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Culture and Economics: A Literature Review

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by

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Abstract

The advent of innovative research techniques has led to the appearance of culture as a new frontier in the field of economic research. The explosion of research in the past two decades has shown culture to powerfully affect economic outcomes and be shaped by a myriad of factors. This paper explores the literature on the interplay between culture and economics to analyze the channels through which culture influences the economy, uncover the origins of culture to better understand the different economic outcomes in different societies, and finally, assess the extent to which culture is fixed and the extent to which it can change. Moving forward, there is much room for further investigation regarding the dynamics of cultural change and the extent to which culture can be controlled.

1. Introduction

Recent decades have seen increasing interest from economists in studying how culture and the economy interact. The emerging literature on culture and economics has been summarized by Beugelsdijk and Maseland (2010), who overviewed four distinct research areas, including trust and entrepreneurship, as well as relevant theoretical approaches. Additionally, Fernández (2011) reviewed the literature on how economists leverage immigration to establish a connection between culture and economics; Alesina and Giulliano (2015) contributed a thorough account of culture's documented relationship with institutions; Castellani (2019) considered the literature regarding culture's measurement and its impact on various economic variables; and Giuliano (2020) explored research on culture and gender gaps.

Here, I synthesize three broad strands of literature at the intersection of culture and economics. After providing background on culture's definition and history within the field of economics (Section 2) I survey the rich body of work regarding culture's powerful effect on economic outcomes (Section 3). Then, I reverse the direction of causality to uncover what factors have been considered for their influence on culture (Section 4). Finally, I briefly overview the literature on the dynamics of cultural change and persistence, in which there is much room for further research (Section 5).

2. Background

2.1. The Definition of Culture

Before delving into how culture and its effects entered into economic discourse, it is worth considering the scope of the word "culture" itself. Casting our investigative lens back to the word's etymological roots, we can say that culture finds its origin with the ancient Latin word *cultura*, meaning cultivation (Oxford Dictionary, 2010). In Middle English, the term was frequently employed by those in the agricultural sector to refer to the cultivation of crops and soil. Over time, the word became increasingly polysemous in its usage, expanding first to describe the acquisition of a more refined mind or tastes and again in the 19th century to refer to attributes of people groups within society. For example,

> "Culture, or civilization ... is that complex whole which includes knowledge, belief, [etc.] and any other capacities acquired by man as a member of society" (Tylor [1871] 1958, p. 1).

From the time of its ancient roots, the term culture has fallen into colloquial use. Today it is frequently applied in reference to a vague set of behaviors and attitudes that are prevailing within a group (for instance, "adolescent culture", "political culture", "university culture", "tabloid culture", and so on). Because culture is a term so commonly used, one might be forgiven for finding the extensive academic discourse written on the topic unnecessarily tedious and exhaustive. Even a swift survey of the corpus of this work, however, reveals that constructing a conclusive definition of culture is a decidedly difficult task. As early as the 1950s, academia had produced over 160 definitions for culture (Kroeber & Kluckhohn, 1952), with the list certainly being longer by now. The sheer volume of literature composed on the definition of culture --especially within the discipline of anthropology-- indicates a clear lack of consensus within academia on how best to pin down the concept to one formal definition.

Helping to obscure the discovery of a strict definition of culture is the fact that, as discussed by psychologist Gustav Jahoda, culture is "not a thing, but a social construct vaguely referring to a vastly complex set of phenomena" (2012, p. 300). Narrowing down this vast, complex set is challenging to do without some level of subjectivity, which is why experts who attempt this task often find themselves in direct conflict with one another. For example, Jahoda writes that “the supposed location of culture is variously said to be (a) only in the mind or (b) both in the mind and in the material world created by humans; (c) external only (without specifying where)" (Jahoda, 2012, p. 299).

While a strict definition of culture is unavoidably elusive, some analysts have concluded that vagueness is not necessarily fatal and may, in fact, be appropriate considering culture's nature. As put by Alfred Lang, "Every reasonable thinker … must sooner or later gain the insight that attempts at defining culture in a definite way are futile"(1997, p. 389). Lang explains that when definitions attempt to confine culture to the kind of "immutable persistence everybody wants scientific terms to possess, it ceases to be real culture" (1997, p. 389). From his

perspective, culture is by its nature constantly evolving and fluctuating; therefore, it is only useful conceptually if it can remain vague (Lang, 1997, p. 389). To the extent a specific project may necessitate culture be restricted to a more rigid definition --either for theoretical or empirical purposes-- authors can clarify how they will use the term in the context of their work. After all, words should be made to fit the needs of their user to a certain degree. As Lewis Carroll facetiously reminds us in *Through the Looking Glass*, "When I use a word … it means just what I choose it to mean – neither more nor less"(Carroll, 1917, p. 99).

In the field of economics specifically, locating a definition for culture with sufficient quantifiability for research initially posed a challenge. Over the decades, however, a consensus has materialized amongst economists that culture should be defined as beliefs and values (see, *e.g.*, Guiso et al., 2006 and Fernández, 2011). This paper will similarly define culture as values and beliefs that are shared among groups of people.

2.2. Historical Groundwork

Culture's acceptance within the discipline of economics has varied over the years. At its inception, economics was open to the importance of beliefs and values. Classical economists like Adam Smith and John Stuart Mill naturally incorporated culture into their economic theories and considered cultural context integral to fully understanding economic phenomena. Then, in the early 20th-century, more scientific approaches to studying economics appeared and the discipline evolved beyond pure theory to become more statistically and mathematically based. This development produced economists who were reluctant to consider culture, a nebulous and difficult-to-trace concept that is not easily quantified, as a possible determinant of economic outcomes. It was not until recently that the development of superior research techniques and access to improved data have allowed culture to make a return to economic discourse. While a fully comprehensive history of cultures' relationship to economics will not be included here, detailed accounts can be found in the writings of Guiso et al. (2006), Beugelsdijk and Maseland (2010), and Karimzadi (2019).

One point of contention in the historical literature that is pertinent to this thesis concerns the direction of causality between culture and economic development. The ideas of two classical economists in particular, Karl Marx and Max Weber, create the framework of this debate.

Arguing that economic development drives cultural change is Karl Marx. Although he never specifically used the word culture, Marx believed that virtually all elements of a society, including shared beliefs and values, flow from the economic structure. In his worldview, the mode of production (*i.e.,* the economic structure) possesses primacy; it conditions all outlooks, from the social to the political, from the religious to the intellectual (Marx, 1911; 1959). He outlines his philosophy on religion specifically in *Das Kapital* (1959), saying, "The religious world is but the reflex of the real world" (Marx, p. 68). He explains how in the case of capitalism, the abstract structuring of economic relationships makes religions like Protestantism, with its "cultus of abstract man", the most suitable form of religion (Marx, p. 68).

While Marx thought of cultural elements like religion as primarily resulting from the economic setting, the direction of causality from Max Weber's point of view was inverted: culture drives the economy. In the book, *The Protestant Ethic and the Spirit of Capitalism* (1930), Weber unveiled his famous hypothesis that the Protestant Reformation was instrumental in instigating the rise of Western European capitalism. Protestantism, he argued, highlighted the virtues of hard work and wealth accumulation to a much greater extent than Catholicism, thus providing the foundation necessary for transitioning to a market-based, industrialized economy.

Both the perspectives of Marx and Weber have been taken up by other economists. To Weber's point that economic development stems from cultural factors, Mokyr (2008) asserts that a key determinant of the Industrial Revolution was the advancement of what he calls "gentlemanly culture", a set of cultural norms that emphasized commitment, honesty, and cooperation. More along the lines of Marxist philosophy, modernization theorists believe that economic industrialization causes cultural shifts. For example, Bell (1973) argues that when the appearance of modern technology transformed daily life from a "game against nature" (p. 126) into one “against fabricated nature" (p. 127), the central role ascribed to religion and God eroded and more secular values and beliefs arose.

Ultimately, the conflict between these two schools of thought is merely a mirage; culture and the economy interact on a two-way street. Presenting evidence that both the Weberian and the Marxian traditions can simultaneously be correct is Inglehart (2000). His research uses data from the World Values Survey to demonstrate that while industrialization tends to alter culture in predictable ways, cultural heritage matters to economic development as well. Consistent with materialist theory, his research finds that industrialization does provoke societal values to shift away from the traditional and towards the secular (while economic collapse tends to do the opposite). These value shifts do not manifest identically across societies, however, and instead follow unique paths depending on cultural heritage. Inglehart tracks how these paths give rise to cultural zones with their own highly distinctive and economically relevant value systems. The fact that one society was historically shaped by Protestantism and another Catholicism, therefore, will have enduring implications on future economic development.

2.3. The Search for Identification Strategies

Because culture and the economy have a two-way relationship, it is imperative that researchers credibly establish a direction of causality in their analyses; otherwise, it will not be possible to reliably interpret their results. For example, Knack and Keefer (1997) document correlations between measures of social capital (like trust) and various economic outcomes (like GDP) across different countries. In the absence of evidence regarding causality, however, these results are difficult to interpret. Are pre-existing levels of social capital driving these economic variations or the reverse? Or, considering the fact that cultural traits are not randomly assigned across regions, could these correlations be due to some unconsidered, tertiary factor? In the absence of answers to these questions, purely correlative studies like Knack and Keefer's fail to demonstrate clear causation and thus have limited applicability on their own.

To account for factors like reverse causality and omitted variables, economists have devised many creative research strategies. This section will briefly outline four popular ways that economists studying culture estimate causal effects: Instrumental Variables, the Epidemiological Approach, Natural Experiments, and Laboratory Experiments.

2.3.1. Instrumental Variables

To demonstrate that one variable (the explanatory variable) has a causal effect on another variable (the outcome variable), many economists have relied on the use of a third variable, referred to as an instrument. Suitable instruments affect a study's explanatory variable but importantly have no independent effect on the outcome variable. By inducing changes in the explanatory variable via the instrument, researchers can eliminate the possibility of reverse causality and isolate a causal effect on the outcome variable. The assumption underlying this approach is that the instrumental variable will only be related to the outcome variable indirectly through its effect on the explanatory variable (which, unlike the instrument, has a direct relationship with the outcome).

The literature on culture is filled with interesting instrumental variables. Maseland (2013), whose research focus is culture's influence on per capita GDP via its effect on institutions, finds an unusual instrument in the biological psychology literature. This instrument is the prevalence rate of the parasite *Toxoplasma gondii*, which is known to affect personality and attitudes in a myriad of ways similar to culture: increasing distrust; making individuals more competitive and opportunistic; and decreasing concern for others. Assuming that the prevalence of *Toxoplasma gondii* has no independent effect on per capita GDP, Maseland uses the parasite's effect on individual values to find that culture exercises a meaningful effect on both institutions and per capita GDP.

Another example comes from Becker and Woessmann (2009), who attempt to tackle Weber's theory about the role of Protestantism in economic development. They propose an alternative hypothesis: that Protestant economies developed because their emphasis on reading the Bible increased literacy rates, generating the human capital necessary to increase economic prosperity. Using distance from Martin Luther's city of Wittenberg, from which the Reformation spread to other parts of the continent, as an instrument for the prevalence of Protestant beliefs in Prussian counties, they find that a larger share of Protestants is associated with increased economic prosperity.

One challenge facing the instrumental variable approach is reliably confirming that an instrument is viable, in other words, ensuring that it does not have an effect on the outcome

variable through some channel other than the explanatory variable. In spite of this challenge, however, use of this method has allowed economists to begin establishing credible causal links between culture and the economy.

2.3.2. The Epidemiological Approach

An alternate method for testing causality is the epidemiological approach, which uses data regarding immigrants and their descendants to identify culture's effects. Coined by Fernández (2008), this method exploits the fact that immigrants bring their beliefs and values with them when they immigrate and pass them down to their descendants, who go on to share the same economic and institutional environment as others living in their geographic region. By looking at people with different cultural backgrounds with the economic and institutional setting held constant, the epidemiological approach hopes to eliminate the problem of reverse causality.

One example of the epidemiological approach comes from Marcén et al. (2018), who use data regarding women who immigrated to the United States while still very young to investigate whether culture affects fertility choices. They find that the mean number of children born in one's country of origin is positively related to the number of children one has. Fernández and Fogli (2009) also focus their research on issues facing women, namely female labor decisions and fertility. Differently, however, they use data on second-generation immigrant women rather than child immigrants. Using numbers on female labor force participation and fertility in the women's home countries as proxies for culture, they find that both have significant explanatory power for second-generation female labor and fertility decisions.

Mocan (2019) also employs the epidemiological approach in his research regarding the impact of leisure culture and taxes on the labor behavior of second-generation immigrants residing in 26 European countries. He examines data on the countries from which each immigrant's father originated to measure cultural preferences for leisure and establish average and marginal tax rates. His results reveal that for women, hereditary leisure culture and taxes both impact labor force participation and hours worked, while for men, only taxes are influential.

Like the instrumental variable approach, it is important to understand the limitations of epidemiological studies. One concern is that there may be a selection bias present in any given

sample of immigrant parents. In cases where the distribution of beliefs amongst populations of immigrants is not consistent with those of their native countries, the cultural attitudes passed down to immigrant descendants may not be truly representative of their ancestral culture. There is also a possibility that immigrants and their offspring may not always face the same economic and institutional environments as others living in their same geographic areas. Finally, there is a risk that omitted variables, like unobserved human capital, might disrupt results. These potential issues and others are discussed in detail by Fernández (2011).

2.3.3. Natural Experiments

Leveraging natural experiments is another popular method by which economists attempt to confirm causal relationships. In the context of cultural research, natural experiments entail people being randomly exposed to events and situations that occur outside of the researchers' control. As is the case with any observational study, the biggest limitation to natural experiments comes with the lack of control researchers possess over extraneous variables, which can interact with the variables of study, threatening validity.

An excellent example of a natural experiment is highlighted by Basten and Betz (2013). During the 16th-century, the Swiss Confederacy defeated the Roman Catholic kingdom of Burgundy in the Burgundy Wars. The ensuing peace negotiations split a previously cohesive region in the South-West of modern-day Switzerland in two, awarding one half to the Catholic city republic of Fribourg and the other to the newly Protestant city republic of Berne. The authors exploit this random assignment of religion within a previously homogenous region to study the causal effect of Protestantism on preferences compared to Catholicism. They find that in this case, Protestantism reduced preferences for leisure, wealth redistribution, and government intervention, resulting in higher per capita income and greater income inequality.

The literature is flush with similar natural experiments, in which history randomly applies some treatment to one part of a previously homogeneous region but not another (see Section 4.3). In the case of Basten and Betz, the Burgundy Wars led to the imposition, or "treatment," of Protestantism on one portion of an otherwise cohesive group, thus creating a natural treatment and control group. Assuming that the application of the treatment was indeed exogenous to the

variables of study, differences that emerged after the historic division can reasonably be attributed to the treatment itself. Although ensuring that the ostensibly exogenous treatments of natural experiments are in fact randomly occurring can be challenging, this type of study has enabled researchers to begin to establish directions of causality.

Lichter et al. (2021) recently leveraged a natural experiment from 20th century East Germany to uncover the long-run effects of government surveillance on culture (trust) and economic performance. Under the German Democratic Republic (GDR), East Germans experienced repressive policies that relied on silent, undetected surveillance rather than overt violence. To accomplish this, the Ministry for State Security (also referred to as the Stasi) employed ordinary citizens to act as unofficial government informers. Although this network was incredibly vast, representing around 1% of the East German population by the 1980s, it was not distributed evenly across districts; instead, surveillance intensity was left to the discretion of each Stasi district office. Notably, the political and legislative aspects of the GDR did not vary by individual district, being determined instead by a centralized system that created a reasonably homogenous environment by applying the same laws and policies across districts. In their research, the authors exploited this natural variety in surveillance intensity along district borders to reveal the causal effects of surveillance on trust and the economy. Their results demonstrated that higher levels of spying produced decreased interpersonal and institutional trust and lower monthly incomes that persisted even after German reunification.

2.3.4. Laboratory Experiments

One final method for establishing causality is to experiment in a lab. Featured notably in the literature on trust, this technique eliminates the primary problem associated with natural experiments by affording researchers extensive control over the variables present in their studies, thus allowing them to architect truly random conditions. The benefit of control does not come without a cost, however; laboratory experiments can demand substantial time and funding to facilitate. Additionally, their artificial nature can limit applicability to the more complex and unpredictable real world, so their external validity can be restricted.

An example of laboratory work comes from He and Jiang (2016), who investigated the causal effect of culture on corruption. Specifically, they wondered whether the collectivist culture of the Chinese Communist Party (CCP) exercised any influence over political corruption, considering the emphasis placed on willingness to sacrifice personal interests for one's country. To answer this question, He and Jiang used an experimental technique called priming, in which some but not all of their participants were exposed to a questionnaire related to CCP identity. In theory, this psychologically activated CCP-associated concepts in the minds of the exposed group, thereby increasing the strength of their affiliation to collectivist culture. He and Jiang then tested the willingness of primed participants to engage in corrupt behavior compared to unprimed participants through an experimental game centered around demanding and accepting bribes. Their results showed that being primed with CCP concepts prior to game participation reduces bribery engagement across the board, indicating that increasing the salience of collectivist culture generates a negative, causal effect on corruption.

Often, researchers merge multiple methods of establishing causality in their research designs. For example, a recent paper by Karaja and Rubin (2021) combined laboratory games with a naturally-occurring experiment to analyze the impact of governmental corruption on inherited mistrust of outsiders. First, the authors located treatment and control groups along the historical Habsburg and Ottoman border, which shifted in 1774 after the Ottomans ceded a Romanian region previously under their control to the Austrian Habsburgs. According to historical records, one of the villages in this region, Știrbăț, arbitrarily remained with the Ottomans, while the rest of the villages went to the Austrians. Regardless of which side of the border they fell, however, all villages were ruled by outsiders to Romania. The descendants of individuals from villages placed under Austrian rule would go on to encounter institutions with low corruption and substantial property rights, in part due to the tight grip of the Austrian regime on local nobility. At the same time, the descendants of Știrbăț residents exogenously left within the Ottoman Empire experienced limited property rights and widespread government corruption perpetrated by rapacious administrative officials. The authors show how these institutional differences persisted across generations until the 20th-century.

Having identified a suitable natural experiment, the authors test for an effect of historical corruption on modern-day culture. Placing individuals from Știrbăț into the treatment group and individuals from two villages historically absorbed by the Habsburg Empire into the control group, the authors conducted a series of laboratory trust games to test for differences in cultural attitudes towards outsiders. In these games, participants were randomly paired with either a co-villager or an outsider and assigned the role of "sender" or "receiver." Those with the sender role were tasked with determining how many of three tokens to send to their partner. Sent tokens were multiplied by three and given to the receiver, while unsent tokens were kept by the sender. In addition, senders were told that receivers could return some or all of the sent tokens, conditional on at least one token being sent. Participants played this game at least four times and were matched with partners from their own village as well as outsiders. The results demonstrated higher levels of mistrust towards outsiders (measured by lower levels of sender token sharing with outsiders) amongst the treatment group compared to the control. The authors conclude that exposure to administrative corruption and low institutional protection of property rights in the history of the treatment group engendered a culture of mistrust that persisted even after the cessation of the conditions by which it was produced. On the other hand, their results demonstrate higher levels of trust towards outsiders amongst the control group, which was historically exposed to Austrian Habsburg institutions. Further discussion of how Habsburg institutions differed from those of surrounding regions and persistently impacted culture can be found in Section 4.4.

3. The Importance of Culture to Economics

By its nature, culture affects the values and beliefs of individuals, which in turn can influence their behavior. Although demonstrating cause and effect continues to pose a challenge to researchers, the development of sophisticated statistical methods, access to improved data, and continued interdisciplinary cooperation have synergistically allowed modern economists to convincingly link culture to outcomes in the economy. This growing body of work indicates that the set of cultural values and beliefs that affect the economy may in fact be quite expansive. This

section will discuss three separate channels through which culture can affect economic outcomes: Economic Preferences, Political Preferences and Institutions, and finally, Beliefs.

3.1. Economic Preferences

A myriad of cultural traits can be considered relevant economically. As mentioned previously, fertility preferences can be tied to cultural background (see, *e.g.*, Fernández & Fogli, 2009; Baudin, 2015; Eschelbach, 2015; Chabé-Ferret, 2019) and have important implications for economic growth (see, *e.g.*, Sinding, 2009; Das Gupta et al., 2011; Ashraf et al., 2013; Karra et al., 2017).

Also previously mentioned, trust has been shown to have a wide range of ramifications for economic preferences. Two of the most influential inquiries into the importance of trust come from Guiso et al. (2008a; 2009). In their 2008 paper, they use cross-country data to study the effect a general lack of trust has on stock market participation. Their results show that less trusting individuals are also less likely to engage in the stock market, with those who do engage buying significantly less than their trusting counterparts. In their 2009 paper, Guiso et al. use data on European bilateral trust to demonstrate the effect of trust on international trade, ultimately finding that lower bilateral trust results in suppressed trade between countries as well as decreased foreign direct investments and cross-country portfolio investments.

Another strand of literature focuses on the effect of culture on labor preferences, specifically concerning female labor force participation (FLFP). According to Fernández (2011), countries with more traditional values regarding the role of women tend to have lower female labor force participation, resulting in limited available labor capital in these countries. She reports that traditional values affect FLFP through the preferences of both women and men, with two of the most salient factors being female educational preferences and the characteristics of husbands. Mocan (2019) also demonstrates the effect of culture on FLFP in a previously discussed paper, which demonstrates a pronounced negative effect of hereditary leisure culture on the number of hours worked by second-generation immigrant women. Family ties have additionally been shown to influence the labor decisions of women; according to the work of Alesina and Giuliano (2010), stronger family ties result in decreased FLFP. As is the case with

both Mocan (2019) and Alesina and Giuliano (2010), much of the body of research on how culture affects FLFP consists of epidemiological studies (see also, *e.g.,* Antecol 2000; Fernández 2007; Fernández 2011; and Fernández & Fogli 2009). Related to labor force participation, Ichino and Maggi (2000) recently published their research regarding culture's effect on labor productivity. Their study uses data from Italy to show that preferences for evading work on the job appear to be driven by birth location, which can be considered a proxy for one's cultural background.

Culture also affects economic outcomes through its influence on saving preferences. Guiso et al. systematically established this relationship through a series of two papers, starting in 2003, when they documented a link between religious beliefs and preferences for thriftiness. To do this, they used answers from a survey that asked people what values they considered essential to instruct children about at home. Their results show that, when compared to the nonreligious, Protestants were 2.3% more likely and Catholics 3.8% more likely to view thriftiness is a value that should be taught to children (the thrift preferences of other religions like Hinduism and Buddhism also tended to be higher than those of nonreligious people, but these effects were not statistically significant). In 2006, Guiso et al. tested whether these preferences for valuing thrift have any bearing on actual savings. They found that a ten percentage point increase in the share of thrift-valuing people is associated with a 1.3 percentage point increase in the national saving rate. To establish causality, the researchers employed an instrumental variable approach like those discussed in Section 2.3.1, predicting national thrift preferences using the religious demographics of countries. They then used these predicted values, which capture the extent to which cultural background explains thrift preferences, to calculate their results. This method showed double the impact of thrift preferences on savings, although it simultaneously weakened the statistical significance. The research of Knowles and Postlewaite (2004), which applied a similar approach at the micro-level, corroborates these results.

3.2. Political Preferences and Institutions

Political preferences and the institutional structures they generate form another channel through which culture can influence economic outcomes. The cultural environments in which people grow up influence their beliefs on the role of government, for instance, how much governments ought to intrude into economic life through regulation, income redistribution, or nationalized industries. These political preferences can then produce formal institutions that reinforce these notions. As is typical of research surrounding culture, much of the literature faces ambiguity regarding the direction of causality. Considering the totality of work done on the subject, it appears likely that culture and institutional structure interact with each other in a complex, multidirectional network rather than a simple, unidirectional one, similar to the two-way relationship Inglehart (2000) described between culture and economic development (see Section 2.2). Here, the causal effects of culture on institutions will be discussed in the context of their connection to economic outcomes, while later (Section 4.4), the reverse relationship will be explored.

Regarding political ideas and values, culture has been shown to influence preferences for labor market regulations (Alesina et al., 2015) and political participation (Alesina & Giuliano, 2011), both of which can have important implications for economic outcomes. Much work has also been done to uncover how culture affects redistribution preferences. Guiso et al. (2006) use a combination of survey data and information about cross-country religious affiliation to test for a connection between religion and redistribution preferences. They find that American individuals who identify as Catholic, Protestant, and Jewish tend to have a more negative attitude towards redistribution when compared to the non-religious. As for whether these preferences have any implications for real-world policy, the authors find that increased preferences for redistribution do raise the ratio of direct-to-indirect taxation significantly, indicating that the underlying cultural determinants of redistribution preferences do affect actual redistribution. Luttmer and Singhal (2011) conducted additional research on this topic, reporting a correlation between the redistributive preferences of immigrants with the preferences in their country of origin.

North defined institutions as "the rules of the game"; "the humanly devised constraints that shape human interaction" (1990, p. 3). Their susceptibility to cultural influence and effect on economic outcomes have also been extensively documented in the literature (see, *e.g.*, Tabellini, 2008a; Alesina & Giuliano, 2015). Fischer (1989) provides a particularly illustrative study that tracks how four waves of culturally distinct settlers led to the development of different institutions across the United States that maintain their relevance to American politics today. The first wave of settlers was the Puritans, who colonized Massachusetts in the mid-17th century. Their values for education and order produced institutions that protected these ideals: universal education, large government, high taxes, and the like. The second wave was the Cavaliers, who established themselves in Virginia during the second half of the 17th century. Fischer shows how their belief that inequality was natural led to their adoption of institutions with little emphasis on taxes or education. The third wave occurred over the turn of the century when Quakers migrated to Delaware and enshrined their values of personal freedom in a limited form of government and equal rights for citizens. The fourth and final wave discussed by Fischer were Scottish-Irish herdsmen in the 18th century, whose strong beliefs in freedom from the law and personal defense resulted in vigilante justice and limited government. This shows how cultural values can give rise to different institutional forms that go on to shape economic environments.

Culture's capacity to influence institutions is highly relevant to economic outcomes, as the two have been shown to be intimately connected. For example, the work of Acemoglu and his colleagues (see, *e.g.*, Acemoglu et al., 2001 and Acemoglu & Robinson, 2012) provides strong evidence that institutions have a powerful impact on economic performance. In one paper, Acemoglu et al. (2001) combine an instrumental variable approach with a natural experiment originating in the American colonies. They argue that European colonists immigrating to the New World established radically different institutions in different colonies. In the choice to establish one institutional form over another, the suitability of the area for European settlement played a pronounced role in institutional quality. Because locations with high mortality rates were less likely to be considered settleable, colonizers were more likely to construct poor-quality institutions in these areas. Conversely, locations that were desirable for settlement received institutions of superior quality. By leveraging differences in the mortality rates faced by soldiers,

bishops, and sailors over time as an instrument for current institutions, the authors find that institutions have significant effects on per capita income.

3.3. Beliefs

Like values, people's beliefs about themselves and the world around them can influence their decisions and behavior. Thus, such beliefs create another channel through which culture can influence the economy. For example, Alesina and Angeletos (2005) examine how beliefs about the determinants of income can become deeply rooted in culture and affect the economic landscape of a country. Their results show that country-wide popularity of the belief that luck determines income (as opposed to merit) is highly correlated with social welfare spending as a share of GDP.

Deeply rooted superstitions can also affect outcomes in the economy. Consider the widely held Chinese belief that being born during the Year of the Dragon means one is destined for greatness. Although dragon children are not inherently superior to their non-dragon peers, Mocan and Yu (2020) find a correlation between possession of a dragon zodiac and higher test scores. This is true despite dragon children having access to comparatively fewer per capita resources in the classroom due to the greater volume of babies born in the dragon cohort. Given that dragon children are not inherently different from those born in any other zodiac year, one would expect the elevated competition they face for resources to translate into lower academic success. In reality, however, individuals born in this superstitiously auspicious year consistently outperform their peers on college entrance exams and are more likely to acquire at least a college education compared to similar individuals with a different zodiac sign. How could this be?

To uncover an answer to this question, the authors first investigate whether being born in the Year of the Dragon could lead to above-average self-esteem. Finding no correlation, they then consider the effect of parental expectation on dragon children. Their results unearth a systematic difference in how Chinese parents tend to approach dragon kids, with increased involvement in their education at all levels. Accounting for this difference caused the previously observed dragon-test score correlation to disappear, indicating that increased parental investment

(on the grounds of superstition) is the reason for superior academic performance within dragon cohorts.

Discriminatory beliefs towards certain social identities are another brand of cultural belief that plays a role in economic outcomes. One strand of research on this subject that has garnered considerable traction is the series of laboratory experiments facilitated by Hoff and Pandey (2004; 2005; and 2014)-- all centered around uncovering how socially-hierarchizing belief systems (*e.g.,* caste systems) influence group behavior. In one of their studies (Hoff & Pandey, 2004), they asked high-school students from India, a country in which traditional caste hierarchies still run deep, to solve mazes. When caste differences between the participants were concealed, no caste differences in performance appeared. When this information was made known, however, large caste gaps emerged. The low-caste students performed worse when caste status was disclosed both absolutely and relative to the high-caste students. These results are consistent with the psychological theory of "stereotype threat", in which being stereotyped as inferior intellectually may undermine a person's ability to perform cognitive tasks (Hoff & Pandey, 2014, p. 120). The experiment revealed that highlighting caste differences can cause underperformance in high-caste individuals as well. The authors theorize that this may be because caste differences trigger a sense of entitlement in high-caste groups, decreasing the need to achieve. Assuming these experimental results can be extrapolated to apply outside of the lab, they suggest that those with demonstrably similar abilities may nonetheless perform differently in cultures with highly salient hierarchical groups.

Similar to how beliefs about caste identity can impact behavior, so too can beliefs about cultural identity. For example, Butler and Fehr (2021) use a laboratory experiment to investigate how such beliefs affect cooperation. First, participants with ties to both US and Chinese culture are primed to temporarily increase the saliency of one of these two cultural identities. Then, the participants engage in a Prisoner's Dilemma game to test their willingness to cooperate with other anonymous players. The experiment's results show that activating a US cultural identity leads to higher levels of cooperation than activating a Chinese cultural identity. Butler and Fehr theorize that this is because Chinese cultural identities tend to transmit less optimistic beliefs about others' readiness to cooperate than American cultural identities.

4. The Origins of Culture

Given the broad influence culture holds over the economy, many economists now desire an understanding of how culture develops. Flipping the direction of causality to investigate how culture is affected, rather than its effects, has allowed a myriad of conceivable roots to be identified. This section will discuss four potential sources of origin for culture: evolution, environment, legal codes, and historical events.

4.1. Evolution

In the 20th century, many of the world's most elite social anthropologists argued that the study of culture was categorically unique from the study of evolution. The term culture was frequently employed to refer specifically to the societal behavior acquired freely through social learning, apart from evolutionary biology (Knight 1995). Kroeber (1917) famously made this distinction between biologically-driven social behavior and culture by comparing humans to the highly social but still decidedly cultureless ant. In this comparison, he explains how a pair of ants raised from egg to maturity, in complete isolation from any others of their kind, will nevertheless, within a generation, be able to naturally recreate their entire social system without diminution. Contrastingly, a man and woman raised from birth to adulthood in isolation would not be able to reproduce their civilization of origin. Such an experiment could only result in "a troop of mutes, without arts, knowledge, fire, without order or religion" (Kroeber 1917, p. 177). Kroeber concludes that while "heredity saves for the ant all that she has, from generation to generation," it does not maintain "one particle of the civilization which is the one specifically human thing" (1917, p. 177). Because of this, culture is somehow set apart from the instinctual social behaviors that arise from genetic evolution.

This distinction can further be seen through an investigation into the monogamous behaviors occurring in both human beings and certain birds. In birds, monogamous relationships are formed as the result of specific natural impulses. Humans, contrastingly, enter into monogamous marriage relationships not because of innate biological impulses but contrary to them. We do this because we have developed certain conventions and social taboos around the natural sexual instinct that might compel us to engage in non-monogamous behavior (Murdock,

1965 and Webster, 1929). In the words of Lippert, "The institution of human marriage is not a subject of natural history but of cultural history" (1931, p. 69).

While these arguments, which give insight into how culture is distinct from evolutionary biology, are important, they must not be allowed to erect an impenetrable barrier between evolutionary theory and human cultural life. Such conceptual frameworks, which as previously mentioned were popular amongst many 20th-century social anthropologists, have recently been replaced by formulations that recognize the intertwined nature of evolution and culture and acknowledge that both are necessary for achieving a full understanding of human behavioral preferences (see, *e.g.*, Schaller et al., 2011; Lewens, 2017; and Creanza et al., 2017). Evolutionary biology, or heredity as Murdock put it, expands the human capacity for culture through introducing abilities like tool making, agriculture, facial expressions, and language (Schaller et al. 2011, p. 138). It equips us with critical mechanisms that facilitate cultural expression, like the central nervous system, motor skills, and various sensory equipment (Murdock 1932, p. 202), and bestows upon us the basic biological impulses which both drive and frame our development. Biological evolution, however, does not comprehensively explain all of cultural development. As Murdock wrote:

> Heredity may enable man to speak, but it does not prescribe the particular language he shall employ. It may drive him to some form of sexual association, but the impulse may find adequate satisfaction in a wide variety of polygynous, polyandrous, and monogamous relationships. In short, culture owes to heredity only the number and general character of its institutions, not their form or content. (1932, p. 203)

Despite the inability of biological evolution to contribute a reasonable origin for why humans develop particular beliefs and values, the principles found in evolutionary theory have been used to understand the dynamics of cultural transmission, change, and persistence, as will be explored in Section 5.

4.2. Original Environment

Initial environments have also been investigated as a potential cultural genesis. An environment represents the total set of external factors impinging on and influencing life at a certain location, ranging from biological factors like local flora and fauna to physical ones like soil endowment, water availability, climate, and topography. The environment in which a society develops helps to determine the agricultural systems that are possible and plays a large role in shaping what agricultural knowledge and techniques are acquired by particular people groups.

Although many environmental factors like climatic risk (Buggle & Durante, 2017) and natural disasters (Sinding Bentzen, 2019) have been shown to affect culture, this section will focus specifically on how initial environments can push societies to adopt certain agricultural systems that play a role in developing culture. Throughout history, groups of people across the world have adapted their way of life to survive and thrive within the context of specific environmental conditions and resources. Different environmental conditions tend to lend themselves to different production activities and agricultural systems, which in turn encourage different preferences, beliefs, and values.

A large empirical literature exists on the effects of agricultural environment on culture. One of the most significant contributions to this body of work regards a hypothesis initially proposed by Boserup (1970). According to this hypothesis, the presence of plow agriculture --in which men have a comparative advantage-- led to a division of labor where men were dominant in farming and women increasingly worked within the home. Over time, this initially-practical gender specialization became a cultural pattern, facilitating a belief that women belong in the domestic sphere. In a 2013 paper, Alesina et al. tested this hypothesis to show that the presence or absence of the plow in a society's traditional agricultural practice had a causal effect on the development of that society's gender culture, which influences modern labor market outcomes. Their research design used the suitability of an environment for growing certain "plow-positive" crops, characterized by their need for large, quickly-prepared tracts dug in deep, rock-free soil (Pryor 1985; Carranza, 2014), as an instrument to predict whether or not the plow was adopted in a society's agricultural system.

They began by confirming that societies with traditionally plow-based agriculture tended to have lower levels of women in farming than societies that preferred handheld tools like the hoe. Using information regarding gender-based labor divisions in agriculture and controlling for several factors that might correlate with gender roles and plow use, like the presence of large domesticated animals, the authors verified that women living in societies with plow agriculture indeed farmed less. They then examined the impact of ancestral plow use on modern-day gender roles. On the country level, they studied three different outcomes expected to reflect cultural views toward the proper role of women in society: female labor force participation rate in 2000, entrepreneurship, and national politics. Their results associated historical plow use with lower amounts of modern female labor force participation and lower female firm ownership. Their results did not find a statistically significant relationship between traditional plow use and female political participation. Finally, they employed an epidemiological approach to test for the persistence of cultural gender beliefs, finding that, despite growing up in a shared environment, immigrant children with a heritage of traditional plow use displayed more unequal beliefs about gender roles today.

As cited by Alesina et al. (2013, p. 513), another connection between culture and the practice of plow agriculture was identified by Braudel (1998), specifically regarding religious beliefs. In particular, Braudel investigated religious trends in Mesopotamia, which experienced a sudden and pronounced eclipse of female goddesses by male gods in its history. During the Akkadian period, between 2350 and 2150 BCE, some 39% of city deities were goddesses. By the conclusion of the 2nd millennium, however, most of these female deities had been overshadowed by male ones (Leith 2005). This trend continued into the 3rd and 4th millennium. Braudel noticed that such shifts in religion coincided with the introduction of the plow, which produced male domination in agriculture. As Mesopotamian societies became progressively patriarchal, the reign of "all-powerful mother goddesses and immemorial fertility cults presided over by priestesses" gave way to "male gods and priests" (Braudel 1998, cited by Alesina 2013, p. 513*)*.

Another set of traditional agricultural systems with differing documented effects on culture is rice paddy and wheat farming. That rice cultivation is distinctly different from wheat cultivation has been documented by many authors (see, *e.g.*, Gladwell, 2008; Talhelm and

English, 2020). Unlike wheat fields, which only require the clearance of trees and debris before plowing, rice paddies must be built. A rice farmer might begin this process through various laborious processes, such as hollowing out a space in the side of a mountain or erecting elaborate terraces from river plains or marshland. After laying the foundation, a rice farmer needed to create a hard clay floor to prevent water from seeping into the ground, followed by a thick layer of mud where the rice seedlings could grow. In designing this so-called "clay pan," painstaking attention was crucial to ensuring proper drainage and optimal submersion of plants.

Because rice is semi-aquatic, a rice farmer also needed to construct a complex irrigation system of dikes and channels to transport water to the paddy, whereas wheat farmers could often rely on rainfall to water their crops. In order to allow precise control of water flow, rice farmers needed to embed special gates into their system of dikes. Beyond this, the rice plants had to be fertilized, which was a complicated process in and of itself. Made from a meticulously balanced mixture of river mud, compost, hemp, bean cake, and "night soil" (human manure), rice fertilizer needed to be applied not only in the perfect amount but also at the perfect time. As a final element of complication, rice farmers had to select from hundreds of different crop strains, each bringing slight trade-offs between yield, speed of growth, resilience in poor soil, and resistance to drought. In order to manage the risk of crops failing, farmers might grow dozens of strains simultaneously, coordinating the different levels of water and fertilizer needed for each. Unlike wheat farmers, who planted according to the season and took periods of fallow in order to avoid exhausting the soil, rice farmers planted all year long.

Ultimately, rice paddy farming tended to be an exceedingly laborious and precise endeavor, where minor adjustments in fertilizer, water, and strain were the secret to more abundant harvests. On the other hand, wheat farming tended to be more "mechanically" oriented, with farmers expanding or upgrading their equipment to improve yields rather than relying on subtle alterations to their underlying processes.

Rice farming's delicate and complex nature compared to wheat farming has had several documented effects on culture. For example, Gladwell (2008) records a powerful impact of rice farming on China's cultural attitudes towards hard work. Although all feudal farming --be it wheat, rice, or otherwise-- entails strenuous labor, Gladwell identifies a distinct difference in the

way different types of farmers came to see the relationship between effort and output; while a wheat farmer might see their yields respond inconsequentially to minor improvements in farming processes, a rice farmer applying similarly sized adjustments could expect to reap substantial rewards. Because of this, the cultural beliefs of rice farming societies grew to highly associate effort with results. To illustrate this, Gladwell cites the work of historian David Arkush, who compares the effort-encouraging proverbs of Chinese peasants (*e.g.*, "No one who can rise before dawn three hundred sixty days a year fails to make his family rich," p. 236) to the comparatively fatalistic proverbs of Russian peasants (*e.g.*, "If God does not bring it, the earth will not give it," p. 235). In his analysis, Gladwell uses this cultural difference to explain the long observed difference between the math prolificacy of historically rice farming countries like China and the historically wheat farming countries of the West. He argues that the types of work attitudes that make one a successful rice farmer are the same ones that make a successful mathematician.

In a recent paper, Talhelm and English (2020) uncover a different impact of rice farming on Chinese culture. Comparing localities within China that historically farmed rice to those that historically farmed wheat, they identify tighter social norms, higher collectivism, and lower tolerance for non-conformists that persist even within localities where farming no longer remains a part of daily life. Central in their interpretation of these results is the fact that rice irrigation systems were more than just an individual farmer's feat of engineering; they were projects completed in conjunction with others in the community. Rice irrigation networks required all farmers within a rice village to cooperate extensively to efficiently construct channels, coordinate water use, and facilitate dike repair. In such an environment, conflicts presented a threat to village success, making effective collectivist behavior essential. Contrastingly to the cooperative processes required by rice farmers, wheat farmers could often rely on rainfall rather than manufactured irrigation systems to grow their crops.

Talhelm and English find that the community behaviors necessary to effectively manage and maintain rice paddies are responsible for the elevated collectivist attitudes and tighter social norms observed in regions that traditionally practiced rice farming. The economic implications of this are both positive and negative. On the one hand, people living in societies with tighter social norms tend to be much better at self-monitoring, so historically rice-farming areas hold

social order in higher priority and abuse drugs less than their historically wheat-farming counterparts (Talhelm & English 2020). On the other hand, tight social norms seem to put a damper on creativity. Talhelm and English's data finds that rice areas in China tend to file fewer patents for new inventions and produce less innovative thought than Chinese wheat areas (2020, p. 19823).

The literature is rich with empirical papers that support environmental setting as a cultural origin. Further supporting the connection between communal irrigation practices and collectivism is the work of Buggle (2017), who finds collectivist attitudes like willingness to cooperate and acceptance of hierarchy to be more commonly found in locations that used complex irrigation systems. A final example of the literature on agriculture and culture comes from Galor and Özak (2016), who theorize that growing up in an environment conducive to high returns on agricultural investments will gradually enforce stronger long-term time preferences. Their results show that higher potential agricultural output experienced by ancestral populations is correlated with higher patience among modern descendants. Furthermore, Galor and Özak find that crop yield potential in a population's ancestral homeland has a more potent effect than its present location geographically.

4.3. Historical Events

Although a society's culture often arises early on in its development and then persists over time, significant historical events can provoke the formation of new cultural attitudes. For example, the historical migration of Scots-Irish herders to the United States was among the first historical events considered by economists for its impact on culture. In their seminal book, Nisbett and Cohen (1996) assert that this migration prompted a violent culture of honor to take root in the American South. Grosjean (2014) tests this hypothesis in a subsequent paper investigating the persistent phenomenon of Southern honor killings, which aim to defend one's reputation and are consistent with a strong honor culture. Supporting Nisbett and Cohen's theory, she finds that the prevalence of such killings can be traced back to the historical migration of herders from two specific regions of Scotland and Ireland. Because these regions lacked sufficient state institutions to reliably enforce property rights, deterring theft through a reputation

of violent retribution became essential to defending the easily carted-off animals on which herder survival depended. Over time, this resulted in an extreme culture of honor becoming embedded in the foundation of Scots-Irish culture.

Between 1717 and 1775, an estimated 200,000 Scots-Irish traveled across the North Atlantic in what has been described by some as the first mass migration to the United States (Fischer 1989, cited by Grosjean 2014, p. 1289). With this migration, the Scots-Irish brought their culture of honor and strong preferences for violence, with dire implications for the Deep South. Grosjean's results show that in the far southern regions of the United States, the historical presence of Scots-Irish migrants explains 20% of contemporary homicide variation not related to other traditional determinants of crime. By and large, an increase of 1 percentage point in the population share of Scots-Irish in 1790 is associated with a 25% higher homicide rate by modern white offenders today.

Another example of the historical roots of culture comes from Voigtländer and Voth (2012). Their paper argues that the anti-Semitism witnessed in Nazi Germany originated with the historic Black Death epidemic, which had wiped out a third of Europe's population more than 600 years prior. They explain how Jews were frequently scapegoated and even killed when the Black Death first appeared on the continent, with one common rumor being that Jewish populations were poisoning local wells and causing people to become sick. While many towns and cities did oversee both sanctioned and unsanctioned killings of Jews during this time, others did not. Using regional data about plague-era attacks on Jews, Voigtländer and Voth find that the same areas that perpetrated violent attacks against Jews in the 1300s exhibited stronger anti-Semitic attitudes over half a millennium later, indicating a powerful cultural persistence. The occupants of these areas were more likely to vote for the Nazi Party in 1928, organize Jewish deportations after the Nazis secured power, engage in violence against Jewish people, write letters to anti-Semitic newspapers, and attack synagogues.

Historical conflicts have also been shown to affect the development of culture. For example, Besley and Reynal-Querol (2014) exploit within-country variation to uncover the impact of precolonial conflicts in Africa. Their results show that historical conflict is associated with stronger ethnic identity, higher levels of mistrust, and weaker national identity. Rohner et al.

(2013) also studied the effects of conflict on culture, specifically focusing on a series of civil and ethnic conflicts occurring in Uganda between 2002 and 2005. Their findings similarly identify large effects of conflict on ethnic identity and levels of trust in the decade immediately following, however, the recent nature of these incidents limits the potential for any long-term conclusions or analysis.

Slavery represents a final area of history that has been explored in the literature for its effects on culture. As a part of the body of work on this topic, Acharya et al. (2016) provide evidence that the historic presence of slavery is connected to modern-day conservative beliefs and values in the Deep South. They use an explanatory variable constructed from US Census data to measure the proportion of the population that was enslaved in each county in 1860 and create four outcome variables measuring the current attitudes and beliefs of Southern whites using the following categorizations: partisanship, support for affirmative action, racial resentment, and answers to "feeling thermometer" questions, which ask respondents to rate their reactions to racial and ethnic groups on a numerical scale. The results of this analysis reveal that Southern whites presently residing in counties with higher 1860 concentrations of slaves are more likely to identify as a Republican, oppose affirmative action, and express feelings of resentment towards African Americans compared to whites living elsewhere in the South. The authors believe this persistent effect of slavery can be explained by the passing down of racist and conservative beliefs and values within families over time. They have recently published a book, *Deep Roots* (2020), further elaborating the results of this study.

Nunn and Wantchekon (2011) also investigate the impact of African enslavement, this time within the context of the African slave trade. They find that ongoing variation in native African mistrust is attributable to the historic movements of the trans-Atlantic and Indian Ocean slave trades. In their paper, the authors explain how continued exposure to the ubiquitous warfare and state-organized raids typical of the African slave trade led to a sense of insecurity that eventually caused many native Africans to turn on one another. In these situations, it was not uncommon for individuals to kidnap, trick, and sell others --including neighbors, friends, and family-- into slavery.

To test their hypothesis that a betrayal-abundant environment in some areas of Africa may have sparked a persistent culture of mistrust, Nunn and Wantchekon combine data on historical slave shipments with current, individual-level survey data. They find that current African natives belonging to ethnic groups that were more heavily exposed to the slave trade in their histories manifest higher levels of mistrust towards coethnics, neighbors, relatives, and local government officials today.

A final example of historical slavery's impact on culture comes from Dalton and Leung (2014), who link the relatively high rates of polygamy found in some parts of Africa with the shortage of males created by the trans-Atlantic slave trade. Although the capture and exportation of native people into slavery took place all over the African continent, the trans-Atlantic trade drew mainly from the west coast due to its proximity to the New World. The comparatively high demand for male slaves in the New World and, by extension, in the trans-Atlantic slave trade led to the depletion of men from the western edge of the continent. Dalton and Leung argue that lengthy exposure to a shortage of men on the west coast of Africa created a culture of polygamy that still persists today. Notably, they find that this culture of polygamy is largely absent in the east of Africa, which was dominated by the Indian Ocean slave trade in which there was no skewed demand for men.

4.4. Institutions

The final origin of culture discussed in this paper is institutions. One interesting institutional environment that has been heavily studied for its lasting impact on culture existed in Italy at the end of the Middle Ages. At this time, the imperial authority of the Holy Roman Empire had eroded, leading to a power vacuum in Italy. While this vacuum was filled in the Italian South by Norman invaders, who ensured order and stability by developing a strong state, the Center-North of Italy remained relatively unstable. In such a setting, several cities claimed independence from the Holy Roman Empire, becoming self-governing, free city-states and instituting their own rules and laws explicitly in the name of the people, from which political power was said to be derived. Importantly, the institutions of free city-states were regionally unique to the North of Italy and did not exist in the South.

In their seminal book, Putnam et al. (1993) argue that exposure to collaborative self-government in the free city-states of Northern Italy led to the formation of something they call "civic capital," later defined by Guiso et al. (2016) as "those persistent and shared beliefs and values that help a group overcome the free rider problem in the pursuit of socially valuable activities" (p. 419). In other words, civic capital determines a society's capacity for positive community collaboration. They attribute the significant differences observed between Northern and Southern civic capital in Italy today to the period of independence experienced exclusively in the North over half a millennium ago. Guiso et al. (2016) published a subsequent paper confirming these results. Notably, they found that free city-state experiences were not only responsible for North-South civic capital differences but Northern within-region variances as well. Further, they determined that the strength of civic capital's persistence in historically independent cities was determined by the duration and intensity of their free city-state experience.

Lowes et al. (2017) also look at historical institutions to establish a causal effect of institutions on culture. Their research hones in on the highly advanced institutions of the 17th-century Kuba Kingdom in Central Africa, which had a system of courts and juries, professional police force, separation of political powers, considerable public goods provisions, military, taxation, and an unwritten constitution. Strongly resembling those of modern societies, the Kuba Kingdom's institutions were vastly superior in their development to those of nearby villages and chieftaincies. Comparing people whose ancestors resided just outside the Kuba Kingdom to those whose ancestors lived within it, the authors conduct a series of laboratory experiments to measure people's propensity to follow the rules in the face of a monetary incentive not to. One experiment entails a cost to rule-following and a benefit to cheating, while another provides participants with an opportunity to steal. The results of these laboratory experiments find that Kuba's formal institutions correlate with a stronger propensity for cheating and weaker rules-following norms. These findings are consistent with recent research on how the effectiveness of formal institutions negatively affects parental tendencies to instruct children on values related to rule-following.

One set of historical institutions that have been heavily investigated for their impact on culture are those of the Habsburg Empire, which played a dominant role in Central Europe for much of its history until collapsing in 1918 (see, *e.g.*, Becker et al., 2016 and Karaja & Rubin, 2021). Although initially, the territories of the Habsburg Empire shared only loose administrative ties, reforms initiated by the Holy Roman Empress Maria Theresa led to the transformation of the empire's bureaucratic landscape in the 18th-century. Among other things, this reorganization instituted county governors to ensure the establishment of strong bureaucracies in new territories and required training for local administrators at the empire's capital: Vienna. Later reforms incorporated by Maria's son, Josef II, ended censorship, promoted public education, and founded social and medical care institutions. These changes facilitated the development of reasonably homogenous institutional environments across the Habsburg Empire that were generally uncorrupt and predictable for inhabitants.

Becker et al. (2016) exploit the fact that the original Habsburg border cuts through five current, Eastern European countries to identify the so-called "Habsburg effect" on trust. This approach relies on the fact that the communities existing along the historic Habsburg border in close geographic proximity to each other will have shared a common set of formal institutions for many years and differ only in their exposure to Habsburg institutions in the past. Therefore, exposure to Habsburg institutions functions as an arbitrarily applied treatment, enabling the identification of causal effects. To further establish a causal relationship, the authors also control for observed variations in individual education, religion, language, and wealth. Comparing people on either side of the historical Habsburg border, Becker et al. find that those living in places formerly part of the long-gone Habsburg Empire continue to exhibit higher levels of trust in courts and police. They also find that historical Habsburg affiliation is associated with a reduced propensity to pay bribes to the court today, indicating lasting cultural norms regarding interactions with public institutions. These results are consistent with the previously mentioned study of Karaja and Rubin (2021) on the impact of exposure to low corruption under Habsburg institutions compared to high corruption under Ottoman institutions.

Another natural experiment that has allowed the relationship between institutional regimes and cultural preferences to be examined occurred with the 1945 split of Germany into

East and West. Alesina and Fuchs-Schündeln (2007) conjecture that the resulting exposure to 45 years of 'communism' (used here in reference to the politico-economic system existing in postwar East Germany) in East Germany had causal effects on people's attitudes in the following decade. Through their research, they find that the institutional influence of living under the Communist regime in East Germany heightened pro-government attitudes within the population that persisted even after reunification. This persistence appears to be limited, however, as the authors show East German preferences converging with those of West Germans in as few as one or two generations.

One cultural domain shown to be particularly susceptible to the effects of institutions is gender attitudes. For example, a recent study by Zhang (2019) shows how exposure to institutional reforms implemented under the Chinese communist regime in the 1950s altered female competitiveness. Leveraging an inconsistently applied marriage reform that increased marital autonomy and imposed a minimum age on marriage, Zhang attempts to uncover if policies aimed at changing culture can be effective. She documents a dramatic reduction in the gap between male and female competitiveness due to the policy. Further, Chinese women exposed to the reform were less likely to enter into a teenage marriage and more likely to work off-farm relative to men and to be able to read. These findings demonstrate that institutional reforms aimed at altering culture can produce demonstrable effects on gender norms in some cases. However, Zhang cautions against generalizing these results to other institutional contexts, as implementing a marriage-age policy in a location with differing institutional infrastructure and without Chinese collectivist norms may not achieve the same results.

In a recent paper, Akyol and Mocan (2020) study the impact of a 1997 Turkish law that required three additional years of schooling for students who had yet to complete the 5th grade by the summer of that year. They find this law to be associated with a significant change in marital preferences, specifically the likelihood that a person will marry a blood relative. Additionally, their results document a change in women's beliefs regarding the importance of a son in continuing on the family bloodline.

5. Cultural Persistence and Cultural Change

Considering culture's capacity to powerfully affect the economy, it is worth understanding the extent to which culture is resistant to change. On the one hand, there are many documented examples of culture persisting for hundreds of years. Consider, for example, the research of Alesina et al. (2013) mentioned above, which found that the use of plow agriculture as far back as a few millennia still has persistent impacts on gender attitudes today, holding all else constant. Furthermore, Acharya et al. (2016) revealed the effects of slavery on Southern U.S. culture more than 200 years in the future. On the other hand, researchers have also identified numerous instances of cultural change. Recall the findings of Alesina and Fuchs-Schündeln (2007), which uncovered a pronounced impact of exposure to Communism on the cultural preferences of East Germans that survived German reunification but ultimately vanished after a relatively brief period of a few decades. Economic growth has also been shown to produce cultural change, as shown previously by Inglehart (2000). Given the evidence of both long-term cultural persistence and rapid cultural change, the question of how and why these two phenomena occur naturally arises. Further, in answering this question, one can hardly help but wonder: How susceptible is culture to our control?

5.1 Mechanisms: The How

Before asking the why of cultural change and persistence, one might first ask the question of how. How do cultural beliefs and values persist over time, and what mechanisms are involved in their evolution? Many researchers investigating this question take as a starting point the idea that culture's development over time may be analogous to biological evolution. Under this paradigm, the reproduction of culture across generations occurs through the transmission of information rather than genes. This section explores the three potential modes of cultural transmission defined by Cavalli-Sforza and Feldman (1981) in their cornerstone book*, Cultural Transmission and Evolution: A Quantitative Approach*: Vertical, Horizontal, and Oblique.

5.1.1. Vertical and Horizontal Transmission

Vertical transmission describes the passing of cultural ideas and attitudes from parents to progeny. Horizontal transmission, on the other hand, occurs between peers of the same generation. Cavalli-Sforza and Feldman (1981) theorize that cultural transmission was primarily vertical before the advent of organized farming. This was because social groups were generally small and compact during this time, elevating the importance of parental influence. With the introduction of new agricultural practices, however, societies expanded to support social groups of increasing size and complexity; in the modern age, peers now play an enhanced role in cultural transmission.

Like all cultural transmission, vertical and horizontal transmission can generally be understood as occurring in two stages (Cavalli-Sforza & Feldman, 1981). In the first stage, called the awareness stage, individuals gain exposure to culture through observation or active instruction. Cultural exposure itself does not ensure cultural transmission, however. In the second stage, called the acceptance or learning stage, individuals can either assimilate or reject the beliefs and values to which they have been exposed. This stage ultimately determines whether transmission occurs.

Comparing vertical and horizontal transmission reveals differing capacities for the facilitation of cultural persistence and change. Vertical transmission plays a crucial role in cultural persistence as it represents a dominant mechanism by which ideas get passed from one generation to the next. Although it can also foster the acquisition of new cultural ideas, as discussed in Section 5.2.1, it does so relatively slowly. Comparatively, horizontal transmission can more rapidly disseminate new culture. This is because it allows individuals to learn from and transmit to a more significant number of people. According to theoretical studies, beliefs and values that are more conducive to vertical transmission will exhibit a slower evolution compared to those closely associated with other transmissional forms like horizontal transmission. Section 5.2.3. explores the empirical literature applying this difference to explain why some cultural attitudes favor long periods of persistence while others demonstrate a tendency to evolve more quickly.

A critical contribution to the seminal work on cultural transmission comes from Boyd and Richerson (1985), who incorporate ideas from social psychology to describe how psychological biases can shape cultural transmission. With regards to vertical transmission, one set of biases are particularly relevant: content biases. These biases involve the heightened transmissibility of certain types of culture based on characteristics like memorability and usefulness. Like vertical transmission, horizontal transmission can be affected by content biases. Additionally, it can be influenced by the prestige bias, which entails preferential copying of the beliefs and values of prestigious figures, and the conformity bias, in which an innate desire to conform results in the increased transmission of the majority culture. The transmission biases introduced by Boyd and Richerson have been reviewed in more detail by Mesoudi (2009; 2016).

5.1.2. Oblique Transmission

An alternative type of cultural transmission is oblique transmission, which occurs between members of different generations who do not share a child-parent relationship. Oblique transmission often entails the biases described by Boyd and Richerson (1985) and can take many different forms. For example, education represents an example of oblique transmission, through which teachers can transmit cultural ideas to younger generations. Another interesting form of oblique transmission that has recently received attention is media, which is shown to have the capacity to produce real cultural change (see literature review by DellaVigna & La Ferrara, 2015). Moving forward, there is room for further research regarding media's facilitation of cultural transmission (both oblique and horizontal), specifically in terms of emerging social media networks, which are exerting influence over individuals at increasingly young ages.

Many economic studies of culture assume that beliefs and values can be transmitted. For example, studies that use the previously mentioned epidemiological approach (Section 2.3.2) take as given that culture is transmitted and attempt to capture the effects of this transmission, be it vertical, horizontal, or oblique. Recall the work of Fernández and Folgi (2009), which relies on the assumption that parents (or the collective neighborhood) transmit cultural preferences from their country of origin to immigrant descendants. Whether or not epidemiological studies capture primarily vertical or horizontal and oblique transmission depends. According to a recent study

from Miceli (2019), vertical transmission will be stronger when fewer immigrant peers live within an area, while horizontal and oblique transmission will be more substantial in areas that are densely populated with immigrants from the same country.

5.2. Theories: The Why

There are many theories as to what factors ultimately determine whether culture changes or endures over time. For example, in the case of communism's relatively short-lived effect on East German preferences uncovered by Alesina and Fuchs-Schündeln (2007), duration of exposure likely contributed to the weakness of persistence. If the East German communist experience had lasted for more than 45 years, its effects might have had a greater capacity for persistence. This explanation is consistent with the previously-cited work of Guiso et al. (2016), which showed that the duration of exposure to free city-state institutions impacted the strength of civic capital's persistence in Italy. In addition to the duration of exposure, this section examines three other theories for the why behind culture's evolution and persistence.

5.2.1. Costs and Benefits

The most straightforward entry-point to an understanding of why culture sometimes changes and sometimes persists is through the lens of a cost-benefit analysis. From this perspective, societies hold onto cultural beliefs and values so long as they remain beneficial and update them after they outlive their usefulness. Therefore, the answer to whether culture persists or changes depends on the status of the underlying cost-benefit calculus, which can evolve due to various factors. As remarked by Fernández (2011, p.484), "the speed of cultural change depends on how quickly social beliefs and preferences change over time, which in turn depends on the environment broadly speaking." In other words, the overall profitability of culture, and therefore its persistence or non-persistence, is influenced by the environment in which individuals live.

Much empirical evidence supports this viewpoint. Consider, for example, Fernández-Villaverde et al.'s (2014) research on the rapid transformation of attitudes towards premarital sex in the last one hundred years. Before the modern era, women's ability to control whether sexual intercourse resulted in pregnancy was low, while the associated costs of

out-of-wedlock births were often relatively high. Considering this, young people, especially women, were incentivized to adopt pro-abstinence attitudes that they later transmitted to their children. The church additionally faced an incentive to encourage abstinence, as it was often responsible for providing charity to unwed mothers and their children. In the absence of any changes to this cost-benefit calculus, a culture of sexual stigmatization was able to persist for centuries. This changed dramatically in the modern era, however. With the advent of effective contraception providing women with more control over whether sex resulted in a pregnancy, there was a transformation in the costs and benefits of premarital sex, which spurred rapid cultural change. Although only about 6% of American women had engaged in premarital sex by 19 in 1900, by the mid-2010s, that number had jumped to 75% (Fernández-Villaverde et al., 2014, p. 1).

The cost-benefit explanation of culture also provides insight into the impacts of institutions and historical events documented previously. Recall, for instance, the findings of Grosjean (2014) in Section 3.3 regarding the inconsistency of honor culture's persistence in the United States after Scots-Irish immigration. Although Scottish and Irish immigrants came to many areas of the country, the culture of honor they brought with them only took root and persisted in the Deep South. Grosjean explains that this was because honor culture was uniquely valuable in Southern areas, which lacked the strong institutions necessary to enforce property rights. Her results also find that as the benefits of honor culture have dissolved due to increasing convergence in the quality of Northern and Southern institutions over time, honor culture's persistence has begun to wane. This supports the notion that as cost-benefit environments change, so too does culture. Other research tells a similar story of how weak institutions can play a pronounced role in shaping culture, often leading to the persistence of cultural beliefs that supplement institutional shortcomings. For example, Gershman (2015) demonstrated that evil eye beliefs, in which envious looks cause harm, were more likely to persist in societies with weak institutions. He conjectured that this was due to the benefit such beliefs provided in encouraging envy-avoiding behaviors that promoted property protection in the absence of adequate institutional effectiveness.

Many theoretical models explore how a cost-benefit calculus might interact with the mechanisms of cultural transmission. Bisin and Verdier (1998; 2001) were among the first to propose such theoretical models, suggesting, for example, that parents have a desire to maximize their children's well-being (parental altruism) that results in the vertical transmission of culture that is useful given the current cost-benefit environment. While vertical transmission is primarily a mechanism of cultural persistence, it can also help foster cultural change if parents actively encourage emerging beliefs and values that will benefit their children or passively withhold older, more costly attitudes. Because parents may experience bias, Bisin and Verdier also allow for human error in their models. Although parents may aspire to equip their offspring with an optimizing set of cultural beliefs and values, in reality, they do so imperfectly because they perceive the welfare of their children through the biased lens of their own preferences. This phenomenon is called "imperfect empathy."

Voigtländer and Voth's (2012) previously mentioned paper on the development of xenophobic culture during the Black Death is consistent with these types of theoretical models. Specifically, Voigtländer and Voth find that the persistence of antisemitic attitudes was less pronounced in cities where the cost of such preferences was high due to elevated levels of trade or immigration. This suggests that parents may have been less prone to transmit antisemitic beliefs (or that children were less inclined to internalize vertically transmitted antisemitism) due to high associated costs. However, Voigtländer and Voth also document centuries of persistence in environments where antisemitism was neither costly nor beneficial. This could be explained under an imperfect empathy model, in which parents continue to transmit obsolete cultural ideas due to their own biases.

An alternate set of theoretical models that account for the cost-benefit landscape is the evolutionary approach (overviewed by Robson and Samuelson in their 2011 publication as well as Mesoudi in 2016). In standard models from this tradition, preferences are perfectly inherited from parents in childhood and subsequently weeded out from society according to their evolutionary advantage in the surrounding environment. While the previously discussed set of models respond to changing costs and benefits due to conscious choices regarding transmission,

the reactiveness of evolutionary models is due to an unconscious, survival-of-the-fittest style evolution.

In a recent paper, Giuliano and Nun (2021) look at the impacts of environmental stability, which have long been theorized to be a determinant of cultural persistence and change in evolutionary models. Their research specifically tests the hypothesis that culture changes in the presence of substantial environmental instability and persists when environmental conditions are relatively stable. This is because the beliefs and values of previous generations are less likely to remain valuable over time in an environment that is perpetually in flux. Conversely, when environmental conditions are relatively stable, cultural preferences that had an evolutionary advantage previously should retain usefulness as long as the environment remains the same.

One prominent challenge facing theoretical models of cultural persistence and change is the continued existence of maladaptive (or costly) culture. After all, if an analysis of costs and benefits truly drives culture, should not disadvantageous culture be eliminated? As previously mentioned, the imperfect empathy model provides some insight into such occurrences. Another factor that deserves consideration, however, is ignorance. Consider, for example, the religious practice of river bathing documented by Logan and Qirko (1996) in many Hindu and Muslim populations. Because local water sources frequently contain coliform bacteria, amebas, and viruses passed in human wastes, such behavior often results in the development of dangerous diseases. In the absence of sufficient epidemiological knowledge, however, the costs of religious bathing may not be identified, explaining its continued persistence.

Because ignorance can allow for the persistence of maladaptive culture, educational campaigns have proven to be among the most effective instruments for evoking cultural change. For example, Cao (2006) documents the practice of genital mutilation in Egypt, which was based on a cultural belief that women who did not undergo the procedure would become sexually promiscuous. This practice was highly persistent, even resisting a formal ban by Egypt's health minister. Despite most villages across the country continuing the custom even in the face of legal prohibition, a nonprofit organization was able to render the practice virtually non-existent in a small village outside of Cairo through a coordinated educational campaign. It accomplished this by reframing the practice as an issue relating to family planning, literacy, and health care. In

uncoupling the practice from its previously-held cultural meaning, which had made it traditionally desirable, education succeeded where laws failed. The idea that attitudes towards violent practices like female genital mutilation can be affected by education is further supported by the work of Mocan and Cannonier (2012). They show that educational attainment empowers women, furnishing them with the knowledge and power needed to make better decisions regarding their well-being. In doing so, increased schooling produces a pronounced shift in the attitudes of women towards matters related to women's health and violence committed against women. In addition to being less likely to say that wife-beating was justified, women exposed to increased education are also found to be more likely to believe that the practice of female genital mutilation should be eliminated.

5.2.2. Equilibria

Another approach to understanding the dynamics of cultural change and persistence is to consider the possibility of self-reinforcing traits that lead to multiple cultural equilibria. The concept of equilibria, specifically a single, steady-state equilibrium, is heavily featured in classical economic models. Consider, for example, the Solow model, which is used to help explain long-run economic growth. For every conceivable set of parameter values, the Solow model identifies a unique steady-state level of capital and output towards which the economy will inevitably be drawn. When an event within the model shocks the economy away from its steady-state, the impact is temporary. In the long run, the system will always converge to its unique equilibrium. As remarked by Arrow and Hahn (1971), however, "in general, there is no need that equilibrium be unique" (p. 15). Within a multiple equilibria framework, a system may converge to one of many steady-states depending on initial conditions and transition from one steady-state to another due to events of sufficiently large scale.

The existence of multiple equilibria is apparent through observation of the surrounding world. Consider, for instance, the peculiarity that people drive their cars on the right side of the road in the United States but on the left side of the road in the United Kingdom, exhibiting two possible steady-states in driving conventions. In another interesting example, Redding et al. (2011) write of how the division of Germany post World War II caused the location of West

Germany's central airport hub to move from Berlin to Frankfurt, where it remained even after reunification. Notably, the authors show that the permanence of this relocation was not attributable to changes in the air traffic environment, suggesting that the hub's persistence in the new location was due to its having reached an alternate equilibrium.

Basu and Weibull (2003) explore the idea of multiple equilibria in a cultural context by applying it to punctuality, defined as "the ability of different individuals to exchange some words and then coordinate on time" (p. 165). Noting previous research that establishes differences in punctuality patterns across nationalities, the authors suggest that individual decisions regarding punctuality may reflect beliefs about the punctuality of others. If you expect the people you interact with to generally arrive on time, you may be more likely to engage in punctual behaviors like leaving the house early. Conversely, if you expect the people you interact with to generally arrive late, you may be less inclined to make the effort required to be on time. Basu and Weibull argue that because punctuality's profitability to the individual is inherently tied to the punctuality attitudes of the collective, it can function as a self-enforcing trait. If most individuals in a society practice punctuality, it will generate an expectation of punctuality, which will, in turn, generate more punctual behavior. On the other hand, if most individuals in a society arrive late to events, it will create a shared expectation of lateness, which will inspire more tardy behavior. To formally test this, the authors imagine a scenario in which individuals must independently decide whether to arrive late or on time and apply principles of game theory to predict stable states in which societal behavior reaches equilibria. The results of their analysis indicate that the same set of people with the same set of attributes (preferences, endowments, abilities, etc.) can alternatively settle into very different cultural practices --one of punctuality and one of tardiness-- depending on initial conditions. In the context of cultural transmission, this demonstrates how the conformity bias can result in persistence at an equilibrium point.

Bursztyn et al. (2020) provide a more empirical approach to uncovering culture's ability to manifest multiple equilibria. Their research investigates the effects of widespread misconceptions regarding the prevailing attitudes towards working women in Saudi Arabia, where husbands generally retain the final word on whether their wives enter the workforce. The authors demonstrate that while the vast majority of young married men in Saudi Arabia are open

to the idea of their wives working, they substantially underestimate the level of support for working women maintained by their peers. They also find that correcting these mistaken beliefs regarding the attitudes of others results in a significant increase in female labor force participation. These findings support the idea that culture can persist due to a self-reinforcing nature, where individual decisions are guided in part by beliefs regarding the attitudes of others, which are concurrently formed through observation of individual decisions. Further, they indicate that the same society can move from one cultural equilibrium to another due to imposed events like educational programs.

The interplay between culture and institutions can also lead to the persistence of culture at one of multiple equilibria. Tabellini (2008b) creates a model in which a culture of generalized morality incentivizes cooperation with others by reducing the likelihood of encountering a dishonest partner. Simultaneously, a highly cooperative environment incentivizes parents to transmit values that support trustworthiness and cooperation to their children. In the model, highly cooperative and moral environments produce institutions with robust mechanisms of cooperation enforcement, which further support the continued transmission of generalized morality and cooperation. Tabellini argues that this interaction between culture, transmission incentives, and institutions can lead to different steady-states depending on initial conditions. If a society starts out with strong generalized morality, it will end up at an equilibrium with institutions that incentivize and enforce cooperation and the continued transmission of values that promote trustworthy behavior. On the other hand, if a society starts out with limited morality, it can converge to a different equilibrium, with weak institutional enforcement of cooperation and a lack of values supporting generalized morality.

A previously discussed paper by Mocan and Yu (2020) illustrates the capacity of some cultural beliefs to manifest their own realities through influencing expectations and then persist over time because of their self-fulfilling nature. Their paper explores a counterintuitive phenomenon occurring in China, in which children born during the Year of the Dragon enjoy greater academic success compared to their non-dragon peers, despite facing more competition for classroom resources. This is because the superstitious expectations held by the parents of dragon children cause them to invest more heavily in their children's futures. By influencing

parents' behavior through their expectations, the superstitious belief that dragon children will have brighter futures is able to manifest a reality in which it actually becomes true. In this way, superstition creates a self-fulfilling prophecy, enabling a seemingly nonsensical cultural belief to persist at a steady-state for centuries.

A final model, constructed by Guiso et al. (2008b), uses multiple equilibria to explain the persistence of trusting beliefs towards others as well as cultural shifts from trusting to non-trusting steady-states. They build an overlapping generations model in which parents transmit beliefs regarding the trustworthiness of others to their children, who in turn update these beliefs through real-world experience and transmit their updated beliefs to their own children. These intergenerationally transmitted beliefs affect whether or not individuals decide to engage in trade, with trusting beliefs encouraging trade and mistrustful beliefs producing trade hesitation. In such a model, multiple equilibria are possible. Suppose a majority of parents transmit pessimistic beliefs regarding the trustworthiness of others to their children. In that case, society would end up in a no-trust-no-trade equilibrium, in which resistance to trade prevents individuals from updating mistrustful beliefs absorbed from their parents. In such an environment, mistrustful beliefs would be transmitted unaltered through the generations. Contrastingly, suppose a majority of parents transmit trusting beliefs to their children. In that case, society would be pushed into a high-trust-high-trade equilibrium, in which individuals are encouraged to trade by their inherited trusting beliefs and, as a result, learn about the actual trustworthiness of the population.

The authors also model how a society that has settled at one cultural equilibrium can later switch to a new one in response to a sufficiently large shock. Using historical exposure to collaborative self-governance as an example of a temporary shock (see, *e.g.,* Putnam et al., 1993), they attempt to explain the remarkably long-term persistence exhibited by civic capital in some Northern Italian cities of over 500 years. Their analysis shows that these historical shocks, in which towns temporarily experienced independence as free city-states, were sufficient to induce a shift towards a new cultural equilibrium of high civic capital. Notably, the absence of such shocks in the South of Italy resulted in cultures that did not transition to high civic capital equilibria. The authors contend that the long-term persistence of Northern cities at high civic

capital equilibria can be attributed to the lengthy duration of their free city-state experiences, which lasted around 250 years.

Although culture has long been used as a selection mechanism between multiple economic or institutional equilibria (*e.g.,* Greif, 1994; 2006), as it stands, the concept of culture itself manifesting multiple equilibria has not received much attention in the literature. In the ongoing work of understanding cultural persistence and change, a consideration of whether cultural manifestations are the result of underlying beliefs and values or the reinforcing nature of some cultural behaviors represents an important research question, specifically relating to culture that takes into account expectations regarding the behavior of others.

5.2.3. Mode of Transmission

A final explanation for why culture sometimes but not always persists over long periods of time has to do with the way some beliefs and values spread compared to others. As discussed in Section 5.1.1, theorists predict that horizontal transmission supports faster cultural change than vertical transmission. Because of this, cultural beliefs and values that are more closely associated with horizontal transmission will have a higher capacity for rapid change than those that are more vertically oriented. In a recent paper studying first and second-generation Bangladeshi immigrants to East London, Mesoudi et al. (2016) find evidence that supports this interpretation of cultural change and persistence. Assuming that native Bangladeshi culture is more collectivistic than native East Londoner culture, they analyze whether second-generation immigrants maintain their parents' low level of individualism or take on updated cultural attitudes because of exposure to highly individualistic peers during their early years of development.

The study results show that while the first-generation immigrants experienced little change towards individualism, this was not the case for second-generation immigrants. The authors note that the adoption of more individualistic culture occurred in second-generation immigrant groups despite their retention of close family ties and fluency in their heritage language, which represent the primary channel through which vertical transmission occurs (Tsai et al., 2012). After analyzing the data, the authors conclude that individualism is almost entirely

determined by horizontal transmission, while collectivism is determined by a mix of vertical and horizontal transmission. These results are consistent with a recently observed phenomenon in which several countries have become increasingly individualistic over time despite not experiencing significant changes in collectivism.

Another recent paper supports the idea that persistence can look different for different cultural traits depending on the factors involved in their transmission. Giavazzi et al. (2019) examine multiple generations of immigrants and analyze how many generations it takes for hereditary beliefs and values from a family's country of origin to converge with those prevalent in their country of destination. They hypothesize that the more parents tend to care about their children retaining a certain cultural attitude, the slower convergence will be and the longer the cultural trait will persist through the generations. These are the beliefs and values for which vertical transmission will be more important. Conversely, the authors speculate that assimilation will occur more quickly when choosing to update one's set of cultural attitudes will significantly reduce transaction costs in one's new country of residence. Here, it is likely that horizontal transmission will be involved, as traits that yield social benefits among peers tend to spread horizontally.

To test their hypotheses, Giavazzi et al. look at a variety of beliefs and values to study how quickly they evolved across four generations. Their results confirm that certain types of culture, such as beliefs regarding the trustworthiness and fairness of others, converged relatively quickly, while others, such as attitudes relating to religious identity and sexual morality, were more likely to persist over time. The types of culture that persisted tended to be those for which vertical transmission was more significantly involved, while culture that was more horizontally oriented was more likely to change to fit the surrounding environment.

6. Summary and Discussion

Despite the original openness of classical economists to culture, the subject was noticeably absent from formal economic models for many years due to its ambiguity as a concept and unquantifiability as a variable of study. Over this time, other social scientists like anthropologists continued to regard culture in their work, considering such issues as culture's

definition and its grounding in biological evolution (see, *e.g.*, Kroeber, 1917; Kroeber & Kluckhohn, 1952; and Murdock 1932; 1965). Although teasing out causal relations between culture and the economy remains a challenging scientific task, the development of new, sophisticated research methods over the past few decades has enabled a return of culture to the discipline of economics; today, all branches of social science recognize the importance of culture in contextualizing human decision-making and influencing human behavior.

In this thesis, I provided an overview of three strands of research regarding culture and economics: culture's impact on economic outcomes, the origins of culture, and the dynamics of cultural change and persistence. Moving forward, the horizon facing researchers at the intersection of culture and economics remains wide. For example, empirically testing the models of cultural change and persistence developed in the literature represents a compelling opening in the research agenda. Further, as technology and economic development continue to transform human society, there is a growing need to consider how models of cultural transmission might require updating. If vertical transmission from parent to child is a source of cultural persistence, while horizontal, peer-to-peer transmission is more conducive to rapid cultural change, how will the earlier access of children to horizontally-oriented social media networks of unprecedented size affect culture's stability and evolution?

In light of culture's intimate relationship with economic outcomes, the potential for deliberately evoking cultural change naturally arises. As shown in the literature, many controllable factors --including institutions, education, and media-- possess a capacity to change culture by altering cost-benefit landscapes, influencing patterns of cultural transmission, and shifting societies to new cultural equilibria. Assuming that the effects of these factors are replicable in most countries, the existing research of cultural economists can help point policy makers towards powerful tools by which to generate economic development and improve societal wellbeing.

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