning governments have taken over many monitoring tasks and it could be that one important function of religion has ceased to be important in certain countries. Punishing people who have not complied with a social norm can be based on a meta-norm. In theory, then, punishment can be implemented: (a) directly by god; (b) by his believers and other individuals; (c) by government representatives. The question here is whether belief in a punishing god reduces the likelihood that believers will punish non-cooperative behavior themselves. In straightforward economic terms, the question is whether the three potential forms of punishment are substitutes or complements.
5. Finally, the activation of religious beliefs may be a precondition for behaving in accordance with religious doctrine. I will therefore report the findings of studies in which religious beliefs were made more salient via priming.

It seems that lab experiments and surveys are the most frequently used methods to answer the questions just sketched, but "quasi-experiments" and other approaches have also been tried. Norenzayan (2013) reports that atheists are among the least-trusted individuals. If that is the case, and respondents assume that this might be so, they may have incentives to overstate their religious beliefs. This means that studies based on the self-evaluation of participants should be read with a grain of salt.

Are Different Beliefs Connected to Different Social Norms?

In Section 4.2.1, I reported evidence on the sequence of the spread of different religious beliefs. Because the moralizing high gods of some of today's world religions are antedated by other beliefs, I deal with some these beliefs here before turning to big gods.

In his analysis on obstacles to development in Africa, Platteau (2009) explains the function of witchcraft in Africa. In order to sustain the substantial redistributive norms within kinship groups, it is essential that newly gained personal wealth is not

attributed to hard work or innovative thinking, but simply as good luck. This interpretation facilitates the belief that the wealth should be shared with others. When extraordinarily wealthy people are loathe to share their wealth, they may be suspected to be witches. Belief in witchcraft is reported to be more prevalent than ever, and to negatively affect economic development as it reduces incentives to above-average achievement. Gershman (2016, p. 185) reports that in Tanzania parents who believe in witchcraft discourage their children from eating in neighbors' houses and interacting with strangers because they fear witchcraft attacks and accusations. They refuse to provide food assistance to their neighbors because they are afraid of witchcraft accusations in case someone gets sick after eating the food. The question is whether the reports from Tanzania are the odd ones out or if such behavior (and the underlying norm) is systematically more likely among people who believe in witchcraft.

Relying on data from the European Social Survey and using an epidemiological approach, Gershman (2016) finds that belief in witchcraft is associated with antisocial attitudes. His focus is mainly on trust, but also charitable giving. He finds that the negative association between beliefs in witchcraft and general trust is based on regional evidence and not at the individual level. Gershman reports that the mutual monitoring of various behaviors is weaker because people are afraid of being accused of practicing witchcraft. This could also imply that with mutual monitoring being absent, the likelihood of prosocial punishment is low.[21]

Unfortunately, a similar study on the effects of ancestor worship is not available. Both Swanson (1960, chapter v) and Sheils (1975) deal with the determinants of ancestor worship but not its effects. In the context of family types, insights on the effects of ancestor worship would be particularly interesting. Mitterauer (2010, p. 90ff.) describes some of ancestor worship's consequences for the organization of families, e.g., a predilection for patrilineal descent. Fukuyama (2012, p. 61) claims that societies practicing ancestor worship are not united by gods worshipped by the entire community.[22] If this is true the monitoring function of big gods was also absent for the ancestors being worshipped. This also implies that societies worshipping ancestors were probably rather small and eventually taken over by societies worshipping big gods. It could further imply that the propensity to

---

[21] Recent research on witchcraft is summarized in Gershman (2021).

[22] This view deviates from Sheils (1980) who introduced the notion of "superior ancestor worship" in which the family of the king (or similar) may the worshipped ancestor of a large community well beyond the confines of a standard family.

cooperate with non-kin is smaller and that people tend to be more xenophobic. Unfortunately, to date there is no study that analyzes the consequences of ancestor worship across groups or even countries.

Based on the notion that moralizing gods enabled societies to become larger and more complex, Henrich et al. (2010) examine whether adherence to one of the world religions is associated with greater fairness to anonymous others. Their evidence is based on three experiments run across 15 diverse populations in Africa, North and South America, Oceania, New Guinea and Asia. These populations included small-scale societies of hunter-gatherers, pastoralists, horticulturalists, and wage laborers. They interpret offers made in the Dictator Game as a measure of fairness and find that participation in a world religion is associated with fairer behavior.

Botero et al. (2014) claim that psychological experiments show that the concept of moralizing high gods can reduce the level of cheating (Shariff & Norenzayan 2011), increase the willingness to be fair (Henrich et al. 2010) and to cooperate (Shariff & Norenzayan 2007). On the other hand, there is evidence that belief in moralizing gods increases the prevalence of conflicts and casualties on the local level (Skali 2017). Skali (2007) uses religion as an impediment to credible commitment because societies believing in a moralizing god are unlikely to agree on any kind of middle ground regarding their religious beliefs, thus turning the more standard argument that belief in a moralizing god can signal commitment on its head.

Studies on the relationship between religious beliefs and prosocial behavior have produced mixed results. This is why Shariff & Norenzayan (2011) ask whether specific beliefs induce specific behavior. More precisely, they are interested in the question whether gods thought of as punishing are associated with more prosocial behavior. They do indeed find that belief in a punishing god is associated with less cheating. Interestingly, belief in god as such is not significant. However, these results should be taken with a grain of salt: the more convincing set-up is based on 39 participants who were all students at U.S. universities. The authors themselves recognize that their study design does not allow them to address the relevance of religious differences, and that the cheating measure is highly artificial (ibid., p. 94).

In a sense, Shariff & Rhemtulla (2012) is a follow-up of Shariff & Norenzayan (2011). Here, the focus is not on whether god is punishing or loving, but on the belief in heaven vs. hell. Whereas Shariff & Norenzayan (2011) relied on a limited number of students at U.S. universities, this study draws its datasets from the World Values Survey and European Values Surveys, and takes 143,197 subjects from 67

countries into consideration. Covariates include country's predominant religion, income inequality, GDP per capita, national imprisonment rates, life expectancy, urban density, three of the "Big Five" personality traits (conscientiousness, neuroticism, and agreeableness), belief in god, and religious attendance. It finds that the higher the proportion of people who believe in hell, the lower the national crime rates. In contrast, belief in heaven predicts higher crime rates. These findings are not only highly significant, but also robust. These beliefs are stronger predictors of national crime rates than economic variables such as income or income inequality. Shariff & Rhemtulla (2012) point to an issue that deserves additional research: Why is a belief in heaven (or a loving god) correlated with antisocial effects? Their study also makes it clear that future studies should focus on individual rather than national means.

Whereas Shariff & Rhemtulla (2012) rely on a large global sample and real world data to establish an association between particular beliefs and social outcomes, Atkinson & Bourrat (2011) also use a large global survey (87 countries) to assess the correlation between particular beliefs and the justifiability of moral transgressions. They find that beliefs about god and the afterlife independently of each other predict respondents' assessment of the justifiability of a number of moral transgressions. The paper does not deal with behavior, but the evaluation of behavior.

How are religions practiced?

Thus far, I have surveyed studies focusing on *what* religious people believe. There are also studies that examine how differences in religious intensity and practices (*how* people believe) impact social norms and prosocial behavior.

A study by Soler (2012) enquires into the effects of what she terms "religious commitment" on cooperation among adherents of the Candomblé cult in San Salvador de Bahia (Brazil), this cult is neither a moralizing nor big god religion. She describes it as amoral and as having neither fixed ethical rules nor a belief in the afterlife (ibid., p. 348). This study provides us with an interesting case in which the effects of religious commitment can be analyzed separately from confounding ethical demands that would be based on religion. To measure costly religious signaling, Soler creates the Candomblé Religious Signaling Scale (CRSS), and cooperation is measured by engaging Candomblé adherents in the public goods game (PGG). Soler takes the endogeneity of the CRSS explicitly into account by assuming that people with a low income stand to gain more from Candomblé

membership in terms of potential support received later on. Hence, adherents with a low income are likely to invest more into costly signals, i.e., into a higher CRSS score. She, hence, asks to what degree religious commitment is primarily determined by instrumental concerns. She finds that higher degrees of religious commitment are, indeed, associated with higher offers in the PGG. Moreover, believers with higher CRSS scores also report having received more help from fellow Candomblé members. Finally, she also finds that income, a proxy for the potential usefulness of Candomblé membership, and CRSS scores are negatively correlated, as expected.

Frequent participation in collective rituals is one way of practicing a religion. In Judaism, males are expected to participate more in collective rituals than females. This is why Sosis & Ruffle (2003) hypothesize that when comparing the behavior of religious males with religious females in a variant of the PGG, males would take out significantly less out of an envelope to which both participants have access than females, and this is exactly what they find.

Who are the norms shared with?

Both papers surveyed in the last section analyze prosocial behavior in experimental settings that are restricted to coreligionists. I now move to surveying some studies in which the question to whom cooperative behavior is directed played a central role. There is, after all, the possibility that more religious people will behave more pro-socially but that this prosocial behavior is restricted to coreligionists.

Similar to the paper just surveyed, Ahmed (2009) also tries to separate individuals along their degree of religiosity. Attending religious services does not automatically confirm a high degree of religious commitment. To address this issue, Ahmad differentiates between students in India studying at madrasas to become Imams with non-religious students, and has the participants play a PGG and a Dictator Game (DG). Because participants know that their donations will go to members of their own group, this study is also an in-group study, but since there was no treatment in which participants have the possibility to play either of the two games with people who were not members of their groups, we do not know how they would have played under that condition. The main difference in the behavior between the two groups are the number of participants who do not donate anything in the PGG. There is a significant difference between zero contributors with the non-religious significantly more likely to behave as predicted by a simple *homo economicus* model. But once these non-contributors are taken off the sample, no significant

differences in the mean amount contributed to the public good can be ascertained. Essentially the same result holds with regard to the DG. But it is also striking that almost 24% of the future Imams contribute zero in the DG.

Religion as Substitute or Complement?

It could be that religious commitment as well as the prosocial behavior that may come along with it depends on a weak state. If social and welfare services are not provided by the state, it may be more beneficial to become religious and to signal it to other religious people.

People most affected by high inflation rates may be in need of credit to survive. If no viable alternatives are available, these people may turn religious and hope that this will facilitate receiving credit from coreligionists. This is exactly what Chen (2010) tested based on a case study from Indonesia. Rice farmers could adjust the price of their produce to keep up with the high level of inflation, whereas public bureaucrats were hit by high inflation much more harshly. Chen observed that those hit worse by an economic shock tend to increase their Koran study and send their kids to Islamic schools, which promises only low returns in traditional economic terms, apparently in the hope of "ex post insurance" to such events. Interestingly, when credit is available from banks or microfinance organizations, the effect of economic distress on religious intensity disappears (ibid., p. 303). These findings suggest that worldly needs can drive an increase in one's religious intensity, but also that if viable alternatives are around, religious intensity does not increase.

Whereas Chen (2010) analyzes the incentives to become religious (or increase religious intensity) as a function of the availability of alternatives, Laurin et al. (2012) analyze the propensity to punish norm violators as a function of respective individual beliefs. They hypothesized that if a god is believed to be omniscient and omnipotent, he could be viewed as a perfect sanctioning actor, and believers may have fewer incentives to punish norm-violating behavior themselves. This is what they find but, interestingly, these results are only significant when religion is made salient.

Under what circumstances?

It could be that people need to be reminded of their religious duties. If religion "corrects" selfish propensities in humans, then reminding them of their religious duties may influence their behavior. A few surveys exist of the many studies that analyze this question of "reminding" by treating participants in experiments with so-called "primes". I report the findings of a select few studies.

The religious priming literature is surveyed in Shariff et al. (2016) who propose to distinguish between four types of religious primes: explicit, implicit, subliminal, and contextual primes. They analyze 93 studies and examine three questions: does religious priming have effects, does religious priming cause subjects to behave more pro-socially, and do any possible effects depend on preexisting religious beliefs. Formulated differently, do prosocial effects of priming carry over to non-religious people. For the authors, the term "prosociality" encompasses "measures related to ethical, cooperative, or generous behavior or attitudes", and includes "sharing resources in the dictator game, contributing to a common good in the public goods game, cooperating in the prisoners' dilemma, willingness to volunteer time and effort, and refraining from lying and cheating" (ibid., p. 37).

Shariff et al. (2016) find that, generally speaking, priming does have an effect and there is a small to medium effect on prosociality. Based on 17 of the surveyed studies, they find a significant difference between priming's effect on believers and non-believers. Effects are, as expected, significantly stronger among the believers. These findings provide a positive answer to the three questions posed. This seems to indicate that priming relies on existing religious beliefs and is not based on more general human values. The findings hold independently of whether the data were collected in the lab, in the field, or online.

Of the many papers surveyed by Shariff et al (2016), I am picking three to give the reader a more concrete impression of these studies. Ahmed & Salas (2011) play both a dictator game and a prisoners' dilemma as a paper and pencil experiment with undergrads in Chile. The students treated with a prime were asked to resolve a scrambled sentence task in which five of the ten sentences contained words associated with religion (like holy or Jesus), whereas the students in the control group were asked to unscramble ten sentences that had no religion connotations. In this study, priming works among both the religious and the non-religious. In the dictator game, 18% of the non-primed students send zero amounts, compared to 6% of the primed. The percentage of participants who send half of their endowment is

19% among the non-primed and 28% among the primed. The results regarding the PD are similar. Contrary to the findings in the meta-study by Shariff et al. (2016) reported above, Ahmed & Salas (2011) find that religious primes affect the behavior the religious as well as those who claim not to be religious.

Two other studies, also contained in the survey summarized above, analyze non-WEIRD, non-Christian samples. Both studies draw on the Muslim call to prayer (*athan*) as a prime. Aveyard (2014) had all participants resolve an unscrambling task, the scrambled sentences of those treated with a religious prime contained religious terms in five out of ten sentences. Aveyard is interested whether primes impact the degree of honesty in a simple cheating game and finds that primed undergraduate students are, indeed, significantly less likely to cheat than participants in the control group. Interestingly, the (self-declared) degree of religiosity does not have an effect on cheating behavior. Discussing his findings, Aveyard (2014) raises the possibility that non-Muslims who live in Muslim societies could also behave more honestly after having been treated with a (Muslim) prime. It is, hence, not only interesting to see whether religious primes only affect the behavior of religious people, but also whether the effects of religion-specific primes are limited to believers of that specific religion. It would be interesting to run similar experiments with Christians living in a Muslim-majority country.

The experiment run by Duhaime (2015) deserves special mention as it was conducted as a field experiment in the souks of the medina in Marrakesh, Morocco. The shopkeepers were given three options in a dictator game. The recipient was supposed to be a charity and the three options were: (1) to keep 20 dirhams (around €2 at the time) to themselves and give 0 to the charity, (2) 10/30, or (3) 0/60. The hypothesis is that shopkeepers would behave more prosocially when hearing the call to prayer which turned out to be the case. Although running primes as field experiments is a noteworthy and valuable addition to the literature, the study is not without problems. Only 17 of the shopkeepers received the prime (out of 63 participants in total), and the author did not collect any information on their sociodemographic background.

Most of the early contributions to the relationship between religiosity and prosocial behavior surveyed here are already surveyed by Norenzayan & Shariff (2008). Their specific focus deals with the premise that reputational concerns are based on a psychological mechanism unrelated to religion, they examine whether these reputational concerns have the same effect on behavior as those based on religion. As reported above, their survey found mixed results. But to the degree that religious

devotion is correlated with prosocial behavior, it seems primarily driven by egoistic motives seeking to keep up one's own prosocial self-image. The authors also point out that it is difficult to establish causality, as people with prosocial attitudes may also be more attracted to religion.

In Norenzayan et al. (2013), these mixed findings are explicitly acknowledged, and the authors inquire into the possible reasons underlying them. A possible reason mentioned is the continuous presence (absence) of religious reminders. This would be the case in kibbutzim, madrasas, or Candomblé communities. A second possible reason is that in the experiments that found prosocial behavior, the prosocial behavior was only for the benefit of in-group members; prosocial behavior would, hence, not be universal. A third possible reason could be the weakness (strength) of secular institutions.

5. Family Organization as Mediating Factor

5.1. Introduction

Section 4 discusses insights about religion as a mediating factor between geography and social norms. In this section, we look for insights about the same mediating factors offered by family organization.

Over the past couple of decades, economists have become interested in the economic effects of religion, and the economics of religion has thrived as an important subdiscipline. Over the past ten years, the economic consequences of family types and (the strength of) family ties have gained more attention. Alesina and Giuliano (2011, 2014) are interested in identifying the strength of family ties and measure strength by counting the number of generations living under one roof. Even more recently, Enke (2019) focuses on the strength of kinship ties and distinguishes between tight and loose ties as popularized by Gelfand et al. (2011). It turns out that kinship tightness is strongly negatively correlated with per capita income today.

Long before Alesina and Giuliano, French anthropologist Emmanuel Todd (1985) claimed that differences in family types have far-reaching effects on economic, political, and social development. These claims remained untested by economists for a long time until Gutmann and Voigt (2021) find that communitarian family types (those in which sons continue to reside with their parents even after they have been married and all sons are treated the same with regard to inheritance) are linked

to low levels of the rule of law as well as late industrialization. Countries in which cousin marriage is frequently practiced display high levels of state fragility and weak civil society organizations.

There is, hence, evidence that family organization does have important consequences on social organization (including that of the state) and economic development. This is why I now ask to what degree family structures have been determined by geography (5.2.1) and religion (5.2.2) and to what degree differences in social norms can be attributed to differences in family structures (5.3).

5.2. Family Structure as Endogenous

5.2.1. Family Structure as Determined by Geography

Differences in subsistence mode not only impact social norms via religion but also via differences in family structure. For example, Mitterauer (2010) observes that for some kinds of agriculture, a division of labor along gender lines as well as the cooperation between male adults was key. Given that this was the case, he expects patrilinear systems to emerge that will be connected via a clan system (ibid., p. 89). He observes that such family structures have survived in the West Balkans until today. Beyond that, Mitterauer (2010, p. 66ff.) shows that the way in which a particular agricultural system was constitutionalized could have far-reaching consequences on family structures. He argues that the way the kingdom of the Franks structured its agriculture may be the source for what has been termed the "European Marriage Pattern" by Hajnal (1965).

Enke (2019) is primarily interested in the determinants of moral systems. He not only looks at the determinants of the main dimensions of moral foundations theory (namely care, fairness, loyalty, authority, and sanctity as introduced by Graham et al. 2013), but also at the contributions that people make to the provision of public goods, the extent to which people trust each other, etc. The aspect of family structure that his study focuses on is kinship, which he interprets as encompassing family structure and descent systems. To produce a kinship indicator he relies on four variables from the Ethnographic Atlas: the domestic organization of the family (distinguishing between nuclear and extended families) and post wedding residence (asking whether the wife is expected to move in with her husband) to cover family structure and lineages (defined as a group of people who are linked by being able to trace a common known ancestor), and segmented communities and clans (when

lineages become very large, they may split into multiple lineages but may still be united in a clan) to cover descent systems.

Based on the assumption that sedentary agriculture necessitates more collective action than hunter gatherer societies, Enke (2019) does find that societies that practiced agriculture were characterized by tighter kinship relations. As the overwhelming number of societies no longer rely on hunting and gathering, he asks whether pathogen prevalence could be an important determinant of tight kinship relations. Following Fincher & Thornhill (2012), who find that higher parasite stress is correlated with stronger family ties because pathogen prevalence makes travelling and interaction with others more dangerous, Enke (2019) uses three measures of pathogen prevalence, and his estimates support those conjectures.

Whereas pathogen prevalence is hypothesized to cause strong family ties, both weather variability and wheat suitability have been hypothesized to be associated with weak family ties. In societies subject to high weather variability, it would be imprudent to rely only on your family, as the other family members are also likely to be affected by a bad harvest. Establishing ties to non-family members would serve as an insurance. Durante (2009) finds some evidence in favor of this argument.

Except during sowing and harvesting, growing wheat is not very labor intensive. Historically, women were often responsible for wheat growing, while the men tended to the cattle and were often away from home for extended periods which increased the number of interactions with non-family members. Relying on these stylized facts, Ang and Fredriksson (2017) hypothesize that in societies that have historically relied on cultivating wheat, family ties are weaker. Relying on individual data, cross-state data for the U.S., and cross-country data they find strong evidence supporting their hypothesis. An analysis based on the epidemiological approach shows that second-generation immigrants originating from wheat-oriented cultures place little emphasis on family ties.

The study by Ang and Frederiksson is of particular interest because they run a horse race and include not only wheat suitability, but also temperature variability and pathogen stress to see how robust their findings are. It turns out that wheat suitability always remains highly negatively associated with the strength of family ties, neither temperature variability nor pathogen stress are close to being significant.

5.2.2. Family Structure as Determined by Religion

It is difficult to establish if family types are more stable over time than religion or vice versa. As discussed in Section 4.2.2., Todd (1985, p. 137) argues that family structures are more stable over time than religions, one piece of evidence being that Islam successfully spread to East Asia only after customizing some of its doctrines to accommodate local family structures. On the other hand, there are those who argue that organized religion has had huge impacts on family structures. Schulz et al. (2019), for example, claim that the Catholic church systematically undermined cousin marriage in Medieval Europe, and that this promoted individualism and other cultural traits (see also Goody 2000).

More recently, Henrich (2020) argues that some of the Catholic church's policies on family organization led to the emergence of what are known to be WEIRDos (people from western, educated, industrialized, rich democracies). These policies undermined intensive kin-based institutions in Europe in a seemingly systematic fashion. This is why Henrich (ibid., p. 165f.) dubbed them the Church's Marriage and Family Program or MFP for short. The measures being part of the MFP included many prohibitions dealing with marriage to blood relatives, polygamy, marrying non-Christians and the adoption of children. The MFP also required both bride and groom to explicitly consent to their marriage, encouraged newlyweds to set up independent households and individual ownership of property and inheritance by personal testament.

Henrich claims that WEIRDos are, indeed, systematically different from non-weirdos on a number of dimensions. According to him, WEIRDos are individualistic, think analytically, believe in free will, take personal responsibility, feel guilt when they misbehave and think nepotism should be sanctioned heavily. Non-WEIRDos identify more strongly with family, tribe, clan and ethnic group, think more holistically, take responsibility for what their group does (and publicly punish those who bedraggle the group's honor), feel shame (instead of guilt) when they misbehave and think nepotism is a natural duty.

Schulz (2017) conjectures that cousin marriage safeguarded the minimum functional size of camel herds, and claims that there is a high correlation between camel-based living and the prevalence of cousin marriage. In a sense, Islam contributed to this development because it prescribes that daughters should also inherit a share of their fathers' wealth. He shows that a high proportion of consanguineous marriages has a detrimental effect on democracy, social capital

(indicated by levels of political participation) and state capacity (captured via the quality of institutions). Interestingly, he interprets these findings as an argument against the position that Islam is inimical to democracy ("It's the camels, stupid!"). As with so many other studies surveyed in this paper, Schulz also relies on the epidemiological approach.

5.3. Family Structure as a Determinant of Social Norms

Enke (2019) is not only interested in the determinants of family structures but also their effects on a host of dimensions, including cooperation and trust. He finds significant differences in cooperative behaviors depending on kinship tightness. Specifically, in societies with weak kinship ties, individuals are more likely to incur personal costs to sanction wrongdoing, whereas members of societies with strong kinship ties are more likely to take revenge directly. The results for trust indicate that members of societies with tight kinship ties place their trust in the in-group, but are less trusting of foreigners and strangers in general. These results not only hold across societies, but relying on the epidemiological approach also within countries on the individual level. These findings imply that in tight kinship groups, cooperation takes place primarily within the in-group, whereas in loose kinship societies, one can enter into productive relationships with strangers without being particularly obligated to members of the in-group.

A closely related study is Moscona et al. (2017) who ask whether ethnic groups in Africa that have traditionally relied on segmentary lineage display different levels of trust to their in-group compared to their outgroup. The authors use segmentary lineage to describe a society that traces its ancestry back to an often mythical founder. When the society evolves its own political and economic life, a lineage is established. As different members (segments) of the society are allocated different functions (political, administrative, judicial), a segmentary lineage society develops. Moscona et al. (2017, p. 566) cite Fortes (1953, p. 26) who describes the consequences of segmentary lineage as "the individual has no legal or political status except as a member of a lineage; … all legal and political relations in the society take place in the context of the lineage system." In other words, individuals in societies relying on segmentary lineage are expected to share collectivist norms.

Moscona et al. (2017) hypothesize that trust levels within such groups might be high but that, due to fewer interactions taking place with others, generalized trust levels should be low. Based on recent Afrobarometer data, they find their hypothesis largely confirmed. Moreover, it seems that differences in trust levels are

not caused by higher trust vis-à-vis in-group members but, rather, lower trust vis-à-vis outgroup members.

6. Conclusions and Outlook

In a survey on social norms written some 30 years ago, Jon Elster did not want to exclude the possibility that social norms were determined by chance events, hence admitting that no convincing theory regarding their emergence was readily available. In this survey, I have tried to show that we have made huge steps toward identifying some of the basic determinants driving the emergence of social norms.

Economics as a discipline has also made important progress over the last couple of decades. For a long time, property rights and contracting institutions had been assumed to be perfect and the enforcement of contracts as essentially costless. Institutional economists show that these assumptions were naïve at best, and possibly also dangerous if they inform policy design. The policy implication of recognizing the relevance of transaction costs seemed straightforward and can succinctly summarized in “get the institutions right”. Frequently however, this imperative was confined to “get the formal institutions right”. But formal institutions need to be enforced somehow. The potential relevance of informal institutions (including social norms) playing a more prominent role is highlighted in recent research. Some scholars argue that it is in fact informal institutions that ensure the enforcement of formal institutions.

If development relies on formal and informal institutions complimenting each other, then understanding various aspects of social norms becomes crucial. The evidence collected and summarized in this survey shows that many social norms prevalent today can be explained by geographical conditions. If social norms are largely time-invariant and exempt from intentional manipulation, this would have enormous policy implications. Formal institutions primarily built on an individualist mindset may simply not function effectively if most group members whose interactions are to be structured with a particular set of formal institutions share a collectivist mindset.

Many Western countries actively encourage other countries to mimic their constitutions, i.e., define a set of basic individual rights, establish the rule of law and democracy. At times, some of the targeted countries perceive this

encouragement as nothing more than an imposition of Western values. Frequently, these imposed constitutions turned to be dead letter rather soon. If many non-Western societies are more collectivistic and emphasize moral foundations significantly different from those emphasized in the West (such as loyalty, authority, or purity), it's not surprising that these imposed constitutions end up being dead letter in short order because they are not or not sufficiently backed by complementary social norms. One of many possible policy consequences is that we need to fundamentally rethink the institutional advice we offer. This applies not only to advice regarding constitutions, but encompasses all kinds of advice involving institutions.

Because we do not know enough about the mechanisms that lead individuals, or groups of individuals, to adjust the social norms they share to a changed environment, we can only offer potential policy suggestions. In a recent paper using data covering four generations of immigrants to the U.S., Giavazzi et al. (2019) find considerable heterogeneity in social norm adjustment patterns. Whereas cooperation norms display the highest degree of convergence to the norm prevailing in the U.S., norms filtering the role of government and sexual morality display the lowest rate of convergence. In addition, the speed of individual adjustment to all types of norms is influenced by the country of origin. Although these are interesting first results and they are highly relevant given the high number of migrants (including refugees) in today's world, they only cover a tiny part of what we need to know. We still don't know the direction and speed of changes in social norms among people who remain in their original environment.

This desideratum is closely connected to another important question: What channels allow the transmission of social norms from person to person, and from generation to generation? These are very big questions and this is not the place to delve into them (models focusing on cultural transmission are surveyed in Bisin & Verdier 2011; the theory that genes and culture are co-evolving has been propagated in, among others; Boyd & Richerson 2008 and Richerson & Boyd 2008). A more limited question is who is taught a particular set of social norms and who, as a consequence, is expected to abide by them. In Section 3.1, we saw that norms shared among fishermen in Brazil are not shared by their families, whereas norms shared by rice farmers in certain areas of China are also shared by those who have never been involved in rice farming. What conditions limit the practice of a social norm to a subgroup, and what conditions permit a social norm to be shared by everyone?

Much of this survey deals with human reactions to natural events. An earthquake, e.g., might induce people to increase their level of cooperation to increase the general survival rate. The opposite, however, is also plausible. An earthquake might induce individuals to become less cooperative to ensure their own survival. Identifying the circumstances that make one of the possible equilibria more likely is a challenge – and seems necessary to fully discard Elster's notion of social norms as the outcome of chance events.

Many studies cited in this survey refer to religion or family organization as a (more proximate or less deep) determinant of social norms. It would be interesting to untangle the relative effects of deep vs. not-so-deep determinants of social norms. Finally, many studies cited in this paper rely on the Ethnographic Atlas (or the Standard Cross-Cultural Survey) as sources of data for various peoples. Yet, the information contained in these sources is naturally limited and it seems apt to look for additional sources. Recently, Michalopoulos and Xue (2021) published a paper relying on the motifs of fairy tales as a first step to establish the equivalent of the World Values Survey for a time period long passed. It can only be a first step as they do not rely on fairy tales in their entirety, but only on the motifs, i.e., the short headers given these fairy tales by researchers. It could also be argued that instead of fairy tales, more attention should be given to legends and myths because legends pretend to have happened in reality whereas myths are often the founding document of group identity and could, thus, be more relevant if one is interested in social norms.

References

Acharya, A., Blackwell, M., & Sen, M. (2016). The political legacy of American slavery. *The Journal of Politics*, *78*(3), 621-641.

Acemoglu, D., & Jackson, M. O. (2017). Social norms and the enforcement of laws. *Journal of the European Economic Association*, *15*(2), 245-295.

Acemoglu, D., Johnson, S., & Robinson, J. A. (2002). Reversal of fortune: Geography and institutions in the making of the modern world income distribution. *The Quarterly journal of economics*, *117*(4), 1231-1294.

Acemoglu, D., & Robinson, J. A. (2019). *The Narrow Corridor: How Nations Struggle for Liberty*. Penguin UK.

Ager, P., & Ciccone, A. (2018). Agricultural risk and the spread of religious communities. *Journal of the European Economic Association*, *16*(4), 1021-1068.

Ahmed, A. M. (2009). Are religious people more prosocial? A quasi-experimental study with Madrasah pupils in a rural community in India. *Journal for the Scientific Study of Religion*, *48*(2), 368-374.

Ahmed, A. M., & Salas, O. (2011). Implicit influences of Christian religious representations on dictator and prisoner's dilemma game decisions. *The Journal of Socio-Economics*, *40*(3), 242-246.

Alesina, A., & Giuliano, P. (2011). Family ties and political participation. *Journal of the European Economic Association*, *9*(5), 817-839.

Alesina, A., & Giuliano, P. (2014). Family ties. In *Handbook of economic growth* (Vol. 2, pp. 177-215). Elsevier.

Alesina, A., Giuliano, P., & Nunn, N. (2013). On the origins of gender roles: Women and the plough. *The quarterly journal of economics*, *128*(2), 469-530.

Algan, Y., & Cahuc, P. (2013). Trust and growth. *Annu. Rev. Econ.*, *5*(1), 521-549.

Alsan, M. (2015). The effect of the tsetse fly on African development. *American Economic Review*, *105*(1), 382-410.

Ang, J. B., & Fredriksson, P. G. (2017). Wheat agriculture and family ties. *European Economic Review*, *100*, 236-256.

Araujo, D., B. Carillo & B. Sempaio (2022). Economic Production and the Spread of Supernatural Beliefs. Available at Researchgate.

Atkinson, Q. D., & Bourrat, P. (2011). Beliefs about God, the afterlife and morality support the role of supernatural policing in human cooperation. *Evolution and Human Behavior*, *32*(1), 41-49.

Ashraf, Q., & Michalopoulos, S. (2015). Climatic fluctuations and the diffusion of agriculture. *Review of Economics and Statistics*, 97(3), 589-609.

Aveyard, M. E. (2014). A call to honesty: Extending religious priming of moral behavior to Middle Eastern Muslims. *PloS One*, *9*(7), e99447.

Barro, R. J., & McCleary, R. M. (2003). Religion and economic growth.

Basu, K. (2018). *The Republic of Beliefs*. Princeton university press.

Bazzi, S., Fiszbein, M., & Gebresilasse, M. (2020). Frontier culture: The roots and persistence of "rugged individualism" in the United States. *Econometrica*, *88*(6), 2329-2368.

Becker, A. (2019). On the economic origins of restrictions on women's sexuality.

Belloc, M., Drago, F., & Galbiati, R. (2016). Earthquakes, religion, and transition to self-government in Italian cities. *The Quarterly Journal of Economics*, *131*(4), 1875-1926.

Bentzen, J. (2019). Acts of God? Religiosity and natural disasters across subnational world districts. *The Economic Journal*, *129*(622), 2295-2321.

Bentzen, J. S. (2021). In Crisis, We Pray: Religiosity and the COVID-19 Pandemic. *Journal of Economic Behavior & Organization*.

BenYishay, A. (2013). The Transmission of Mistrust: Institutional Consequences of Early-Life Rainfall.

BenYishay, A., Grosjean, P., & Vecci, J. (2017). The fish is the friend of matriliny: reef density and matrilineal inheritance. *Journal of Development Economics*, *127*, 234-249.

Berggren, N., & Bjørnskov, C. (2011). Is the importance of religion in daily life related to social trust? Cross-country and cross-state comparisons. *Journal of Economic Behavior & Organization*, *80*(3), 459-480.

Berggren, N., Elinder, M. & Jordahl, H. (2008). Trust and growth: a shaky relationship. *Empirical Economics*, *35*(2), 251–274.

Bicchieri, C. (2006). *The grammar of society: The nature and dynamics of social norms*. Cambridge University Press.

Bisin, A., & Verdier, T. (2011). The economics of cultural transmission and socialization. In *Handbook of social economics* (Vol. 1, pp. 339-416). North-Holland.

Bjørnskov, C. (2012). How does social trust affect economic growth?. *Southern Economic Journal*, *78*(4), 1346-1368.

Botero, C. A., Gardner, B., Kirby, K. R., Bulbulia, J., Gavin, M. C., & Gray, R. D. (2014). The ecology of religious beliefs. *Proceedings of the National Academy of Sciences*, *111*(47), 16784-16789.

Boyd, R., & Richerson, P. J. (2008). Gene–culture coevolution and the evolution of social institutions.

Brown, C., & Eff, E. A. (2010). The state and the supernatural: Support for prosocial behavior. *Structure and Dynamics*, *4*(1).

Buggle, J. C. (2020). Growing collectivism: Irrigation, group conformity and technological divergence. *Journal of Economic Growth*, 25, 147-193.

Buggle, J. C., & Durante, R. (2021). Climate Risk, Cooperation and the Co-Evolution of Culture and Institutions. *The Economic Journal*, *131*(637), 1947-1987.

Cao, Y., Enke, B., Falk, A., Giuliano, P., & Nunn, N. (2021). *Herding, Warfare, and a Culture of Honor: Global Evidence* (No. w29250). National Bureau of Economic Research.

Carnap, T. von (2017). Irrigation as a historical determinant of social capital in India? A large-scale survey analysis. *World Development*, 95, 316-333.

Chen, D. L. (2010). Club goods and group identity: Evidence from Islamic resurgence during the Indonesian financial crisis. *Journal of political Economy*, *118*(2), 300-354.

Chen, Y., & Yang, D. (2015). Historical traumas and the roots of political distrust: Political inference from the Great Chinese Famine. *Available at SSRN 2652587*.

Dang, D. A., & Dang, V. A. (2021). Cooperation makes beliefs: Weather variation and social trust in Vietnam. *Journal of Behavioral and Experimental Economics*, *91*, 101669.

Deininger, K., Goyal, A., & Nagarajan, H. (2013). Women's inheritance rights and intergenerational transmission of resources in India. *Journal of Human Resources*, *48*(1), 114-141.

Dell, M., Jones, B. F., & Olken, B. A. (2014). What do we learn from the weather? The new climate-economy literature. *Journal of Economic Literature*, *52*(3), 740-98.

Diamond, J. (1987). The worst mistake in the history of the human race. *Discover*, *8*(5), 64-66.

Duhaime, E. P. (2015). Is the call to prayer a call to cooperate? A field experiment on the impact of religious salience on prosocial behavior. *Judgment and Decision making*, 10(6), 593.

Durante, R. (2009). Risk, cooperation and the economic origins of social trust: an empirical investigation. *Available at SSRN 1576774*.

Durkheim E. (1912). *The Elementary Forms of Religious Life*.

Durlauf, S. N., Kourtellos, A., & Tan, C. M. (2012). Is God in the details? A reexamination of the role of religion in economic growth. *Journal of Applied Econometrics*, *27*(7), 1059-1075.

Easterly, W., & Levine, R. (2003). Tropics, germs, and crops: how endowments influence economic development. *Journal of monetary economics*, *50*(1), 3-39.

Ekelund, Jr, R. B., Hébert, R. F., & Tollison, R. D. (2002). An economic analysis of the protestant reformation. *Journal of Political Economy*, *110*(3), 646-671.Fortes

Elster, J. (1989); Social Norms and Economic Theory. *Journal of Economic Perspectives*, 3(4):99-117.

Enke, B. (2019). Kinship, cooperation, and the evolution of moral systems. *The Quarterly Journal of Economics*, 134(2), 953-1019.

Faye, M. L., McArthur, J. W., Sachs, J. D., & Snow, T. (2004). The challenges facing landlocked developing countries. *Journal of Human Development*, *5*(1), 31-68.

Fehr, E., & Gächter, S. (2002). Altruistic punishment in humans. *Nature*, *415*(6868), 137-140.

Fincher, C. L., & Thornhill, R. (2012). Parasite-stress promotes in-group assortative sociality: The cases of strong family ties and heightened religiosity. *Behavioral and Brain Sciences*, *35*(2), 61-79.

Fincher, C. L., Thornhill, R., Murray, D. R., & Schaller, M. (2008). Pathogen prevalence predicts human cross-cultural variability in individualism/collectivism. *Proceedings of the Royal Society B: Biological Sciences*, 275(1640), 1279-1285.

Fortes, M. (1953). The Structure of Unilineal Descent Groups 1. *American anthropologist*, *55*(1), 17-41.

Fukuyama, F. (1995). *Trust: Human nature and the reconstitution of social order*. Simon and Schuster.

Fukuyama, F. (2011). *The origins of political order: From prehuman times to the French Revolution*. Farrar, Straus and Giroux.

Michele J. Gelfand, Jana L. Raver, Lisa Nishii, Lisa M. Leslie, Janetta Lun, Beng Chong Lim, Lili Duan, Assaf Almaliach, Soon Ang, Jakobina Arnadottir, Zeynep Aycan, Klaus Boehnke, Pawel Boski, Rosa Cabecinhas, Darius Chan, Jagdeep Chhokar, Alessia D'Amato, Montse Ferrer, Iris C. Fischlmayr, Ronald Fischer, Marta Fülöp, James Georgas, Emiko S. Kashima, Yoshishima Kashima, Kibum Kim, Alain Lempereur, Patricia Marquez, Rozhan Othman, Bert Overlaet, Penny Panagiotopoulou, Karl Peltzer, Lorena R. Perez-Florizno, Larisa Ponomarenko, Anu Realo, Vidar Schei, Manfred Schmitt, Peter B. Smith, Nazar Soomro, Erna Szabo, Nalinee Taveesin, Midori Toyama, Evert Van de Vliert, Naharika Vohra, Colleen Ward, & Susumu Yamaguchi (2011), 'Differences between tight and loose cultures: A 33-nation study', S*cience*, 332(6033), pp. 1100-1104.

Gershman, B. (2016). Witchcraft beliefs and the erosion of social capital: Evidence from Sub-Saharan Africa and beyond. *Journal of Development Economics*, *120*, 182-208.

Gershman, B. (2021). Witchcraft Beliefs, Social Relations, and Development. Forthcoming in *the Handbook of Labor, Human Resources, and Population Economics*.

Giavazzi, F., Petkov, I., & Schiantarelli, F. (2019). Culture: Persistence and evolution. *Journal of Economic Growth*, *24*(2), 117-154.

Giuliano, P., & Nunn, N. (2021). Understanding cultural persistence and change. *The Review of Economic Studies*, *88*(4), 1541-1581.

Gneezy, U., Leibbrandt, A., & List, J. A. (2016). Ode to the sea: Workplace organizations and norms of cooperation. *The Economic Journal*, 126(595), 1856-1883.

Goldstein, M., & Udry, C. (2008). The profits of power: Land rights and agricultural investment in Ghana. *Journal of political Economy*, *116*(6), 981-1022.

Goody, J. (2000), *The European family*, Oxford: Wiley-Blackwell.

Gorodnichenko, Yuriy & Gerard Roland (2011), Which dimensions of culture matter for long-run growth?, *The American Economic Review*, 101(3), pp. 492-498.

Gorodnichenko, Yuriy & Gerard Roland (2017), 'Culture, Institutions, and the Wealth of Nations', *Review of Economics and Statistics*, 99(3), pp. 402-416.

Gorodnichenko, Yuriy & Gerard Roland (2020), 'Culture, institutions and democratization', *Public Choice*, forthcoming.

Graham, J., Haidt, J., Koleva, S., Motyl, M., Iyer, R., Wojcik, S. P., & Ditto, P. H. (2013). Moral foundations theory: The pragmatic validity of moral pluralism. In *Advances in experimental social psychology* (Vol. 47, pp. 55-130). Academic Press.

Gutmann, J., & Voigt, S. (2021). Testing Todd: family types and development. *Journal of Institutional Economics*, 1-18.

Hajnal, J. (1965). European marriage patterns in perspective. In: D.V. Glass and D.E.C. Eversley (eds.): *Population in History – Essays in Historical Demography*. London: Edward Arnold, pp. 101-144.

Hardin, G. (1968). The tragedy of the commons: the population problem has no technical solution; it requires a fundamental extension in morality. *Science*, *162*(3859), 1243-1248.

Hayek, F. A. (1973). *Law, legislation and liberty, volume 1: Rules and order* (Vol. 1). University of Chicago Press.

Henrich, J. (2020). *The WEIRDest people in the world: How the West became psychologically peculiar and particularly prosperous*. Penguin UK.

Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H., & McElreath, R. (2001). In search of homo economicus: behavioral experiments in 15 small-scale societies. *American Economic Review*, 91(2), 73-78.

Henrich, J., Ensminger, J., McElreath, R., Barr, A., Barrett, C., Bolyanatz, A., ... & Ziker, J. (2010). Markets, religion, community size, and the evolution of fairness and punishment. *Science*, *327*(5972), 1480-1484.

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). Most people are not WEIRD. *Nature*, *466*(7302), 29-29.

Herrmann, B., Thöni, C., & Gächter, S. (2008). Antisocial punishment across societies. *Science*, *319*(5868), 1362-1367.

Hofstede, G. (1980). *Culture's Consequences. International Differences in Work-Related Values*. Sage: Beverly Hills et al.

Hu, S., & Yuan, Z. (2015). Commentary:"Large-scale psychological differences within China explained by rice vs. wheat agriculture". *Frontiers in psychology*, *6*, 489.

Huntington, E. (1945). *Mainsprings of civilization*. New York: Mentor

Knack, S. (2002). Social Capital and the Quality of Government: Evidence from the States. *American Journal of Political Science* 46(4):772-785.

Knack, S., & Keefer, P. (1997). Does social capital have an economic payoff? A cross-country investigation. *The Quarterly journal of economics*, *112*(4), 1251-1288.

La Ferrara, E. (2007). Descent rules and strategic transfers. Evidence from matrilineal groups in Ghana. *Journal of Development Economics*, *83*(2), 280-301.

Laurin, K., Shariff, A. F., Henrich, J., & Kay, A. C. (2012). Outsourcing punishment to God: Beliefs in divine control reduce earthly punishment. *Proceedings of the Royal Society B: Biological Sciences*, *279*(1741), 3272-3281.

Litina, A. (2016). Natural land productivity, cooperation and comparative development. *Journal of Economic Growth*, 21(4), 351-408.

Low, B. S. (1990). Marriage systems and pathogen stress in human societies. *American Zoologist*, *30*(2), 325-340.

Matranga, A. (2017). The ant and the grasshopper: seasonality and the invention of agriculture.

McCleary, R. M., & Barro, R. J. (2006). Religion and economy. *Journal of Economic perspectives,* 20(2), 49-72.

Méon, P. G., Rampaer, R., & Raymaekers, D. (2021). *One-minute earthquake, years of patience: Evidence from Mexico on the effect of earthquake exposure on time preference* (No. 21-015). ULB--Universite Libre de Bruxelles.

Michalopoulos, S. & M. Xue (2021). Folklore. *The Quarterly Journal of Economics*, 1, 54.

Mitterauer, M. (2010). *Why Europe?*. University of Chicago Press.

Mitterauer, M. (2004). *Warum Europa? Mittelalterliche Grundlagen eines Sonderwegs*. München: C.H. Beck.

Morand, S., & Walther, B. A. (2018). Individualistic values are related to an increase in the outbreaks of infectious diseases and zoonotic diseases. *Scientific reports*, *8*(1), 1-9.

Morrison, A., Raju, D., & Sinha, N. (2007). Gender Equality, Poverty and Economic Growth. The World Bank. Gender and Development Group. Policy Research Working Paper 4349

Moscona, J., Nunn, N., & Robinson, J. A. (2017). Keeping it in the family: Lineage organization and the scope of trust in sub-Saharan Africa. *American Economic Review*, 107(5), 565-71.

Murdock, G. P. (1967). Ethnographic atlas: a summary. *Ethnology*, *6*(2), 109-236.

Murdock, G. P. (1981). *Atlas of world cultures*. University of Pittsburgh Press.

Murdock, G. P., & White, D. R. (1969). Standard cross-cultural sample. *Ethnology*, *8*(4), 329-369.

Musitha, M. E. (2021). Xenophobia Is a Foreign Manifestation: Locating Its Meaning in Africa. In Impact of Immigration and Xenophobia on Development in Africa (pp. 56-69). IGI Global.

Muthukrishna, M., Henrich, J., & Slingerland, E. (2021). Psychology as a historical science. *Annual Review of Psychology*, 72.

Nisbett, R. E., & Cohen, D. (1996). *Culture of honor: The psychology of violence in the South*. Westview Press

Norenzayan, A. (2013). *Big gods: How religion transformed cooperation and conflict*. Princeton University Press.

Norenzayan, A., Henrich, J., & Slingerland, E. (2013). A synthesis. *Cultural evolution: Society, technology, language, and religion*, *12*, 365.

Norenzayan, A., & Shariff, A. F. (2008). The origin and evolution of religious prosociality. *Science*, *322*(5898), 58-62.

Norenzayan, A., Shariff, A. F., Gervais, W. M., Willard, A. K., McNamara, R. A., Slingerland, E., & Henrich, J. (2016). The cultural evolution of prosocial religions. *Behavioral and brain sciences*, 39.

Nunn, N. (2012). Culture and the historical process. *Economic History of Developing Regions*, 27(sup1), S108-S126.

Nunn, N., & Puga, D. (2012). Ruggedness: The blessing of bad geography in Africa. *Review of Economics and Statistics*, 94(1), 20-36.

Nunn, N., & Wantchekon, L. (2011). The slave trade and the origins of mistrust in Africa. *American Economic Review*, 101(7), 3221-52.

Oishi, S., & Komiya, A. (2017). Natural disaster risk and collectivism. *Journal of Cross-Cultural Psychology*, *48*(8), 1263-1270.

Olsson, O., & Paik, C. (2016). Long-run cultural divergence: Evidence from the neolithic revolution. *Journal of Development Economics*, *122*, 197-213.

Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge university press.

Pelto, Peretti J. (1968), 'The difference between "tight" and "loose" societies', *Trans-Action*, 5, pp. 37-40.

Peoples, H. C., Duda, P., & Marlowe, F. W. (2016). Hunter-gatherers and the origins of religion. *Human Nature*, *27*(3), 261-282.

Platteau, J. P. (1994). Behind the market stage where real societies exist-part I: The role of public and private order institutions. *The Journal of Development Studies*, *30*(3), 533-577.

Platteau, J. P. (2009). Institutional obstacles to African economic development: State, ethnicity, and custom. *Journal of Economic Behavior & Organization*, *71*(3), 669-689.

Platteau, J. P. (2015). *Institutions, social norms and economic development*. Routledge.

Habibur Rahman, M., Anbarci, N., Bhattacharya, P. S., & Ulubaşoğlu, M. A. (2017). The shocking origins of political transitions: Evidence from earthquakes. *Southern Economic Journal*, *83*(3), 796-823.

Richerson, P. J., & Boyd, R. (2008). *Not by genes alone: How culture transformed human evolution*. University of Chicago press.

Robinson, J. A. (2013). Measuring institutions in the Trobriand Islands: a comment on Voigt's paper. *Journal of Institutional Economics*, *9*(1), 27.

Rodrik, D., Subramanian, A., & Trebbi, F. (2004). Institutions rule: the primacy of institutions over geography and integration in economic development. *Journal of economic growth*, *9*(2), 131-165.

Roes, F. L., & Raymond, M. (2003). Belief in moralizing gods. *Evolution and human behavior*, *24*(2), 126-135.

Romano, A., Sutter, M., Liu, J. H., Yamagishi, T., & Balliet, D. (2021). National parochialism is ubiquitous across 42 nations around the world. *Nature Communications*, *12*(1), 1-8.

Rubin, J. (2017). *Rulers, Religion, and Riches: Why the West got rich and the Middle East did not*. Cambridge University Press.

Sachs, J., & Malaney, P. (2002). The economic and social burden of malaria. *Nature*, *415*(6872), 680-685.

San Martin, A., Sinaceur, M., Madi, A., Tompson, S., Maddux, W. W., & Kitayama, S. (2018). Self-assertive interdependence in Arab culture. *Nature human behaviour*, *2*(11), 830-837.

Schmidt, K. (2010). Göbekli Tepe–the Stone Age Sanctuaries. New results of ongoing excavations with a special focus on sculptures and high reliefs. *Documenta Praehistorica*, *37*, 239-256.

Schulz, Jonathan (2017). The Church's Bans on Consanguinity, Kin-Networks and Democracy.

Schulz, J. F., Bahrami-Rad, D., Beauchamp, J. P., & Henrich, J. (2019). The Church, intensive kinship, and global psychological variation. *Science*, *366*(6466).

Sen, A. (1982). *Poverty and famines: an essay on entitlement and deprivation*. Oxford university press.

Shariff, A. F., & Norenzayan, A. (2007). God is watching you: Priming God concepts increases prosocial behavior in an anonymous economic game. *Psychological science*, *18*(9), 803-809.

Shariff, A. F., & Norenzayan, A. (2011). Mean gods make good people: Different views of God predict cheating behavior. *The International Journal for the Psychology of Religion*, 21(2), 85-96.

Shariff, A. F., & Rhemtulla, M. (2012). Divergent effects of beliefs in heaven and hell on national crime rates. *PloS one*, 7(6), e39048.

Shariff, A. F., Willard, A. K., Andersen, T., & Norenzayan, A. (2016). Religious priming: A meta-analysis with a focus on prosociality. *Personality and Social Psychology Review*, 20(1), 27-48.

Sheils, D. (1975). Toward a unified theory of ancestor worship: a cross-cultural study. *Social Forces*, *54*(2), 427-440.

Sheils, D. (1980). The great ancestors are watching: A cross-cultural study of superior ancestral religion. *Sociological Analysis*, *41*(3), 247-257.

Sibley, C. G., & Bulbulia, J. (2012). Faith after an earthquake: A longitudinal study of religion and perceived health before and after the 2011 Christchurch New Zealand earthquake. *PloS one*, *7*(12), e49648.

Skali, A. (2017). Moralizing gods and armed conflict. *Journal of Economic Psychology*, *63*, 184-198.

Snarey, J. (1996). The natural environment's impact upon religious ethics: A cross-cultural study. *Journal for the scientific study of religion*, 85-96.

Sokoloff, K. L., & Engerman, S. L. (2000). Institutions, factor endowments, and paths of development in the new world. *Journal of Economic perspectives*, *14*(3), 217-232.

Soler, M. (2012). Costly signaling, ritual and cooperation: evidence from Candomblé, an Afro-Brazilian religion. *Evolution and Human Behavior*, *33*(4), 346-356.

Sosis, R., & Ruffle, B. J. (2003). Religious ritual and cooperation: Testing for a relationship on Israeli religious and secular kibbutzim. *Current Anthropology*, *44*(5), 713-722.

Spolaore, E., & Wacziarg, R. (2013). How deep are the roots of economic development?. *Journal of economic literature*, *51*(2), 325-69.

Swanson, G. E. (1960). *The birth of the gods: The origin of primitive beliefs* (Vol. 93). University of Michigan Press.

Tabellini, G. (2010). Culture and Institutions: Economic Development in the Regions of Europe. *Journal of the European Economic Association* 8(4):677-716.

Talhelm, T., Zhang, X., Oishi, S., Shimin, C., Duan, D., Lan, X., & Kitayama, S. (2014). Large-scale psychological differences within China explained by rice versus wheat agriculture. *Science*, *344*(6184), 603-608.

Thornhill, R., & Fincher, C. L. (2014). *The parasite-stress theory of values and sociality: Infectious disease, history and human values worldwide*. Springer.

Todd, E. (1985), *Explanation of ideology: Family structures and social systems*, Oxford: Blackwell.Triandis, H. C. (1995). *Individualism and collectivism*. Milton Park (UK): Routledge.

Tsusaka, T. W., Kajisa, K., Pede, V. O., & Aoyagi, K. (2015). Neighborhood effects and social behavior: The case of irrigated and rainfed farmers in Bohol, the Philippines. *Journal of Economic Behavior & Organization*, 118, 227-246.

Uchida, Y., Takemura, K., Fukushima, S., Saizen, I., Kawamura, Y., Hitokoto, H., ... & Yoshikawa, S. (2019). Farming cultivates a community-level shared culture through collective activities: Examining contextual effects with multilevel analyses. *Journal of Personality and Social Psychology*, 116(1), 1.

Ullmann-Margalit, E. (1977); *The Emergence of Norms,* Oxford: Oxford University Press.

Uslaner, E. M. (2003). Trust, democracy and governance: Can government policies influence generalized trust?. In *Generating social capital* (pp. 171-190). Palgrave Macmillan, New York.

Voigt, S. (2019). *Institutional economics: An introduction*. Cambridge University Press.

Weingast, B. R. (1997). The political foundations of democracy and the rule of the law. *American political science review*, *91*(2), 245-263.

Weber, M. (1930). *The Protestant Ethic and the Spirit of Capitalism*. Translated by T. Parsons with an introductory essay by R. Tawney. London: Allen and Unwin, New York: Scribner and Sons.

Wittfogel, K. (1957). *Oriental Despotism – A Comparative Study of Total Power*. New Haven and London: Yale Universtiy Press.

Woolcock, M., & Narayan, D. (2000). Social capital: Implications for development theory, research, and policy. *The world bank research observer*, *15*(2), 225-249.

Zak, P. J., & Knack, S. (2001). Trust and growth. *The economic journal*, *111*(470), 295-321.

Zapata, O. (2018). Turning to god in tough times? Human versus material losses from climate disasters in Canada. *Economics of disasters and climate change*, *2*(3), 259-281.