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NAVIGATING SOCIETAL RESILIENCE AND DEMOGRAPHIC TRANSFORMATIONS IN A GLOBALIZED LANDSCAPE

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Over the past few decades, the industrialized world has experienced profound structural and technological advances coupled with ideational and cultural shifts, compelling both individuals and governments to adapt to a transformed global landscape. Ideational changes, particularly the prioritization of self-realization and autonomy over conformity to societal expectations, have prompted a reevaluation of established values and norms. Simultaneously, significant structural shifts, marked by liberalization in the economic sphere and an increase in educational attainment, have fueled the dynamics of change. As capital, goods, and information flow more freely across borders, the challenges these changes brought did not stay isolated in the pockets of specific nations; rather, they echoed globally. Navigating in the face of unprecedented change where traditional paradigms and norms are challenged, adaptability and resilience became paramount for societies and governments.

This doctoral thesis aims to provide insights into the dynamics behind a society's capacity to adapt and react to changing circumstances, benefiting from the lens of culture and demography. Therefore, the first paper, "Cultural Dimensions of Resilience: Exploring Inherited Values in the Face of Global Crises", posits the question: to what extent do long-standing cultural traits influence the cross-country differences in resilience? By employing an epidemiological approach, it delves into the inherited component of three pivotal values, namely generalized trust, institutional distrust, and religiosity. Specifically, it analyzes whether societies pre-exposed to these values due to intergenerational transmission are more or less inclined to display resilience when faced with a particular crisis. The findings reveal that generalized and institutional trust values are positively associated with resilience. However, this relationship loses its initial strength when accounting for different welfare regime types. Differently, a significant positive association between religiosity and resilience is observed only when welfare regime types are considered. Finally, this research underscores the necessity of a nuanced cultural approach in comprehending cross-country disparities following global disturbances. It emphasizes the need to acknowledge and integrate long-standing cultural nuances into the broader discourse on resilience.

An important instance of change which echoed across Western societies occurred in family formation and fertility behaviors. Driven by structural and cultural changes, this shift challenged the traditional centrality of the family and was characterized by liberal demographic behaviors

such as cohabitation, non-marital childbearing, divorce, and a postponement of marriage and parenthood. Demographers studying these trends within the theoretical framework of the second demographic transition (SDT) suggested that societies were navigating successive stages of global change, with a pivotal role played by an ideational shift. Yet considerable variation exists across societies, and the gap that was expected to be closed between the forerunners and the laggards of SDT remained. Therefore, the second paper, "Cultural Foundations of The Second Demographic Transition: The Role of Inherited Values" seeks to understand which long-standing cultural traits foster or impede the demographic outcomes of SDT. In other words, it aims to comprehend why certain societies were more capable of adapting to the ideational and structural shift that led to the demographic outcomes observed today. Against this backdrop, the paper employs an epidemiological approach and focuses on the inherited component of five values that have been argued to play a role in de-standardizing family and fertility dynamics: gender egalitarianism, religiosity, institutional distrust, generalized trust, and family ties. The findings reveal that several of these traits have a noteworthy impact when interacted with educational expansion. Gender egalitarianism, institutional distrust, and generalized trust exhibit positive associations with non-marital birth rates when coupled with increased education. Meaning that, with the broad educational expansion that has taken place across all Western countries after the IIWW, the SDT spreads much faster in societies where these three inherited values are deeply ingrained. Conversely, family ties demonstrate a negative association, while no strong evidence is found regarding the influence of religiosity.

Shifting focus, the third paper, "The Impact of Liberalization Policies on Fertility: A Systematic Review of Quantitative Studies" focuses on the impact of liberalization policies that changed the landscape of the modern economy on fertility dynamics. As the first systematic review summarizing the existing quantitative evidence, it intends to synthesize the diverse mechanisms mediating the impact of this structural change in the economic sphere on fertility dynamics at country, regional, and individual levels. With this intention, studies that utilized quantitative research methods to ascertain the effect of liberalization policies, namely trade liberalization, deregulation, and privatization, on fertility were retrieved from the electronic databases of Scopus and Web of Science. After being grouped according to the level of analysis and systematically reviewed according to a predetermined protocol, the main findings were synthesized in a narrative

description. The included macro-level studies provided empirical evidence on the critical role of socio-economic development. Specifically, in less developed countries, trade liberalization created a significant positive impact on fertility. The micro-level studies highlighted the importance of two factors mediating the effects of liberalization on fertility: economic security and gender. A decline in economic security and prospects following liberal policies is likely to discourage individuals from entering into parenthood. Also, biological differences and gender roles may amplify or mitigate this impact. The persisting traditional male breadwinner model may discourage men's fertility decisions negatively if liberalization policies heighten economic insecurity, while women might opt for motherhood if perceived benefits outweigh career prospects, especially under biological clock pressure.

CULTURAL DIMENSIONS OF RESILIENCE:
EXPLORING INHERITED VALUES IN THE FACE OF GLOBAL CRISES

ABSTRACT

In a world marked by the convergence of global challenges, ranging from the far-reaching impacts of the COVID-19 pandemic to the escalating effects of climate change and the persisting refugee crises, the concept of resilience takes center stage. Remarkably, countries with comparable socio-economic contexts exhibit notable disparities in their ability to navigate and rebound from adversity. This study posits that a significant portion of these cross-country variations in resilience can be attributed to deeply rooted cultural traits. Employing an epidemiological approach, we delve into the inherited component of three pivotal values: generalized trust, institutional distrust, and religiosity. We analyze whether societies pre-exposed to these specific values due to intergenerational transmission are more or less inclined to display resilience when faced with a particular crisis. Our findings reveal that generalized and institutional trust values are positively associated with resilience. However, this relationship loses its initial strength when accounting for different welfare regime types. Differently, we observe a significant positive association between religiosity and resilience only when we consider welfare regime types. This research underscores the necessity of a nuanced cultural approach in comprehending cross-country disparities following global disturbances. It emphasizes the need to acknowledge and integrate long-standing cultural nuances into the broader discourse on resilience. As our world grapples with an ever-expanding array of challenges, understanding the intricate interplay between culture and resilience becomes paramount in developing effective strategies for building more resilient societies.

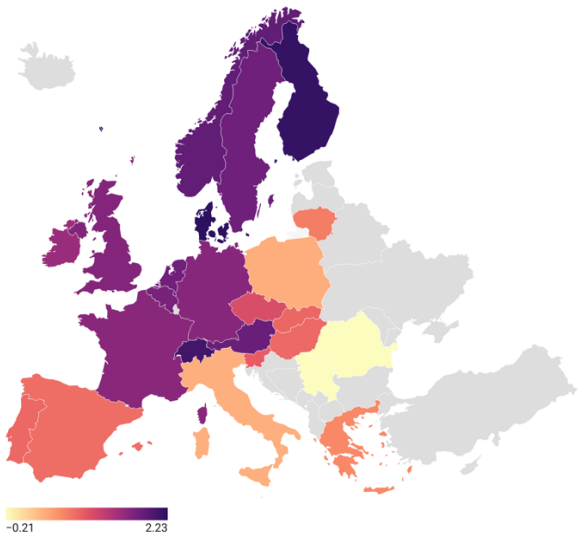
Keywords Resilience, Inherited Values, Culture, Welfare State

1. INTRODUCTION

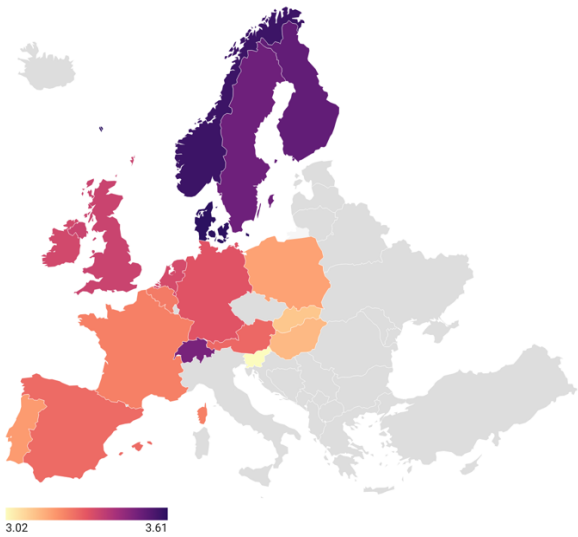
In an era marked by unforeseen global challenges, the concept of resilience has risen to the forefront of both public discourse and academic inquiry. What defines a resilient society? How do we cultivate resilient communities and systems? Why is resiliency an imperative quality in the face of a rapidly changing world? These questions have never been more pertinent, given the profound impact of the recent COVID-19 pandemic, the irreversible consequences of climate change, and the ongoing global refugee crises. Resilience, both on a macro and micro scale, is a multifaceted concept that demands exploration across various dimensions. While the concept of resilience has a long history in various fields, its ascent in social science has been most prominent in the past decade. It is clear that societies across the globe display varying levels of resilience when faced with adversity both at macro- (Figure1A) and micro-level (Figure 1B).

Figure 1 Resilience across Europe in 2006.

A. Government Effectiveness



B. Average Individual Resilience



Source: World Bank Governance Indicators (accessed 15/05/2022) and authors' calculations from European Social Survey (accessed 13/03/2022).

Building resilience in a society necessitates understanding the factors that enable it to withstand crises and adapt to changing circumstances. Equally crucial is the capacity to restore economies and social structures following a severe systemwide disruption. These pursuits have become

central objectives for governments and institutions worldwide, prompting an in-depth examination of the strategies, policies, and interventions that can mitigate crises or guide societies through them. Previous studies have largely focused on the cushioning impact of material resources and specifically on welfare state's ability to buffer negative consequences of system-wide hardships (Stuckler *et al.*, 2009; Kenworthy, Epstein and Duerr, 2011; Nelson, 2012; Visser, Gesthuizen and Scheepers, 2014). While welfare state efforts may develop resiliency, it can be argued that non-material resources that are evaluative in nature, namely long-standing culture, is equally important.

In the pursuit of providing a more nuanced approach, we delve into the often overlooked yet crucial role of long-standing culture. Specifically, we aim to investigate a pivotal and understudied question: to what extent the cross-country differences in resilience are influenced by long-standing cultural traits? We focus on three distinct categories of inherited values: generalized trust, institutional trust, and religiosity. These values are integral components of long-standing culture and have the potential to shape a society's resilience in the face of challenges. By examining whether societies pre-exposed to these specific values due to intergenerational transmission are more or less likely to be resilient, we aim to provide essential insights into the components of societal resilience and the disparities observed across nations following global disturbances. Thus, we aspire to unravel the intricate tapestry of factors that contribute to the resilience of societies, ultimately guiding us toward more effective strategies for building and sustaining resilient communities and systems.

2. BACKGROUND

2.1. Understanding Resilience at Macro and Micro Levels

Referring to the literal meaning of the word, public opinion often defines resilience as "bouncing back", "rebounding" or "returning to normal". Such a definition also resonates with the traditional usage of the word in mathematics and engineering, namely, the the speed of return to to the previous stable equilibrium state (Bodin and Wiman, 2004). However, the term's application has expanded to encompass ecological and societal contexts, allowing for a more systems-oriented perspective. This broader application highlights the capacity of an individual or system to adapt to

disruptions by altering its functioning to maintain or return to a desired state, emphasizing change as a means of resilience (Gunderson, 2000; Hoffman and Hancock, 2017; Walker, 2020).

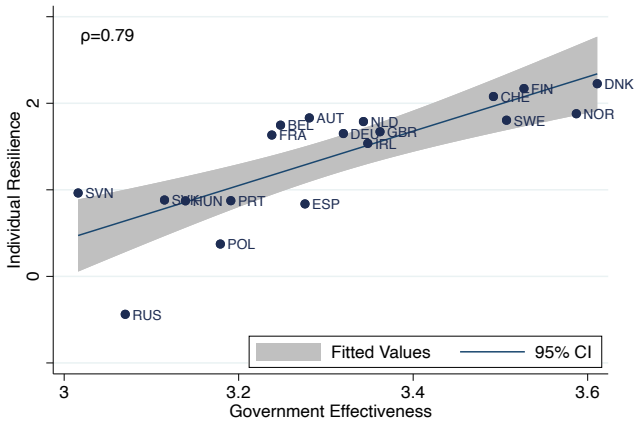
Initially, social sciences undervalued the significance of resilience, particularly during the early 2000s (Olsson *et al.*, 2015). Skeptics questioned its potential contributions to the field. However, the onset of the COVID-19 pandemic, the pervasive impacts of climate change, and an array of global crises have propelled the term resilience into the spotlight. This increased prominence has underscored the need for a more nuanced conceptualization of resilience. Despite numerous attempts across different disciplines to define the concept, its multifaceted nature has established it as both a "boundary object" and a "bridging concept," thus facilitating its interdisciplinary and transdisciplinary advancement (Brand and Jax, 2007). Nonetheless, the inherent complexity and multidimensionality of the concept have posed significant challenges to its operationalization.

From a social science perspective, we propose that a society's resilience operates on two levels: the macro level, referring to entire systems, and the micro level, focusing on individual actors within those systems. Relying on the social-ecological systems resilience approach, system level resilience integrates insights from natural sciences and ecology. It models nature and society as interconnected socio-ecological systems with multiple potential equilibria or stability domains (Holling and Gunderson, 2002). At this macro level, resilience denotes a system's capacity to endure disturbances without experiencing unfavorable regime changes (Holling, 1973). Further, it encompasses the ability to transition between stability states and establish new equilibria when change is unavoidable, underscoring the importance of adaptive capacity (Gunderson, 2000). Following this systemic approach to resilience, at macro level, we focus on the resilience of public institutions, inferring their effectiveness in responding and adapting to large-scale challenges. Differently resilience at the individual level is often conceptualized in psychology as the ability of individuals to negotiate, adapt to, or manage stress and adversity (Luthar and Cicchetti, 2000; Fletcher and Sarkar, 2013). Despite the ongoing debate about whether resilience is an innate trait or a skill developed over time (Leys *et al.*, 2020), the majority of studies conceptualize it as a process influenced by situational and lifelong protective factors.

The theoretical linkage between various levels of resilience lies in the tight interconnectedness and interdependence between individuals and the context they are embedded in, as well as the macro-level actors within that context. Resilience systems, entailing effective governance, robust institutions and policies, provides an environment where individual have access to material and social resources that are likely to bolster their capacity to cope with adversities. Reciprocally, resilient individuals are likely to contribute to the establish more resilient systems, by engaging in community initiatives, supporting policy implementation, and contributing to the robustness and adaptability of institutions. This feedback loop may lead to virtuous or vicious cycles in the long run. Therefore, understanding and addressing these feedback mechanisms is crucial for developing strategies that foster long-term resilience at both the macro and micro levels.

To acknowledge this dynamic interaction, we propose a comprehensive approach that considers both macro-level and micro-level resilience when analyzing the cultural dynamics behind a society's resilience. Correspondingly, our macro-level resilience indicator derived from World Bank's government effectiveness index correlate with our aggregate measure of individual resilience from the European Social Survey data (Figure 2). This correlation suggests that effective governance and institutional quality at the macro level are associated with higher levels of individual resilience. It implies that policies and interventions aimed at enhancing systemic resilience can foster individual resilience. Conversely, cultivating individual resilience can contribute to the stability and adaptability of systems. Thus, fostering resilience at both levels is essential for building robust societies that can endure and prosper amid challenges.

Figure 2 Correlation between government effectiveness and individual resilience aggregated at the country level.



Source: World Bank Governance Indicators (accessed 15/05/2022) and authors' calculations from European Social Survey (accessed 13/03/2022).

2.2. Can long-standing cultures explain variations in resilience?

Though culture is a highly complex construct to conceptualize, the sociological study of culture often agrees that the concept yields a variety of constitutive elements, including models and values (Patterson, 2014). The models resemble the procedural aspects of culture, composed of prevalent knowledge structures and practices which provide predictability and continuity to the actions and social interactions taking place in society. Differently, values represent the evaluative dimension. They operate at the micro level and get transmitted across generations (Glass, Bengtson and Dunham, 1986; Rohan and Zanna, 1996). They refer to individuals' evaluations, prioritizations, and preferences, thus reflecting how desirable the means and ends of action are (Hitlin and Piliavin, 2004).

When faced with adversity, societies demonstrate great variation regarding their perception of what constitutes a risk, severity assessment, and coping mechanisms. Almost all governments respond to crises through policies and interventions. Yet the political system's capacity to recover after disruptions, adapt to change, and ability to continue its practices differ considerably. Values may provide a critical explanation for these differences in resilience (Rogers, Bohland and Lawrence, 2020).

Finally, an important question is: what values should matter for resilience, and in which direction? In a time of stress, we presume that individuals tend to turn to and rely on their communities, existing and functioning institutions, or religious faith. Therefore, we argue that three values may impact resilience: generalized trust, institutional trust, and religiosity.

2.2.1. Generalized trust

Generalized trust refers to the level of trust that an individual in a society gives to a fellow individual who is neither a family member nor an acquaintance from the past (Aassve, Billari and Pessin, 2016). In contrast to particularized trust, denoting the faith placed on known others, generalized trust is not relational (Yamagishi and Yamagishi, 1994). Rather it is the belief on "the benevolence of human nature in general" (Yamagishi and Yamagishi, 1994, p. 139) and "the perception that most people are part of your moral community" (Uslaner, 2002, p. 26). The optimism underlying generalized trust is based on individuals' collective experiences and morals; therefore, it is not constant in the short term. Nevertheless, when observed over the long run, the level of generalized trust in society remains fairly stable (Uslaner, 2002). Also, from a comparative perspective, the disparities between societies are likely to persist in the long term (Bjørnskov, 2007).

Social scientists have studied the role of trust in society for a long time (Simmel, 1978; Durkheim, 1984). It often demonstrated a positive pattern with high trusting countries or regions being more likely to have better functioning governments and democracies, robust institutions, higher performing economies, more economic growth and less corruption (Putnam, 1994; Fukuyama, 1995; Verba, Schlozman and Brady, 1995; Zak and Knack, 2001; Uslaner, 2002; Beugelsdijk, De Groot and Van Schaik, 2004; Inglehart, 2020). Further, high levels of social trust enables efficient mobilization and coordination of resources – essential for systems to adapt and maintain functionality in the face of disruptions – by fostering social cohesion, facilitating collective action and promoting effective governance (Putnam, 2000).

At micro-level, individuals with higher generalized are more likely to engage in social activities, have larger supportive social networks and contribute more to their communities (Helliwell and

Putnam, 2004; Paxton, 2007). Such social engagement fosters mental wellbeing and coping mechanism in face of adversity by enabling individual to seek help when needed, get easier access to resources via their networks and acquire a sense of belonging.

Thereby, we argue that high levels of generalized trust may enhance resilience both at macro and micro levels and suggest the following hypothesis:

Hypothesis 1: Countries where individuals report stronger trust toward others are more likely to have higher levels of resilience both at macro and micro levels.

2.2.2. Institutional Trust

Institutional trust refers to an individual's or group's confidence in the competence, reliability and benevolence of institutions. It also denotes the perceived likelihood that the institutions will effectively fulfill their responsibilities and achieve public goal (McKnight and Chervany, 2000; Hudson, 2006). At macro level, higher institutional trust is likely to enhance resilience by ensuring public cooperation, mobilization of resources and enforcement of regulations. Institutions and systems perceived as transparent, fair and effective are more likely to get public support and participation, which facilitates the implementation of emergency measures and large-scale recovery strategies (Fukuyama, 1995). At micro level, previous studies have shown that trust in institutions is linked with reduced stress and mental health problems (Thoresen *et al.*, 2018; Nilsen *et al.*, 2019), increased perceived efficacy (Olagoke, Olagoke and Hughes, 2020) and individual wellbeing (Hudson, 2006). Further, it has proven to be a crucial element of crisis management and improved resilience during system wide disruptions (Tang and Wong, 2005; Blair, Morse and Tsai, 2017; Oh and Lee, 2022; Tong *et al.*, 2022). In line with this, we suggest the following hypothesis:

Hypothesis 2: Countries where individuals report higher institutional trust are more likely to have higher levels of resilience.

2.2.3. Religiosity

Attachment to religious beliefs may help individuals or communities to cope with adversities through numerous channels. One line of argument stems from its social and participatory dimension, namely religion's capacity to offer personal networks and support among like-minded people (Durkheim, 1951; Simmel, Helle and Nieder, 1997). Scholars argue that distinct from other social networks, religious networks may arise greater sense of comfort as its composed of individuals who share similar beliefs about the practice and meaning of helping (Ellison and George, 1994). Further, such companionship may promote a sense of belonging thus enhance mental and physical health (Krause and Wulff, 2005). Another argument derives from the religious meaning, particularly faith and spiritual experience. Previous studies suggest that religion offers a comprehensive framework for interpreting the world thus provide an a sense of meaning and purpose in life, existential security against adversities and a degree of certainty even when world events are highly unpredictable (Emmons, Cheung and Tehrani, 1998; Inglehart, 2010; Immerzeel and Van Tubergen, 2013). Against this backdrop, we expect high levels of religiosity to be associated with higher resilience at macro and micro level. Thus, we put forth the following hypothesis:

Hypothesis 3: Countries where individuals report higher religiosity are more likely to have higher levels of resilience.

2.3. The Impact of Welfare State

It is important to note that the presence of a strong and comprehensive welfare state can significantly influence resilience. The welfare state represents a policy framework that stems from deeply ingrained cultural values and can either bolster or hinder a nation's ability to respond to and recover from various challenges. By providing both material and immaterial support, which may be fundamental for resilience, it might be in competition with various immaterial providers, including family, friends, and even religious institutions like the church (Popenoe, 1988). It can be a critical component of a nation's macro-level resilience through its capacity to manage and recover from systemic challenges, such as economic downturns or public health crises. For instance, a strong welfare state can help stabilize the economy during downturns and ensure that individuals and families have access to essential services, thus reducing the overall societal impact

of such crises. Further, it can serve as a key component of a country's social safety net, through a range of social services, including unemployment benefits, healthcare and education, which can have a substantial impact on the micro-level resilience of individuals. On this backdrop, we propose the following hypothesis:

Hypothesis 4: Countries where welfare state is more comprehensive/generous are likely to demonstrate higher levels of resilience at macro- and micro-level.

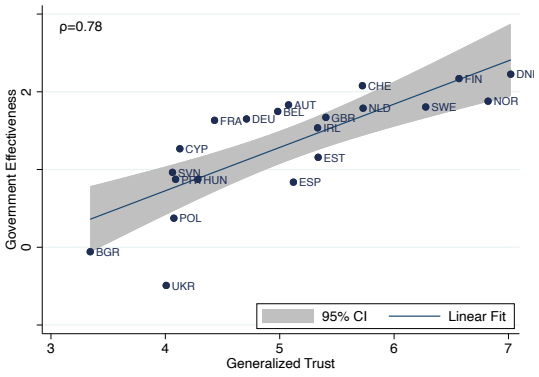
3. ANALYTICAL STRATEGY

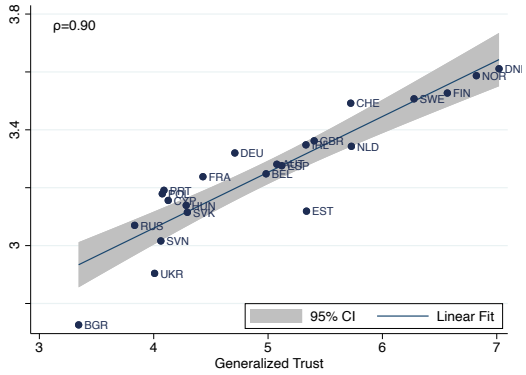
The hypotheses stated above can be tested using data on a society's resilience levels and values measured through cross-country surveys. We perform this at both system (macro) and individual (micro) levels for the year 2006. We retrieve data on system level resilience using the government effectiveness index elaborated by the World Bank evaluates the efficiency of public services, the quality and independence of civil service, the quality of policy formulation and implementation, and the government's commitment to these policies (Kaufmann, Kraay and Mastruzzi, 2011; Kaufmann and Kraay, 2023). Countries are rated on a scale from -2.5 to 2.5, where higher values signify more effective governance. To ensure a thorough assessment of government performance, the data used to compile the index are derived from multiple sources, including international organizations, private sector, and public institutions.

Further we get the data on individuals' self-reported resilience aggregated at the country level and on country-averaged measures for three values of our interest from the European Social Survey (ESS) (2018). Figure 3 demonstrates the bivariate correlation between values and macro- and micro-level resilience. Specifically, higher generalized trust (Figure 3a) and institutional trust (Figure 3b) is associated with higher resilience at the macro and micro levels. Differently, we observe only a weak positive correlation for the case of religiosity (Figure 3c).

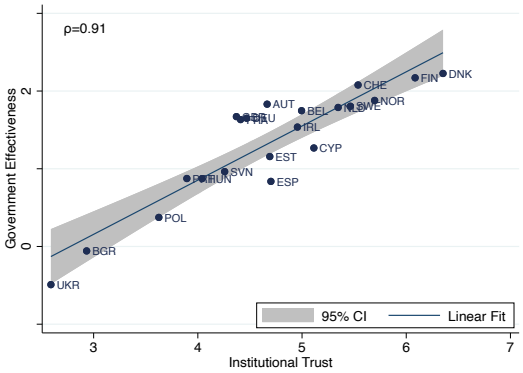
Figure 3 Correlation between values and resilience measured in 2006.

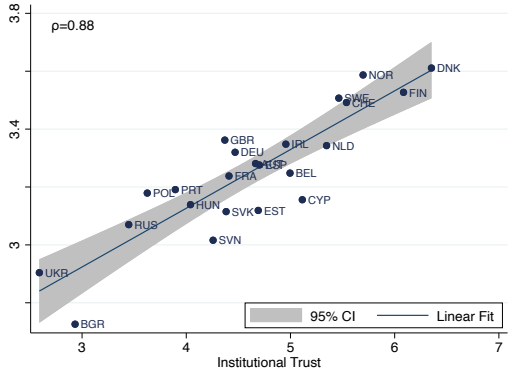
A. Generalized Trust



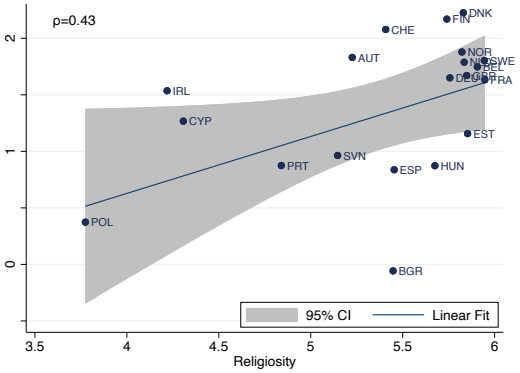


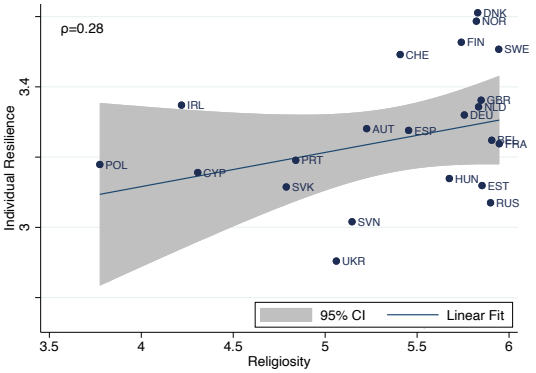
B. Institutional Trust





C. Religiosity





Source: World Bank Governance Indicators (accessed 15/05/2022) and authors' calculations from European Social Survey (accessed 13/03/2022).

Nevertheless, due to two empirical problems, these results are only suggestive, and their support for our hypotheses is critically limited. Firstly, the country-averaged measures for the values are not isolated from their environment. Therefore, rather than capturing the cultural core, we might be measuring a value highly contaminated with the contemporary socio-economic context. Secondly, through this method, we risk reverse causality. The direction of the observed association between the two variables might be the opposite of what we anticipated, meaning that resilience might be a determinant of values. To overcome the empirical challenges, it is crucial to exploit the values of previous generations. As these generations did not live in the current socio-economic context, it is very unlikely that their values are impacted by contemporary resilience. And the time difference between the measurement of the two variables will eliminate the risk of any confounding variables.

The major drawback of this approach is the lack of data on the values of previous generations that are both standardized and have sufficient geographic coverage. For instance, important databases for value measurement, such as the World Values Survey, dates back only to the early 1980s. Since we cannot directly observe the values of previous generations, we proxy the inherited values of current generations based on the process of value formation. Accordingly, the values of a current generation are in part determined by the values they inherited through intergenerational transmission. To differentiate the inherited components from the contemporary environmental influence, we adopt the epidemiological approach, which exploits migrants' descendants in a single destination country (Algan and Cahuc, 2010).

Accordingly, our analytical strategy is composed of two stages. In the first stage, we estimate the inherited values of people living in a certain country by exploiting the values of individuals whose ancestors have migrated from country c to the US. Specifically, we build a regression equation that predicts the contemporary values, in which we also include dummy variables for country-of-origin. Then we take the coefficient of the country-of-origin variable, namely country-of-origin fixed effects, as our estimate for inherited values. Finally, in the second stage, we separately analyze the impact of proxied inherited values on macro- and micro-level resilience.

The epidemiological approach that we employ offers unique strengths. One of the primary strengths is its capacity to reconstruct historical value patterns and provide a proxy for inherited values in settings where historical data is unavailable. By analyzing the descendants of migrants within the same contemporary country it accounts for confounding factors acquired through the immediate circumstances, thereby providing a controlled environment. Furthermore, as it also controls for numerous individual-level factors, we can isolate the inherited components of values from the contemporary measurements. This aspect of the approach is invaluable as it offers clearer insights into intergenerational value transmission and how past cultural values have been retained or transformed over time.

However, the epidemiological approach is not without its limitations. Focusing on migrants' descendants may not accurately represent the broader population, thereby introducing the risk of selection bias. Migrant groups often have unique characteristics or undergo historical experiences that differentiate them from non-migrant groups. For example, the drivers of migration as well the challenges of migration and adaptation to the new environments might have altered their value systems. Additionally, migrants may come from varied socio-economic and cultural backgrounds, for example economic migrants from rural areas or political migrants might not be reflective of the overall population.

Despite these potential biases, the epidemiological approach attempts to mitigate them by controlling for a wide range of socio-economic and demographic variables, thereby ensuring that the inherited values observed are not unduly influenced by the unique characteristics or experiences of migrants. This comprehensive control helps to reduce the impact of selection bias and allows for more accurate proxy of values inherited through intergeneration transmission.

3.1. First Stage: Micro/Individual Level Data and Estimation of Inherited Values

The epidemiological approach that we adopt at the first stage is based on the argument that value formation is dependent on two major forces: the contemporary environment and inheritance from earlier generations (Benabou & Tirole, 2006; Bisin et al., 2004; Bisin & Verdier, 2001; Tabellini,

2008, as cited in Algan & Cahuc, 2007). Therefore, in cases where we don't have access to previous cohorts' reported values, we can proxy the inherited culture by differentiating it from the contemporaneous environment. To do so, we exploit the intergenerational cultural transmission path across immigration cohorts. This identification assumes that inherited values are not immediately overdetermined by the contemporary characteristics of the country where individuals reside (Algan and Cahuc, 2010).

We retrieve the values of individuals from the US General Social Survey (GSS), a database that includes rich information regarding specific values, birthplace, and ancestorial country of origin. In GSS, respondents are asked to specify up to 3 countries of origin and select the one they feel closest to; this allows for determining the ancestorial country of origin. Also, the questions regarding the birthplace of respondents, as well as their parents and grandparents, enable us to identify four immigration waves: fourth-generation Americans (more than two grandparents born in the US and both parents born in the US), third-generation Americans (at least two grandparents foreign-born, and both parents were born in the United States), second-generation Americans (at least one parent born abroad) and first-generation Americans. We exclude first-generation Americans since they are personally exposed to their country of origin. This direct exposure to the origin country may cause endogeneity issues. To further ensure that the measure of values is not driven by direct exposure to the origin country, we adopt a lag of 25 years. This implies that values are measured at least 25 years before the measurement of country-specific resilience level.

Assuming that all people alive contribute to "average values" for a given period and that there is a 25-year difference between two generations, thus the values for a year T are measured as:

i. second-generation Americans born before $T - 25$
ii. third-generation Americans born before $T - 25 + 25$
iii. fourth-generation Americans born before $T - 25 + 50$

We based our measurement of each value on individuals' answers to related questions in the GSS. Generalized trust is measured through a question taken from Rosenberg's ''faith in people'' scale (1956): "Generally speaking, would you say that most people are trusted or that you can't be too careful in dealing with people?" (Sturgis & Smith, 2010). This is frequently employed as a measurement of generalized trust in social sciences. The answers "most people can be trusted"

corresponds to a high level of generalized trust, "can't be too careful" implies low, and "depends" is a medium level of trust.

Religiosity is measured through "How often do you attend religious services?". This question is frequently used in questionnaires to estimate a population's religious practice level. The answers are reported with a 10-point scale spanning from "Never" to "Several times a week." We recoded the answers such that the religiosity level increases as one moves from "never" to "several times a week."

Previous works proposed numerous ways of assessing institutional trust from the GSS (Brehm and Rahn, 1997; Cook and Gronke, 2005). For obtaining a variable that reveals individuals' level of approval of institutions in general, without reference to any specific one, we generated a generalized institutional trust variable using all institutions available in the questionnaire. Institutional trust is volatile due to its dependence on current political and economic circumstances. However, by using a more generalized measurement of institutional trust, we expect it to be more stable. In GSS, presented with 13 institutions[1], individuals are asked to report their level of confidence in each using a 3-point scale: *"As far as the people running these institutions are concerned, would you say you have a great deal of confidence, only some confidence, or hardly any confidence at all in them?"* Using answers to all 13 institutions for principal component analysis, we construct a standardized index where higher values imply greater trust.

Equation 1 describes the first stage estimation to measure inherited values:

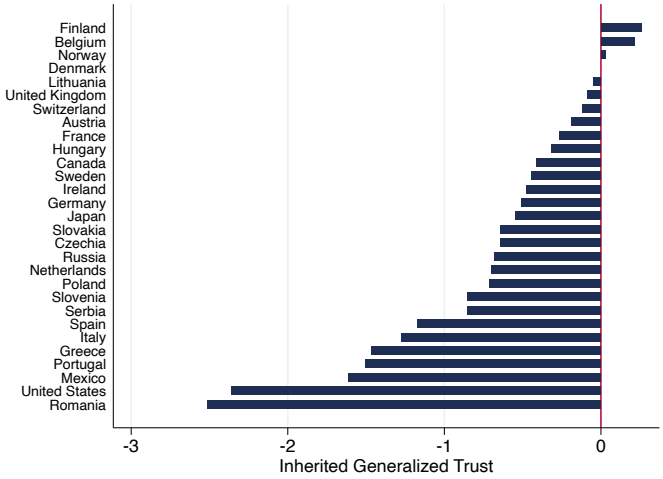
$$V_{ict} = \alpha_0 + \alpha_1 F_c + \alpha_2 \mathbf{X}_{ict} + \varepsilon_{ict} \quad (1)$$

[1] The presented institutions include banks and financial institutions, major companies, organized religion, education, executive branch of the federal government, organized labor, press, medicine, TV, US supreme court, scientific community, congress and military.

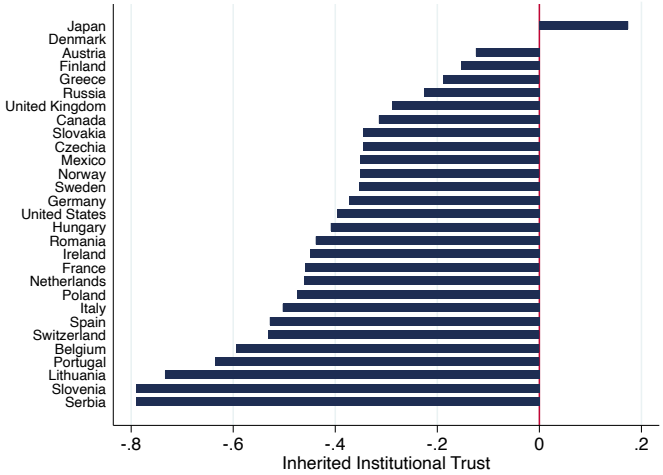
where the value measure V of individual i in year t (whose country-of-origin is c) is regressed on a set of dummy variables indicative of the respondent's country of origin (F_c), and socio-economic characteristics such as age group, sex, educational attainment, social class, employment status, religion, region of interview and generation of immigration (X_{ict}). The coefficients for the country-of-origin dummy variables (α_1) capture the inherited component of culture and are used at the second stage (country level) analysis as the predictors of resilience. The model is identified by omitting one country dummy, Denmark. As this renders Denmark the reference country, the coefficients indicate the difference in the average level of inherited values relative to Denmark (Figure 4). Due to limited data availability in resilience, we estimate the model only for 2006. For each inherited value, the distribution of the sample by country of origin, age, sex, and educational attainment is demonstrated in Appendix (Table A1).

Figure 4 Country averages for inherited values relative to Denmark.

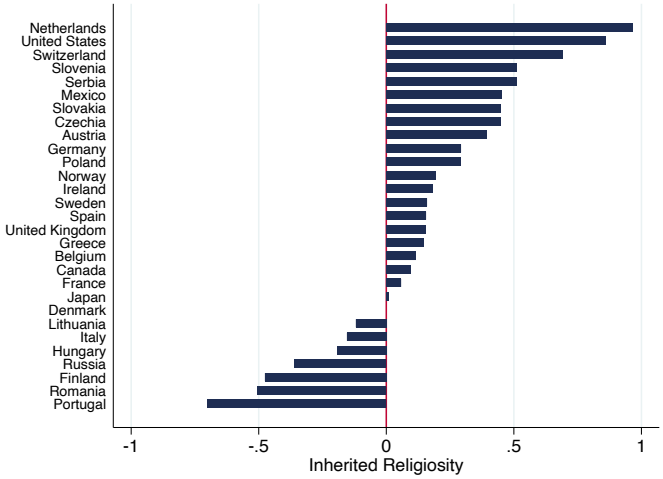
A. Inherited Generalized Trust



B. Inherited Institutional Trust



C. Inherited Religiosity



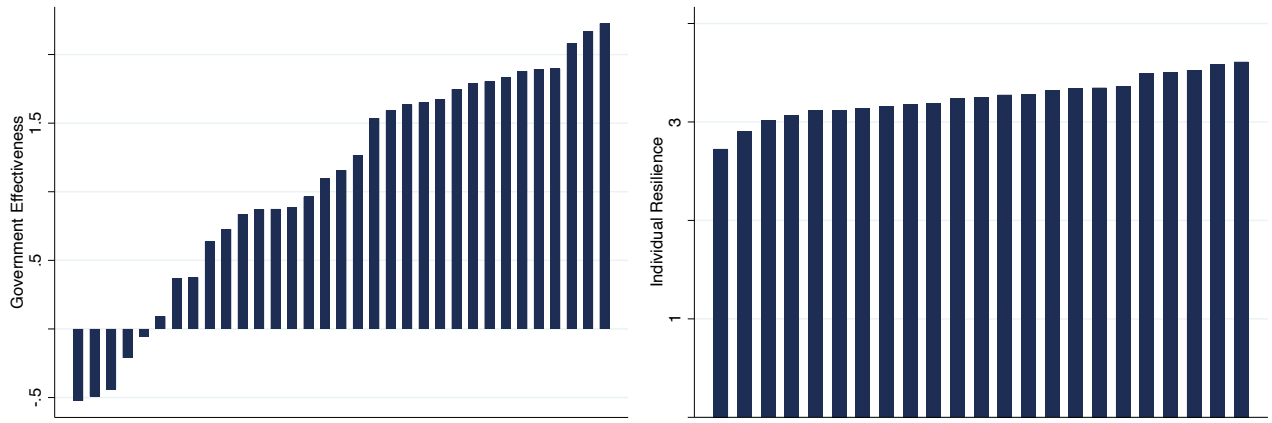
Source: Author's calculation from US General Social Survey (1972–2016).

3.2. Second Stage: Macro/Country Level Data and Analyses

We use two types of resilience measures in our analysis: and macro (government level) indicator of resilience and micro (individual level) resilience aggregated at the country level. The macro-level resilience measurement comes from the World Bank's governance indicators, specifically the governance effectiveness index (Kaufmann and Kraay, 2023). This is an aggregate measure composed of the quality of public services, civil service, policy formulation, policy implementation, and credibility of a government's commitment to such policies. The score of the countries ranges from -2.5 to 2.5. The micro-level comes from the European Social Survey (2018), which records the self-reported resilience of individuals through the question, *"Using this card, please tell me to what extent you agree or disagree with each of the following statements: When things go wrong in my life, it generally takes me a long time to get back to normal."* The answers span in a range of 1-5, 1 corresponding to "*Strongly Agree*" and 5 corresponding to *"Disagree Strongly"*. We recoded them reversely so that higher values correspond to stronger resilience then we aggregated the individual level values at the country level. Figure 5 demonstrates the estimated country averages of micro- and macro-level resilience measures.

We use two types of independent variables to account for the impact of welfare state in different models. First, we generated a categorical variable based on Esping-Anderson's renowned theory outlining the types of welfare regimes according the way they structure and provide social welfare and income security (1990). Secondly, to consider welfare state generosity, we drew data on social expenditure per head of the population (in 1000s euro) for 2006, from Eurostat (2023). Including both Esping-Anderson's categorical variable and social expenditure per head in different models allows for a comprehensive analysis of how welfare state structures and generosity impact resilience. The categorical variable offers insights into the structural aspects of welfare regimes and controls for confounding factors, while social expenditure provides a more accurate and quantitative assessment of actual resources allocated towards social welfare. By using both indicators, thereby including nuanced ways in which welfare state can influence resilience dynamics we enhance the robustness of our findings.

Figure 5 Government effectiveness and individual resilience aggregated at country level in 2006



Source: World Bank Governance Indicators (accessed 15/05/2022) and authors' calculations from European Social Survey (accessed 13/03/2022).

The impact of long-standing inherited values on a country's resilience levels can be represented with the following linear equation:

$$\text{Resilience}_{ct} = \beta_0 + \beta_1 \widehat{\alpha_1}_{ct} + \beta_2 W_{ct} + e_{ct} \quad (2)$$

Where Resilience_{ct} is the resilience level of country c in year t, $\widehat{\alpha_1}_{ct}$ is the average level of a given value estimated at the individual level during 1st stage, the W_{ct} is the welfare state regime category or logarithmic transformation of total social expenditure per inhabitant, and e_{ct} is the error term. Descriptive statistics for all variables are reported in Appendix (Table A2).

4. RESULTS

Tables 1-3 report coefficients for 18 models estimating the impact of inherited values, namely generalized trust, institutional trust and religiosity on government efficiency and self-reported resilience aggregated at the country level. For each table, the first three models consider government efficiency as the independent variable. While the first demonstrates the bivariate relationship, the second includes controls for welfare regime types, namely social-democratic,

conservative, liberal, and post-communist regimes and the third includes the log of total social expenditure per inhabitant (in euros). Further, to test the robustness of our results, latter three models take aggregated self-reported resilience as the dependent variable. Among them the fourth exhibit the bivariate relationship, the fifth model controls for welfare regime types and the last includes the log of total social expenditure per inhabitant (in euros). Before moving on to the examining the results, it is worthwhile to note that for all tables the number of observations for the first three models taking system resilience as the dependent variable is higher compared to the latter three models considering aggregated individual resilience as the dependent variable.

Turning first to the impact of inherited generalized trust on resilience (Table 1 & Figure 6). In the bivariate model, we see that the inherited generalized trust has a sizable and statistically significant positive impact on government efficiency (b=0.64, significant at 0.01). Further, when we control for welfare regime types in the second model, we see that the inherited generalized trust is still statistically significant at the same level but there is slight decrease in the magnitude of impact (b=0.49, significant at 0.01). The coefficients for two welfare regime categories, conservative and post-communist, are statistically significant and negative. Meaning that compared to the base category, the social-democratic welfare regime, government effectiveness is significantly lower in conservative and post-communist welfare regimes. In the third model, when we control for total social expenditure, we observe that inherited generalized trust is statistically significant at the same level and magnitude (b=0.49, significant at 0.01). Plus, the coefficient for social expenditure is positive and significant (b=0.43, significant at 0.01), implying that increased social expenditure is linked with higher resilience. In the fourth model, where aggregated self-reported resilience is the dependent variable, we observe that though smaller in magnitude and significance, the inherited generalized trust has a positive and statistically significant impact (b=0.21, significant at 0.05%). As we control for welfare regimes in fifth model, the significance dissipates, and the coefficient approaches closer to zero (b=0.04). Here all welfare regime categories appear significant and negative, implying that compared to the base category social-democratic welfare regime, self-reported resilience is lower in all other welfare regimes. Finally in the sixth model, when we control for total social expenditure, the magnitude of impact of inherited generalized trust (b=0.08) is again relatively smaller than the fourth model and not significant. The coefficient for social expenditure is positive and statistically significant (b=0.15, significant at 0.01).

Turning to inherited institutional trust (Table 2 & Figure 7), we see that the bivariate relationship between the inherited value and government effectiveness is positive and significant (b=1.22, significant at 0.05). Yet this significance completely dissipates and the coefficient approaches near zero when we control for welfare regime types (b=0.24). The coefficients for two welfare regime categories, are statistically significant and negative, meaning that compared to the social-democratic welfare regime, government effectiveness is significantly lower in conservative and post-communist welfare regimes. In the third model, when we control for total social expenditure, we observe that the impact of inherited institutional trust is not significant (b=0.51) and social expenditure is significant and positive (b=0.58, significant at 0.01). Further, we observe a similar pattern between the first two models when we take aggregated self-reported resilience as the dependent variable. Specifically in the fourth model, the inherited institutional trust has certain positive and significant impact (b=0.45, significant at 0.05) yet this significance dissipates and magnitude declines when welfare regime controls are added in the fifth model (b=0.10). Here all welfare regime categories appear significant and negative, suggesting that compared to the social-democratic welfare regime, self-reported resilience is lower in all other welfare regimes. Differently in the last model, we observe that inherited institutional trust still has a positive and significant impact while controlling for total social expenditure (b=0.36, significant at 0.05) and total social expenditure is positively linked with aggregated individual resilience (b=0.36, significant at 0.05).

Finally, for the case of inherited religiosity (Table 3 & Figure 8), we observe that the bivariate relationship between the inherited value and government effectiveness is not significant. Yet, it becomes significant when we control for welfare regimes (b=0.43, significant at 0.01). The coefficients of all welfare regime categories are significant and negative, suggesting that compared to the social-democratic welfare regime, government effectiveness is lower in all other welfare regimes. In third model, when we control for social expenditure, we still don't observe a significant impact for religiosity yet the coefficient for social expenditure is positive and significant (b=0.60, significant at 0.01). Likewise, a similar pattern appears when we consider self-reported aggregated resilience as the dependent variable. In fourth model, the inherited religiosity is not significant, yet when controlled for welfare regimes the coefficient becomes significant (b=0.07, significant at 0.05%). Again, all welfare regime categories are significant and negative, implying that compared

to the social-democratic welfare regime, self-reported resilience is lower in all other welfare regimes. Lastly in the sixth model, when we control for total social expenditure, the inherited religiosity is not significant and the coefficient for total social expenditure is positive and statistically significant (b=0.18, significant at 0.01). The results for the micro-level resilience is robust when the inherited religiosity is measured by considering the belief dimension, namely when the indicator is constructed using questions on the importance of religion and belief in god (Reported in Appendix Table A3).

Table 1 Impact of Inherited Generalized Trust on Resilience

	Government Effectiveness			Aggregated Individual Resilience		
	1	2	3	4	5	6
Inherited Generalized Trust	0.64***	0.49***	0.49***	0.21**	0.04	0.08
	(0.21)	(0.13)	(0.13)	(0.08)	(0.03)	(0.06)
Welfare Regime Type (Reference: Social Democratic)						
Conservative		-0.45***			-0.27***	
		(0.16)			(0.04)	
Liberal		0.05			-0.15***	
		(0.17)			(0.05)	
Post-communist		-1.19***			-0.43***	
		(0.22)			(0.04)	
Social Expenditure			0.43***			0.15***
			(0.08)			(0.03)
Observations	29	29	23	19	19	18
R2	0.33	0.73	0.87	0.32	0.91	0.62

Note: OLS regressions. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Figure 6 Resilience by Inherited Generalized Trust

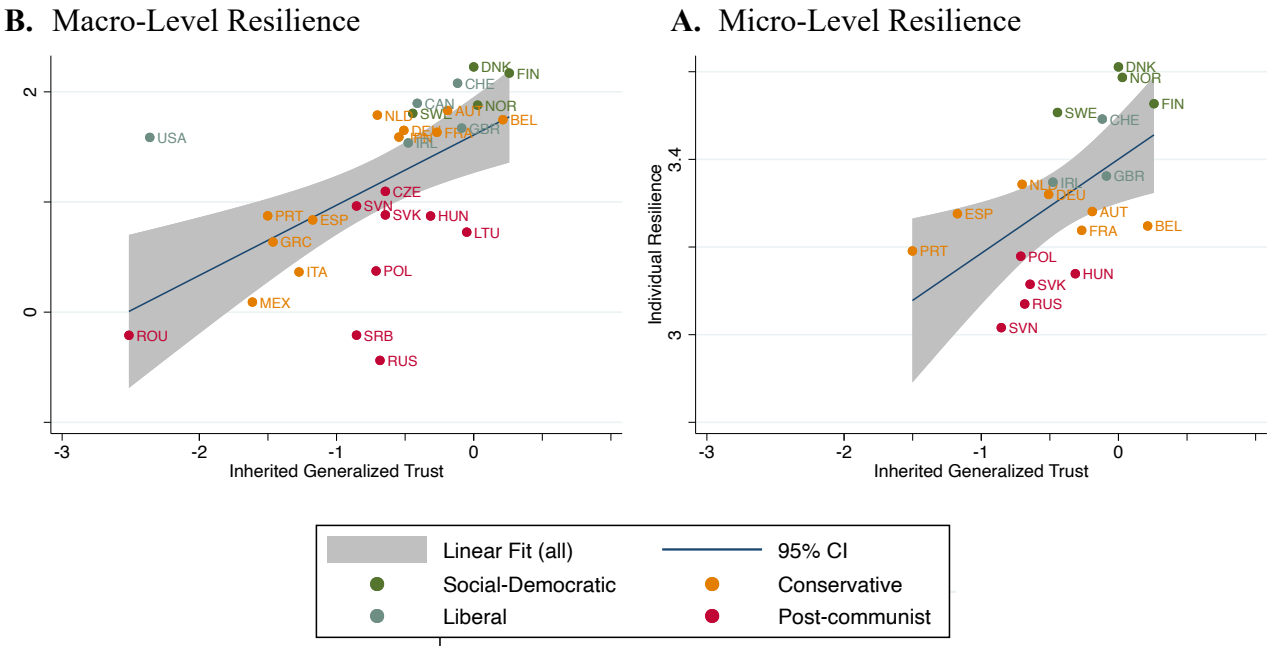


Table 2 Impact of Inherited Institutional Trust on Resilience

	Government Effectiveness			Aggregated Individual Resilience		
	1	2	3	4	5	6
Inherited Institutional Trust	1.22**	0.24	0.51	0.45**	0.10	0.36**
	(0.53)	(0.52)	(0.44)	(0.17)	(0.08)	(0.14)
Welfare Regime Type (Reference: Social Democratic)						
Conservative		-0.80***			-0.26***	
		(0.23)			(0.03)	
Liberal		-0.22			-0.14**	
		(0.16)			(0.05)	
Post-communist		-1.50***			-0.43***	
		(0.29)			(0.04)	
Social Expenditure			0.58***			0.15***
			(0.08)			(0.03)
Observations	29	29	23	19	19	18
R2	0.12	0.57	0.72	0.24	0.91	0.73

Note: OLS regressions. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Figure 7 Resilience by Inherited Institutional Trust

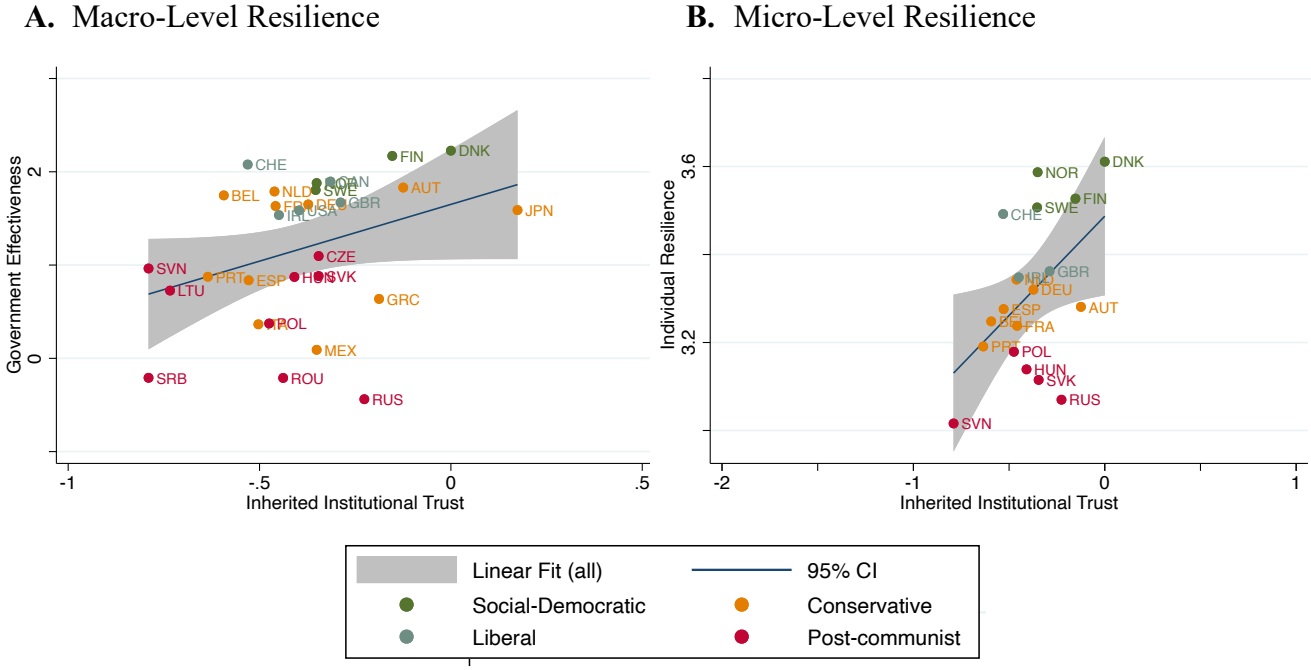


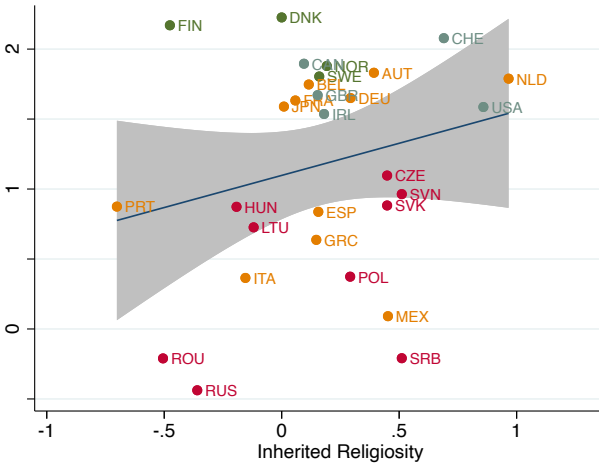
Table 3 Impact of Religiosity on Resilience

	Government Effectiveness			Aggregated Individual Resilience		
	1	2	3	4	5	6
Inherited Religiosity	0.46	0.43*	0.17	0.02	0.07**	-0.06
	(0.38)	(0.24)	(0.23)	(0.10)	(0.03)	(0.07)
Welfare Regime Type (Reference: Social Democratic)						
Conservative		-0.91***			-0.30***	
		(0.24)			(0.03)	
Liberal		-0.45**			-0.18***	
		(0.20)			(0.04)	
Post-communist		-1.63***			-0.47***	
		(0.24)			(0.04)	
Social Expenditure			0.60***			0.18***
			(0.09)			(0.04)
Observations	29	29	23	19	19	18
R2	0.05	0.60	0.71	0.00	0.93	0.60

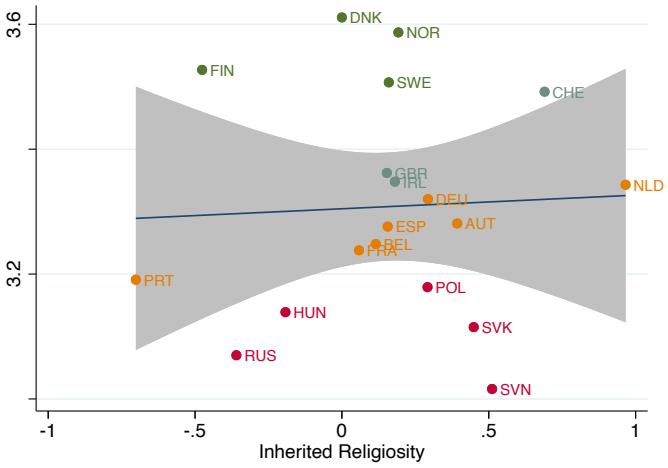
Note: OLS regressions. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

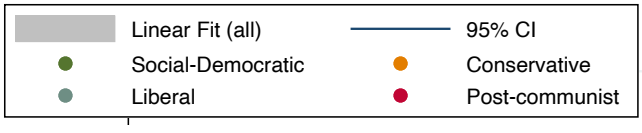
Figure 8 Resilience by Inherited Religiosity

A. Macro-Level Resilience



B. Micro-Level Resilience





5. CONCLUSION

This study has examined the impact of inherited values on resilience at both the macro and micro levels, providing significant insights into the role of cultural traits in societal and individual responses to global crises. Two main findings can be drawn from our research. While inherited values generally play a role in the development of resilience, the strength and significance of these relationships vary, specifically when institutional frameworks are accounted for. For instance, generalized trust and institutional trust show positive and significant associations with resilience. Though this relationship remains robust for generalized trust, a slight decrease in magnitude occurs when welfare regimes and social expenditures are controlled for, suggesting that the value's influence is partially mediated by institutional and welfare factors. Differently, the significance of inherited institutional trust vanishes completely when welfare regimes and social expenditure are included, implying that institutional trust alone is not sufficient for enhancing government effectiveness; supportive welfare policies are also essential. Although there is higher variation, for both trust variables, similar patterns of diminishing significance and magnitude are observed at the micro level. Therefore, it can be argued that effective welfare states can complement and enhance the resilience benefits of inherited trust values. The context-dependent role of inherited religiosity is rather distinctive, the significance of religiosity, on both macro and micro resilience, emerges only when accounting for welfare regimes. This observation implies that, beyond the material and immaterial support sustained by the welfare state, inherited religiosity may enhance resilience through various channels including social, participatory and spiritual dimensions.

Secondly, the presence of a comprehensive or generous welfare state is a critical and significant factor enhancing resilience at both levels. This can be explained through the idea that a generous and universal welfare state may thrive the system's resilience through improved human capital and enhanced social cohesion. Likewise, it can improve citizens' actual and perceived capability of bouncing back from a difficult situation through an inclusive, widespread social safety net.

As with all papers, ours has several limitations. Firstly, since resilience has gained momentum in social sciences only in the past decade, there is a scarcity of data concerning macro- and micro-level resilience. Therefore, our second stage analysis is done with relatively small samples.

Second, our approach prioritizes the local culture. It does not address the argument suggesting that culture can operate both on a local and global level. For instance, we do not consider the supra-national cultural factors that reinforce or hinder resilience. Nevertheless, we believe that our consideration isolating local culture for understanding resilience is important and innovative in the sense that it will open new areas for research and discussion.

Notwithstanding these limitations, our study has four key strengths. First, we empirically tested the societal values that we expected to impact resilience. Specifically, we focus on generalized trust, institutional trust, and religiosity. In a time of stress, we presume that individuals turn to and rely on their communities, existing and functioning institutions, or religious faith. Therefore, our focus on the three values provides a comprehensive perspective on the link between resilience and long-standing culture. Second, by adopting the epidemiological approach, we extract the inherited component of values rather than the current values, which are influenced by numerous contemporary socio-economic factors, including resilience itself. Therefore, our model mitigates a fundamental risk of bias. Third, we construct a database of long-standing societal values and macro/micro level resilience measures, which can be developed further to provide a finer-tuned cultural approach to resilience. Fourth, the critical insight that we provide regarding the components of a society's resilience can be used to explain, to some extent, the cross-national discrepancies we observe after global disturbances. To cultivate and maintain resilient societies, it is essential to adopt a holistic approach integrating cultural values with supportive welfare policies. Future research should further investigate these interactions, taking into account both local and global cultural frameworks, to improve our comprehension and capacity to foster resilience in an increasingly interconnected world.

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APPENDIX

Table A1 For each inherited value, the sample size by country of origin, age, sex, and inherited values.

	Inherited Generalized Trust	Inherited Institutional Trust	Inherited Religiosity
Country of Origin			
Austria	97	106	147
Belgium	30	32	57
Canada	339	320	527
Czechia	269	255	396
Denmark	148	149	231
Finland	95	104	151
France	434	422	669
Germany	3807	3699	5772
Greece	75	74	119
Hungary	97	97	153
Ireland	2810	2668	4287
Italy	1202	1131	1827
Japan	39	36	61
Lithuania	54	60	87
Mexico	510	456	807
Netherlands	304	295	479
Norway	387	362	596
Poland	585	584	889
Portugal	63	57	97
Romania	22	18	36
Russia	228	227	389
Serbia	79	78	126
Slovakia	269	255	396
Slovenia	79	78	126
Spain	174	163	264
Sweden	368	361	570
Switzerland	99	93	149
United Kingdom	3654	3550	5586
United States	602	556	935
Generation			
2nd Generation	1360	1368	2165
3rd Generation	3726	3616	5714
4th Generation	11485	10969	17528
Age			
18-29	3143	3260	4871

20-29	3625	3578	5466
30-39	3037	2944	4669
40-49	2571	2527	3996
50-59	2188	2025	3358
60-69	1386	1154	2116
+80	621	465	931
Sex			
Male	7624	7555	11611
Female	8947	8398	13796
Educational Attainment			
Less than high school	2176	1976	3366
High school	8853	8608	13557
Junior	1097	1045	1672
Bachelor	3070	2989	4618
Graduate	1375	1335	2194
Family Income			
under $1,000	142	134	219
$1,000 to $2,999	211	194	325
$3,000 to $3,999	223	228	346
$4,000 to $4,999	206	196	340
$5,000 to $5,999	261	243	390
$6,000 to $6,999	225	212	365
$7,000 to $7,999	295	295	454
$8,000 to $9,999	491	482	766
$10,000 to $14,999	1527	1593	2402
$15,000 to $19,999	1354	1389	2103
$20,000 to $24,999	1537	1561	2370
$25,000 or more	10099	9426	15327
Employment			
Working full time	8722	8628	13296
Working part time	1797	1728	2777
With a job, but not at work	346	354	533
Unemployed	466	469	729
Retired	2434	2099	3762
In school	433	430	664
Keeping house	2084	1986	3220
Other	289	259	426

Religious Preference			
Protestant	9235	8919	14158
Catholic	4483	4390	6900
Other Religion	873	807	1300
Non-religious	1980	1837	3049
Region of Interview			
New England	990	936	1481
Middle Atlantic	2203	2156	3363
East North Central	3357	3363	5178
West North Central	1457	1365	2214
South Atlantic	2693	2607	4150
East South Atlantic	846	763	1335
West South Central	1474	1385	2291
Mountain	1331	1243	2035
Pacific	2220	2135	3360

Source: Authors' calculation from the US General Social Survey (1972–2016).

Table A2 Descriptive statistics for macro-level analysis (2nd stage).

	Obs.	**Mean**	**Std. Dev.**	**Min.**	**Max.**
Independent Variables					
Inherited Generalized Trust	29	-0.69	0.69	-2.51	0.26
Inherited Institutional Trust	29	-0.39	0.22	-0.79	0.17
Inherited Religiosity	29	0.16	0.39	-0.70	0.97
Welfare Regime Categories					
Social-Democratic/Nordic	4				
Conservative/Corporatist	11				
Anglo-Saxon/Liberal	5				
Post-communist	9				
(Log) Total Social Expenditure per Inhabitant	23	8.47	0.89	6.39	9.45
Dependent Variables					
Government Effectiveness	29	1.17	0.77	-0.44	2.23
Av. Individual Resilience	19	3.31	0.17	3.02	3.61

Source: Author's calculation from US General Social Survey (1972–2016), European Social Survey 2006 (Round 3) and World Bank.

Table A3 Impact of Inherited Religiosity (Belief Dimension) on Resilience

	Government Effectiveness			Aggregated Individual Resilience		
	1	2	3	4	5	6
Inherited Religiosity	0.09	-0.04	-0.43	-0.11	0.12**	-0.01
(Belief Dimension)	(0.59)	(0.41)	(0.41)	(0.26)	(0.04)	(0.24)
Welfare Regime Type (Reference: Social Democratic)						
Conservative		-0.83***			-0.31***	
		(0.22)			(0.03)	
Liberal		-0.25			-0.17***	
		(0.18)			(0.05)	
Post-communist		-1.57***			-0.47***	
		(0.24)			(0.03)	
Social Expenditure			0.62***			0.18***
			(0.08)			(0.05)
Observations	29	29	23	19	19	18
R2	0.00	0.56	0.72	0.01	0.92	0.58

Note: OLS regressions. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

CULTURAL FOUNDATIONS OF THE SECOND DEMOGRAPHIC TRANSITION: THE ROLE OF INHERITED VALUES

ABSTRACT

Considerable variation exists across societies in the prevalence of demographic trends associated with the second demographic transition (SDT). We propose that these persistent disparities are, in part, determined by long-standing cultural traits. Employing an epidemiological approach, we focus on the inherited component of five values known to influence family and fertility dynamics: gender egalitarianism, religiosity, institutional distrust, generalized trust, and family ties. Our study aims to investigate whether societies pre-exposed to these specific values through intergenerational transmission are more or less likely to exhibit SDT behaviors. Our findings reveal that several of these traits exert a notable influence when interacting with educational expansion. Gender egalitarianism, institutional distrust, and generalized trust exhibit positive associations with non-marital birth rates when coupled with increased education. Meaning that, with the broad educational expansion that has taken place across all Western countries after the IIWW, the SDT spreads much faster in societies where these three inherited values are deeply ingrained. Conversely, family ties demonstrate a negative association, while no strong evidence is found regarding the influence of religiosity. In conclusion, our study underscores the necessity of a nuanced cultural approach to the SDT framework, acknowledging the importance of local values alongside the global ideational shift.

Keywords: Second Demographic Transition, Inherited Values, Non-marital Childbearing, Family Formation, Culture

1. INTRODUCTION

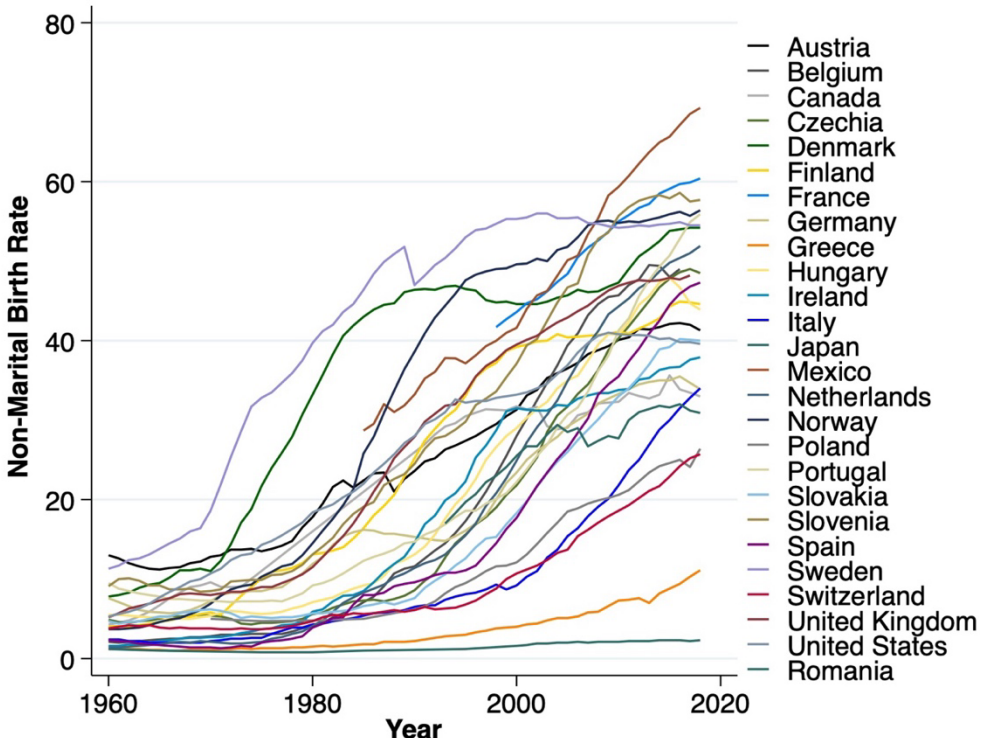
In the second half of the 20th century, Western societies bore witness to a profound transformation in family formation and fertility behaviors. Led on by the Nordic countries, a notable shift occurred, challenging the traditional centrality of the family. It was accompanied by liberal demographic behaviors such as cohabitation, non-marital childbearing, divorce, and a postponement of marriage and parenthood. The second demographic transition (SDT) theory suggested that societies were navigating successive stages of global change, with a pivotal role played by an ideational shift. The increased material security provided by advanced post-war economies facilitated the emergence of "higher-order" (Maslow, 1954) needs and "post-materialist" (Inglehart, 1977) values, which prioritized self-realization, freedom of expression, and autonomy over conformity to societal expectations. This ideational shift, along with subsequent structural changes such as educational expansion, leads individuals to postpone long-term commitments like marriage and parenthood.

Though Western countries experience a shared value shift to some extent, the onset and intensity of the increase in demographic trends typically associated with varied widely across nations (Figure 1). There is consequently still a lively debate about the capacity of the SDT framework to provide a theoretical explanation of contemporary demographic trends, specifically the differences across societies rather than similarities (Zaidi and Morgan, 2017). A fundamental question arises: to what extent are these new demographic behaviors determined by the diffusion of profound changes in value orientations?

In contrast to its great emphasis on cultural change, the SDT framework pays less attention to the impact of a society's long-standing cultural history on its demographic trends. While it acknowledges the influence of local culture as a path dependency modulating the speed and intensity of SDT's spread (Lesthaeghe, 2010, 2020), it falls short of delving into how specific cultural traits impact recent demographic trends. The critique offered in this article is not to refute the global cultural shift proposed by the SDT theory but rather to provide a fine-tuned cultural approach by drawing attention to the role of a society's long-standing values inherited across generations. Putting it differently, the aim is to investigate whether societies pre-exposed to

specific values due to intergenerational transmission of culture are more likely to be the leaders of SDT. Hence, we pose two fundamental questions: What role does a society's longstanding culture play in the de-standardization of family and fertility dynamics associated with the SDT? Specifically, which values are transmitted across generations that, in interaction with educational expansion, have significance for the SDT?

Figure 1 Share of births outside marriage. Proportion (%) of all births where the mother's marital status at the time of birth is other than married. Data retrieved from OECD Family Database.



In this regard, the article offers three significant contributions. Firstly, it extends the understanding regarding the cultural foundations of the demographic change witnessed in the last decades. It identifies and empirically tests a list of inherited values, including gender egalitarianism, religiosity, institutional distrust, generalized trust, and family ties, that yield motivation for de-standardizing family and fertility dynamics. Secondly, we focus on an often-neglected component of culture, namely the inherited values, and follow their variation over extended periods. Empirically, this means deriving measures of inherited values. We do so by adopting Algan and Cahuc's take on epidemiological approach (2010). Instead of using reported values as sampled

through the World Values Surveys, where measures are necessarily influenced by contemporary conditions of the societies where respondents reside, the epidemiological approach extracts those values from US respondents with European descendants. It provides consequently proxy measures of inherited values in the corresponding country of origin. Since it enables time-varying quantification of inherited values in a country, we estimate their impact on the contemporary behavioral outcomes of SDT in the corresponding country. Indeed, this methodology allows for the third important feature of this article: considering the global cultural shift as the primary driver of demographic change, the SDT theory simplifies cross-country demographic differences as sub-narratives caused by cultural lags. However, by focusing on the operations of specific long-standing inherited values, this article suggests a critique regarding the cultural foundations of SDT. More precisely, it establishes the extent to which particular long-standing cultural traits foster or impede the demographic outcomes of SDT as societies are experiencing important structural changes.

2. BACKGROUND

2.1. Can Long-Standing Cultures Explain the Growing Divergence in Second Demographic Transition?

From the late 1960s onwards, the demographic trends in industrialized societies deviated from the predictions of the first demographic transition. Specifically, in Western and Northern European societies, declining fertility did not stop at the replacement level, the popularity of the traditional family decreased among young cohorts, leading to the emergence of alternative living arrangements and the disconnection of marriage and childbearing. Lesthaeghe and Van de Kaa introduced the second demographic transition theory as an attempt to explain these radical changes in fertility and family formation (Lesthaeghe and Van de Kaa, 1986; van de Kaa, 1987). Aligning with Inglehart's argument on post-materialism (1977, 1990), the theory took ideational factors and culture change at center stage by arguing that industrialized societies entered into a profound shift in value orientations toward individualization, self-actualization, and secularization during the postwar period (van de Kaa, 1987, 2002; Lesthaeghe, 2010). The cultural transmission of the new values across individuals is governed by educational expansion. Education, particularly female

educational attainment, can be perceived as a proxy for cultural endowment, which is linked to non-conformism, greater emphasis on self-fulfillment, individualization, sexual liberation, and higher tolerance to unconventional behaviors. These factors collectively contribute to the changing family and fertility dynamics in society (Lesthaeghe and Surkyn, 1988).

Both the initial statements and subsequent elaborations strongly supported the notion of a universal ideational shift, poised to propagate gradually both within and across countries, thus foreshadowing the emergence of country-level convergences in family and fertility patterns (Lesthaeghe, 2014, 2011, 1994; Lesthaeghe and Surkyn, 2004, 2002; van de Kaa, 2002, 2001, 1994). Nevertheless, previous studies have raised questions about the theory's empirical validity by revealing that observed demographic patterns often exhibit divergence rather than convergence, even within European countries (Kuijsten, 1996; Billari and Wilson, 2001; Billari and Liefbroer, 2010). Whereas nearly universal deinstitutionalization of marriage and family formation aligns with the theory, a mixed body of evidence exists concerning the timing and pace of specific demographic changes associated with SDT (Zaidi and Morgan, 2017). For example, countries traditionally considered 'laggards' in SDT, notably Southern European and some East Asian nations, have converged with the theory's expectations by achieving low fertility rates. However, this convergence has not been accompanied by increased prevalence in cohabitation and non-marital fertility. In contrast, the 'vanguard' nations of SDT, represented by Nordic countries, are now experiencing stagnation or declines in non-marital birth ratios and divorce rates (Sobotka and Berghammer, 2021).

The theory claims that the local culture modulates the connection between the adoption of ideational change and its reflection on demographic behavior. Thus, the cross-country differences in SDT's emergence and speed are contingent on historical path dependencies (Lesthaeghe, 2010, 2020). This perspective is not wrong but remains limited in scope since it backgrounds society's long-standing culture and thus fails to answer how and which cultural traits encourage or discourage demographic change. Adopting a historical perspective, Reher (1998, 2004) points out the importance of past cultural factors in influencing contemporary fertility and family behaviors. He underscores that certain cultural values persist across generations, shaping individuals' choices and behaviors. This persistence is particularly relevant in the context of SDT since certain cultural

traditions related to family, gender roles, and marriage have deep historical roots and exhibit resistance to rapid alteration, even in the face of broader societal transformations. Understanding the dynamics of cultural persistence provides essential insights into why some societies experience demographic transitions more gradually or with greater resistance and highlight the necessity of culturally sensitive approaches for reasoning demographic behaviors and addressing demographic challenges.

2.2. Which Inherited Cultural Traits?

Basing its roots in sociological and anthropological reasoning, a recent perspective on the interplay between culture and demographic behaviors provides a multi-leveled theorization. It argues that culture comprises several strata: one rooted in long-term historical processes relying on inter-generational transmission and the other more exposed to current developments and modernization (Guetto, 2012; Bachrach, 2014). The cultural change reflecting in individuals' behavioral decisions initiates in the latter strata, yet it is a participatory process dependent on the former. This means that when individuals encounter cultural developments in their social environments, they redefine them according to their interpretation based on long-standing cultural models.

Intending to answer these questions, we propose a more in-depth consideration of culture. The sociological study of culture most often agrees that the concept yields various constitutive elements, including models and values (Patterson, 2014). Whereas the models resemble the procedural aspects of culture, values represent the evaluative dimension. The former element comprises prevalent knowledge structures and practices that provide predictability and continuity to society's actions and social interactions. The evaluative dimension, namely the values, operates at the micro-level. They refer to individuals' evaluations, prioritizations, and preferences, thus reflecting the desirability of means and ends of actions. Also, the previous works suggest that values are persistent and transmitted across generations to different extents (Glass, Bengtson and Dunham, 1986; Rohan and Zanna, 1996).

In this context, we anticipate that specific long-standing inherited values, when coupled with the expansion of education, will have a significant impact on the evolution of SDT in a given country.

We initiated the choice of inherited values from Lesthaeghe and Surkyn's (1988, 2004) list of values typically associated with demographic characteristics of SDT, then we leveraged insights from the extensive literature on family and fertility. It is important to note that due to data limitations, we were unable to include all values that may potentially influence SDT levels. Consequently, our analysis focuses on the following five inherited values:

2.2.1. Gender Egalitarianism

The original theory and its extensions encompass the concept of the gender revolution, which includes a growing symmetry in gender roles and female economic autonomy, as integral components of the societal context for SDT (Lesthaeghe, 2020). Accordingly, gender revolution corresponds to shift away from women's submissiveness to men. While it alone cannot explain demographic trends, it is a vital part of the multifaceted revolution that catalyzed SDT (Lesthaeghe, 2010).

Furthermore, Lesthaeghe and Surkyn identify gender egalitarianism as one of the values typically associated with SDT's demographic trends (1988, 2004). The ideational shift towards individualization, rejection of authority, and self-actualization manifests in gender dynamics, with a desire for equal gender roles in both public and private spheres (Lesthaeghe and Neels, 2002). In conjunction with critical structural developments such expanded higher education and greater access to birth control methods, these value changes delayed women's family transitions, altered their perspectives on parenthood, and reduced the preferred number of children. Moreover, as these shifts have propelled the dual-earner model, gender-egalitarian relations have become a factor influencing the quality of unions. In the cases where certain quality is not met, divorce and single parenthood have become viable options (Lesthaeghe and Neels, 2002). Against this backdrop, we propose the following hypothesis:

Hypothesis 1: Countries where individuals report more gender-egalitarian values are likely to demonstrate higher levels of SDT behavior as female education expands.

2.2.2. Religiosity

Previous works has posited a reciprocal relationship between secularization and non-conventional family formation, where each can mutually reinforce the other (Thornton, 1985; Thornton, Axinn and Hill, 1992). These studies demonstrated that greater secularism promoted non-conventional unions and sexual behaviors, subsequently advancing secularism further. In a similar vein, the SDT framework identifies secularism as one of the value shifts associated with the de-standardization of family life and fertility patterns (Lesthaeghe and Surkyn, 1988, 2004). Subsequent empirical investigations have supported this premise (Lesthaeghe and Neels, 2002; Lesthaeghe and Surkyn, 2004; Moors, 2008; Lesthaeghe, 2010).

On an individual level, secularism denotes the abandonment of religiosity, entailing a decline in spiritual sentiments, traditional religious beliefs, and practices. Also, previous studies have shown it is a persistent social product shaped within the family during the early years of socialization; therefore, as a value, it can be strongly transmitted across generations (Myers, 1996; Bengtson *et al.*, 2009). Given these, we suggest the following hypothesis:

Hypothesis 2: Countries where individuals report higher levels of religiosity are likely to demonstrate lower levels of SDT behavior as female education expands.

2.2.3. Institutional Distrust

A fundamental element of the cultural shift that underpins the SDT theory is the preference for individual autonomy over any form of institutional authority. Lesthaeghe and Surkyn (2004) contend that this rejection of authority is mirrored in the political field as the value of the "new political left" and list it under the initial set of values related to SDT behavior. The new political left encompasses several dimensions linked to Inglehardt's (1977) postmaterialism, yet due to data limitations, we focus solely on distrust in institutions.

We posit that established institutions tend to promote conformity to conventional forms of conduct in various domains, including gender roles, family, and fertility. Consequently, their rejection is

likely to reinforce the transformation of gender roles and the emergence of diverse family structures. Also, if the family is considered the smallest and most ancient social institution, rejecting its institutional foundations is likely to bring flexibility to union formation and dissolution. In light of these, we propose the following hypothesis:

Hypothesis 3: Countries where individuals have lower trust in institutions are likely to demonstrate higher levels of SDT behavior as female education expands.

2.2.4. Generalized Trust

Generalized trust, which measures an individual's trust in those outside their immediate circle, forms a crucial aspect of societal cohesion and cooperation (Aassve, Billari and Pessin, 2016). It fosters a sense of community and eases interactions, offering a safety net. While generalized trust may vary in the short term based on individual experiences and morals, its long-term stability in society is well-documented (Uslaner, 2002). with persistent disparities among different societies (Bjørnskov, 2007).

Although the SDT theory doesn't explicitly reference generalized trust, prior research indicates its substantial impact on reproductive dynamics in industrialized societies (Aassve, Billari and Pessin, 2016; Aassve, Moglie and Mencarini, 2021). These studies argue that the impact of generalized trust on fertility operates through two main channels. Firstly, high generalized trust correlates with positive societal outcomes, including effective institutions, political engagement, social cohesion, economic growth, lower corruption, and reduced crime rates—all conducive to a stable environment for child-rearing. Secondly, generalized trust encourages individuals to outsource childcare, which is especially important as women pursue higher education and careers that may not easily align with childbearing (Aassve, Billari and Pessin, 2016).

In the context of generalized trust and SDT, we posit that heightened trust levels may reduce the appeal of traditional marriage, leading to a shift in perceptions from marriage as a secure, legally regulated institution to viewing voluntary singlehood, union dissolution as viable alternatives. Furthermore, as generalized trust facilitates the delegation of childcare responsibilities, individuals

may be more inclined to postpone childbearing to later stages of life. Indeed, it was found that countries that show more characteristics of SDT also have high levels of generalized trust (Aassve, Sironi and Bassi, 2013). Given these, we suggest the following hypothesis:

Hypothesis 4: Countries where individuals report stronger trust towards others are more likely to demonstrate higher SDT behaviors as female education expands.

2.2.5. Family Ties

Since all behavioral outcomes of SDT point towards the liberation of family, the strength of family ties reflecting the importance of family can be seen as a straightforward factor. Societies exhibit substantial variation in the prevalence of close and weak ties among family members. Reher (1998) characterizes this distinction as the historically "strong family systems" found in Southern Europe and the "weak family systems" prevalent in Western and Northern Europe.

Within the weak family system, children typically leave their parental homes before marriage and enter an interim phase where they may choose to live independently, share accommodations, or cohabit with a partner. This period is likely to be extended in regions with generous welfare provisions and extension of education. Additionally, the weak family system aligns with values promoting gender equity, individualization, and self-expression, making it compatible with the principles of SDT.

Contrarily, in the strong family systems, individuals tend to reside at parental homes until marriage. Welfare provisions addressed to single individuals or students are relatively limited; thus, necessitating support from their parents, young adults become economically independent much later in life. This model tends to sustain traditional gender roles, lead to earlier marriages and childbirth, and reduce the prevalence of practices like cohabitation and non-marital childbearing. Lesthaeghe (2010) has also drawn upon this theory to explain the lag experienced by Southern European countries in the context of SDT. In this regard, we propose the following hypothesis:

Hypothesis 5: Countries where individuals have stronger family ties are likely to demonstrate lower levels of SDT behavior as female education expands.

3. ANALYTICAL STRATEGY

A significant empirical challenge in assessing the influence of inherited values on SDT lies in the scarcity of standardized and geographically widespread data on values from earlier periods Key databases used for measuring values, such as The World Values Survey and European Social Survey, were initiated after the 1980s. Since direct observation of the values of previous generations is not feasible, we necessitate an analytical approach to proxy the inherited values of current generations. To address this issue, we adopt Algan and Cahuc (2010)'s take on epidemiological approach, which centers on the process of value formation. Accordingly, our present-day values result from two primary factors: values inherited through intergenerational transmission and the contemporary environment. Therefore, to differentiate the inherited components from the influence of the contemporary environment, they exploit the values of migrants' descendants in a single destination country (Algan and Cahuc, 2010).

The epidemiological approach that we employ offers unique strengths. One of the primary strengths is its capacity to reconstruct historical value patterns and provide a proxy for inherited values in settings where historical data is unavailable. By analyzing the descendants of migrants within the same contemporary country it accounts for confounding factors acquired through the immediate circumstances, thereby providing a controlled environment. Furthermore, as it also controls for numerous individual-level factors, we can isolate the inherited components of values from the contemporary measurements. This aspect of the approach is invaluable as it offers clearer insights into intergenerational value transmission and how past cultural values have been retained or transformed over time.

However, the epidemiological approach is not without its limitations. Focusing on migrants' descendants may not accurately represent the broader population, thereby introducing the risk of selection bias. Migrant groups often have unique characteristics or undergo historical experiences that differentiate them from non-migrant groups. For example, the drivers of migration as well the

challenges of migration and adaptation to the new environments might have altered their value systems. Additionally, migrants may come from varied socio-economic and cultural backgrounds, for example economic migrants from rural areas or political migrants might not be reflective of the overall population.

Despite these potential biases, the epidemiological approach attempts to mitigate them by controlling for a wide range of socio-economic and demographic variables, thereby ensuring that the inherited values observed are not unduly influenced by the unique characteristics or experiences of migrants. This comprehensive control helps to reduce the impact of selection bias and allows for more accurate proxy of values inherited through intergeneration transmission.

Overall, our analytical strategy consists of two stages. In the first stage, we proxy the inherited values of people living in country c by using the values that descendants of US immigrants have inherited from their ancestors who have migrated from country c. Once we obtain country-level inherited values for two different years sufficiently apart, we use them in the second stage, where we perform the macro-level analysis outlined in our linear model (1).

3.1.First Stage: Individual Level Data and Estimation of Inherited Values

The estimation of inherited values is based on the epidemiological approach (Algan and Cahuc, 2010). This approach relies on the premise that value formation is shaped by two significant influences: the contemporary environment and inheritance from earlier generations (Benabou & Tirole, 2006; Bisin et al., 2004; Bisin & Verdier, 2001; Tabellini, 2008, as cited in Algan & Cahuc, 2007). Therefore, in cases where we don't have access to previous cohorts' reported values, we can proxy the inherited culture by isolating it from the contemporary environment. To achieve this, we exploit the intergenerational cultural transmission path across immigration cohorts, under the assumption that inherited values are not immediately overdetermined by the current characteristics of the country in which individuals reside (Algan and Cahuc, 2010).

We gather data on individuals' values from the US General Social Survey (GSS) (Davern *et al.*, 2022), a database offering rich information on specific values, birthplace, and ancestorial country

of origin. In the GSS, respondents are asked to specify up to 3 countries of origin and select the one they feel closest to; facilitating the determination of their ancestral country of origin. Moreover, questions about the birthplace of respondents, as well as their parents and grandparents, enable us to identify four immigration waves: fourth-generation Americans (more than two grandparents born in the US and both parents born in the US), third-generation Americans (at least two grandparents foreign-born, and both parents were born in the United States), second-generation Americans (at least one parent born abroad) and first-generation Americans. We exclude first-generation Americans from our analysis because they are personally exposed to their country of origin. Such exposure to the contemporary demographic trends of the origin country may introduce endogeneity concerns.

To further minimize the possibility of endogeneity, we impose a lag of 25 years. This implies that values are measured at least 25 years before the measurement of country-specific SDT level. Given that all people alive contribute to "average values" for a certain period and that there is a 25-year difference between two generations, for year T we need to measure the values of: second-generation Americans born before T – 25, third-generation Americans born before T − 25 + 25, and fourth-generation Americans born before T − 25 + 50.

We apply this estimation of values to two distant years, 1960 and 2010. The 50 years of distancing between these time points is important for ensuring that immigration cohorts do not overlap significantly, the evolution of values over time is substantive, and does not comprise measurement errors. Following the previously described measurement of values, the values for 1960 correspond to the values of the second-generation Americans born before 1935, the third-generation Americans born before 1960, and the fourth-generation Americans born before 1985. Likewise, the values for 2010 are composed of the values of second-generation Americans born after 1935, third-generation Americans born after 1960, and fourth-generation Americans born after 1985. The distribution of the GSS sample of the second, third, and fourth generations is shown in Table1.

Table 1 Number of respondents by origin country, inherited values, and year

	Gender Egalitarianism		Religiosity		Institutional Distrust		Generalised Trust		Family Ties	
	1960	2010	1960	2010	1960	2010	1960	2010	1960	2010
Austria	42	3	25	6	94	11	85	12	82	13
Belgium	12	1	16	2	29	3	26	4	36	3
Canada	148	20	100	38	267	51	282	58	276	57
Czechoslovakia	110	16	87	22	215	37	232	37	226	41
Denmark	64	6	46	13	135	14	131	17	141	14
Finland	24	4	27	6	92	10	82	13	86	14
France	199	11	154	26	377	42	385	49	392	44
Germany	1630	76	1280	215	3368	280	3504	305	3395	296
Greece	17	13	22	16	46	26	45	32	46	33
Hungary	36	5	28	10	81	15	77	21	79	22
Ireland	1121	55	1115	154	2429	198	2595	216	2500	223
Italy	416	90	333	190	812	302	880	325	874	304
Japan	8	3	8	4	25	10	28	12	23	16
Mexico	124	79	112	207	236	274	276	305	246	327
Netherlands	149	11	98	16	261	30	273	32	263	38
Norway	187	6	133	21	324	32	355	32	349	32
Poland	234	36	174	65	469	109	471	115	480	114
Portugal	14	3	18	11	36	20	43	20	41	19
Romania	7	3	7	3	15	3	14	8	16	6
Spain	53	7	69	31	121	41	133	42	114	34
Sweden	152	9	132	21	330	28	335	33	329	34
Switzerland	36	2	44	2	88	3	95	4	89	3
United Kingdom	1639	50	1364	113	3332	169	3480	175	3413	150
United States	183	2	267	29	520	34	565	37	553	34
Yugoslavia	33	5	19	9	59	19	60	20	71	20

Note: Data is from authors' calculation from US General Social Survey Sample

We based our measurement of each value on individuals' answers to related questions in the GSS. Firstly, to capture various dimensions of gender role orientations, we composed a gender egalitarianism indicator using four questions: *"A working mother can establish just as warm and secure a relationship with her children as a mother who does not work," "It is more important for a wife to help her husband's career than to have one herself," "A preschool child is likely to suffer if his or her mother works," "It is much better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family."* We recoded answers to all statements such that higher values correspond to greater gender egalitarianism. Later, we used principal component analysis to construct a standardized index.

Religiosity is a multi-dimensional phenomenon, including individual beliefs and institutional foundations (Guetto, Luijkx and Scherer, 2015). Thus, we measured it with a composite index generated using four questions. While we captured the beliefs dimension by the questions *"Would you call yourself a strong (preference named in religion) or a not very strong (preference named in religion)?"* and *"Please look at this card and tell me which statement comes closest to expressing what you believe about God",* we included the institutional dimension with the questions *"How often do you attend religious services?"* and *"As far as the people running these institutions are concerned, would you say you have a great deal of confidence, only some confidence, or hardly any confidence at all in organized religion?"* Then, we recoded answers to all questions such that higher values reflect stronger religiosity and then used principal component analysis to construct a standardized index.

Previous works proposed numerous ways of assessing institutional distrust from the GSS (Cook and Gronke, 2005). For instance, a two-factor solution to measure trust towards institutions distinguishes between the institutions of order (executive branch, congress, justice system, military, organized religion, major companies) and institutions of opposition (press, labor unions, television, congress) (Cook and Gronke, 2001). An alternative is to measure trust in governmental institutions by focusing only on congress, the executive branch, and the justice system, yet this only evaluates the political dimension of the value (Brehm and Rahn, 1997). For achieving a variable that reveals individuals' level of disapproval of institutions in general, without reference to any specific one, we generated a generalized institutional distrust variable using all institutions

available in the questionnaire. As a value, institutional distrust is very volatile due to its dependence on current political and economic circumstances. However, using a more generalized measurement of institutional distrust, we expect it to be more stable. In GSS, presented with 13 institutions[1], individuals are asked to report their level of confidence in each using a 3-point scale: *"As far as the people running these institutions are concerned, would you say you have a great deal of confidence, only some confidence, or hardly any confidence at all in them?"* Using answers to all 13 institutions for principal component analysis, we construct a standardized index where higher values imply greater distrust.

Generalized trust is measured through a question taken from Rosenberg's "faith in people" scale (1956): *"Generally speaking, would you say that most people are trusted or that you can't be too careful in dealing with people?"* (Sturgis and Smith, 2010). This is frequently employed as a measurement of generalized trust in social sciences. The answers *"most people can be trusted"* corresponds to a high level of generalized trust, *"can't be too careful"* implies low, and *"depends"* is a medium level of trust.

The strength of family ties is captured through the reported frequency of an individual's contact with family members through the question of *"how often you do the following things... Spend a social evening with relatives?"* It differs from alternative measures such as self-reported importance of family since it incorporates geographic proximity to family members. Respondents' answers to the question span from 1-7, one corresponding to *"Almost every day"* and seven corresponding to *"Never".* We recoded them reversely so that higher values correspond to stronger family ties.

The following equation describes the first stage regressions to estimate the inherited values:

$$V_{ict} = \beta_0 + \beta_1 D_c + \beta_2 \mathbf{X}_{ict} + \varepsilon_{ict} \quad (1)$$

[1] The presented institutions include banks and financial institutions, major companies, organized religion, education, executive branch of the federal government, organized labor, press, medicine, TV, US supreme court, scientific community, congress and military.

where the value measure V of individual i in year t (whose country-of-origin is c) is regressed on a set of dummy variables indicative of the respondent's family, D_c, and on socioeconomic characteristics such as age group, sex, educational attainment, social class, employment status, religion, region of interview and generation of immigration. The coefficients for the country-of-origin dummy variables, β_1, capture the inherited component of culture and are used at the second stage (country level) analysis as the predictors of SDT. The model is identified by omitting one country dummy, Denmark. As this renders Denmark the reference country, the coefficients indicate the difference in the average level of inherited values relative to Denmark.

3.2.Validity Checks

Before proceeding to the second stage, we perform two validity checks to enhance the credibility. The first validity check examines whether the inherited values measured by the ancestral country of origin represent the contemporary values of residents of the corresponding country. With this aim, we compare inherited values by ancestral country of origin at time t to those of individuals residing in sampled countries at time t. For a geographical coverage similar to our sampled countries, we retrieve contemporaneous values of residents from the Joint EVS/WVS 2017-2021 dataset (EVS/WVS, 2021)[2]. This cross-sectional dataset contains many value questions addressed to individuals residing in 81 territories. Although the most recent data for our sample corresponds to 2017, it is sufficiently close to 2010 to perform a series of basic macro-level comparisons.

The EVS/WVS and GSS questionnaires are comparable in terms of the items measuring the levels of the chosen five values. The specific questions of the Joint EVS/WVS dataset, which we exploit for composing country averages of values, are as follows:

- Gender egalitarianism is measured using the level of agreement to the following 4 statements: *"When a mother works for pay, the children suffer" "When jobs are scarce, men have more right to a job than women" "On the whole, men make better political leaders than women do" "On the whole, men make better business executives than women*

[2] Compared to the sampled countries from GSS, it succeeds to capture all except for two countries which are Belgium and Ireland.

do". We recoded the answers so that higher values imply higher gender egalitarianism and then used principal component analysis to construct a standardized index.

- The level of religiosity is assessed using answers to 4 questions: *"How much confidence you have in churches?" "How often do you attend religious services these days?" "How important is religion in your life?" "How important is God in your life?"* While the former two include the institutional dimension of religiosity, the latter two embrace religious beliefs. We recoded the answers such that higher values imply stronger religiosity, then ran a principal component analysis to construct a standardized index.

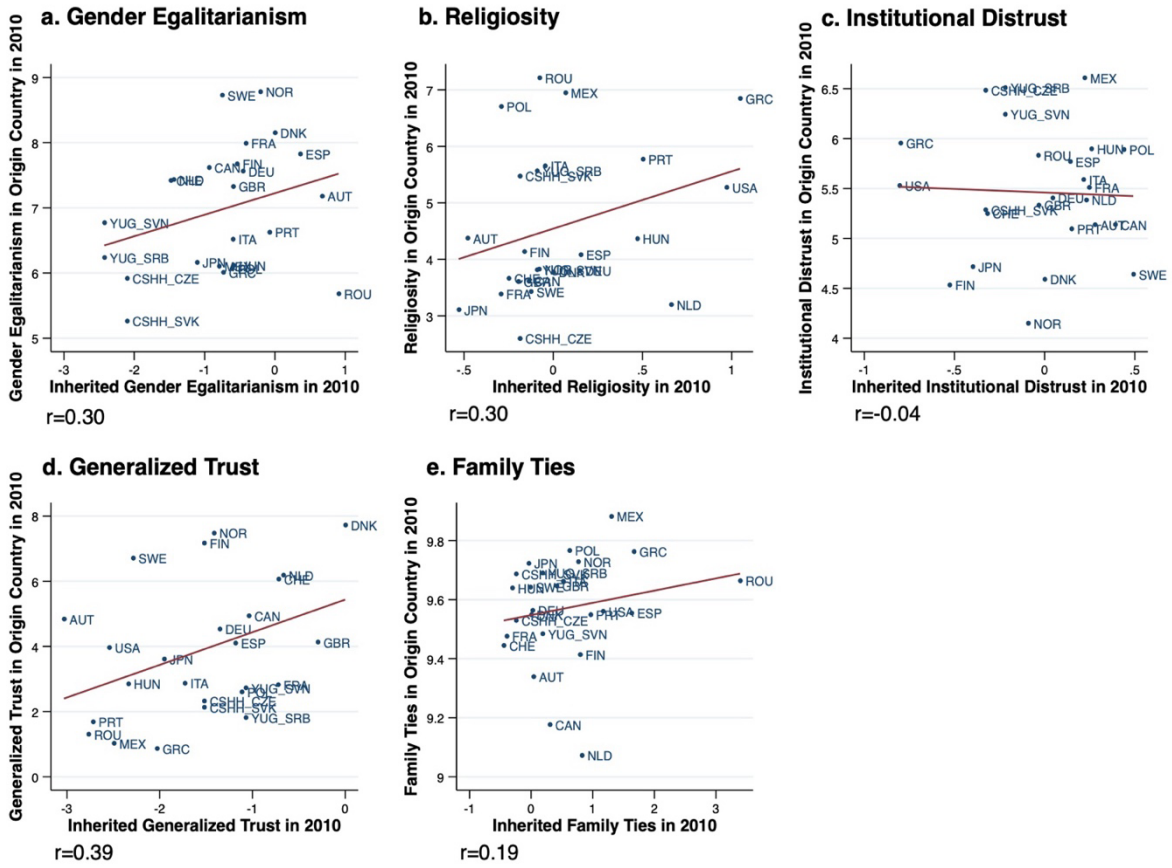
- The level of institutional distrust is evaluated using a question assessing confidence in various institutions: "*for each item listed, how much confidence you have in them, is it a great deal, quite a lot, not very much or none at all?"* The list includes 15 institutions, but to enhance comparability with our main institutional distrust variable, we only exploit the institutions available in the GSS: church, armed forces, press, labor unions, parliament, major companies, and justice system. We used principal component analysis to construct a standardized index in which higher values imply higher institutional distrust.

- Generalized trust is measured using *"Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?"* The answers are recoded on a 3-point scale, *"Most people can be trusted"* as high generalized trust, *"Don't know"* as intermediate, and *"Can't be too careful"* as low generalized trust.

- Unfortunately, the questionnaire lacked an item for measuring the frequency of family meetings; hence, we used self-reported importance of family assessed through the question, *"how important is family in your life?"* We recoded the answers such that higher values imply stronger family ties.

Panels A-E of Figure 2 plots the bivariate relationships between country-level estimations of inherited values in 2010 derived from GSS and country averages of values retrieved from EVS-WVS. Although there is an anticipated measurement error due to question variations and the time difference between the two surveys, the plots show a meaningful consistency when looked together. Four out of five plots demonstrate a positive relationship, and among those, the highest correlation is observed in generalized trust with 0.39, followed by gender egalitarianism (r=0.30), religiosity (r=0.30), and family ties (r=0.19). High correlations imply that the values are strongly transmitted across generations. Differently, institutional distrust showed an extremely low and negative correlation (r=-0.04). This low association may be due to the different evolution of institutional distrust in the US compared to the sampled countries or to the fact that institutional distrust is a relatively volatile value dependent on the current economic and political circumstances. Therefore, the analyses taking this specific value as the independent variable will be approached with caution and considered tentative.

Figure 2 Correlation Between Inherited and Contemporary Values in Origin Countries



The second validity check concerns the relevance of cultural values in explaining demographic behaviors. At the macro level, we expect country-level differences in values to explain macro-demographic changes. As micro-level foundations, individuals are crucial components of macro-level processes. For logical and empirical coherence, though not necessary, it is important to observe certain consistency across micro and macro levels. For instance, a typical model for social action, namely Coleman's diagram ("Coleman-boat" or "Coleman's bathtub"), explains the link between macro-conditions and macro-outcomes through a macro-micro-macro model. Accordingly, the causal relations flow from macro-conditions to micro-conditions, which then give rise to micro-outcomes, which in turn aggregate up to macro-outcomes (Coleman, 1986). This model is also acknowledged for demographic changes. It is suggested that the dynamics of population change should be explained using models of action and interaction between individuals, couples, or families, which are the micro-level units embedded in macro-level contexts (Billari, 2015).

In line with the micro-macro argumentation, this validity check aims to observe a causal link between individual-level demographic behaviors and values. Hence, a micro-level analysis is performed using a question in GSS that evaluates agreement with cohabitation without the intention of getting married through a 5-point scale: *"Do you agree or disagree: is alright for a couple to live together without intending to get married".* First, we recoded the answers so that the higher values imply higher preferences for cohabitation. Then, we regressed cohabitation preferences on values for the sample of immigrants' descendants of 2nd, 3rd, and 4th generations. All regressions control for individual-level characteristics and are estimated using ordered probit models[3]. The results are reported in Table 2.

[3] Controlled individual level characteristics include age, age squared, sex, educational attainment, income, employment status, religion, generation of immigration, region of interview.

Table 2 Impact of Values on Agreement with Cohabitation

Agreement with cohabitation	(1)	(2)	(3)	(4)	(5)
Gender Egalitarianism	0.26***				
	(0.03)				
Religiosity		-0.27***			
		(0.03)			
Institutional Distrust			-0.01		
			(0.03)		
Generalized Trust				0.01	
				(0.01)	
Family Ties					-0.02**
					(0.01)
Observations	800	628	1,017	1,139	1,417
Individual controls	Yes	Yes	Yes	Yes	Yes
Pseudo-R2	0.139	0.148	0.0990	0.0882	0.0879

Note: Robust standard errors in parentheses. * p<0.1; ** p<0.05; *** p<0.01

Table 3 Impact of Values on Agreement with Pre-marital Sex

Agreement with Pre-marital Sex	(1)	(2)	(3)	(4)	(5)
Gender Egalitarianism	0.17***				
	(0.01)				
Religiosity		-0.33***			
		(0.01)			
Institutional Distrust			0.01***		
			(0.00)		
Generalized Trust				0.00	
				(0.00)	
Family Ties					-0.02***
					(0.00)
Observations	6,846	4,074	9,326	9,211	15,715
Individual controls	Yes	Yes	Yes	Yes	Yes
Pseudo-R2	0.108	0.166	0.0774	0.0830	0.0827

Note: Robust standard errors in parentheses.* p<0.1; ** p<0.05; *** p<0.01

The results of regressions are mostly consistent with the expectations of this validity check. The estimations for three out of five models provide statistically significant effects in the anticipated direction: gender egalitarianism, religiosity, and family ties. Also, these values remain robust when the same validity check is performed using a secondary dependent value: opinions regarding pre-marital sex (Table 3). Thus, they provide solid evidence regarding the role of micro-foundations on macro-level demographic change. However, the models for generalized trust and institutional distrust demonstrate insignificant effects on the opinions regarding cohabitation. In the additional validity done utilizing pre-marital sex, the impact becomes significant in the anticipated direction for institutional distrust. However, insignificance persists for generalized trust.

Overall, the validity checks have largely confirmed the transmission of values across generations and the enduring influence of inherited values on contemporary demographic behaviors, with gender egalitarianism, religiosity, and family ties showing robust significant alignment with anticipated trends. These results underscore the potent role of such values as stable predictors within the framework of macro-level demographic shifts. However, generalized trust and institutional distrust present a more complex picture. Generalized trust, while showing a positive correlation in the first validity check, did not pass the second, suggesting that its role in influencing demographic behaviors such as cohabitation preferences is not as pronounced. This indicates a possible decoupling of generalized trust from certain demographic behaviors, calling for a nuanced analysis of this value's role within the demographic outcomes. Differently, institutional distrust's low negative correlation in the first validity check points to its relative volatility and sensitivity to current socio-political climates, marking it as a variable that requires cautious interpretation within the context of intergenerational value transmission. Despite failing to pass the first validity check, the variable institutional trust will still be employed for exploratory purposes; however, any results stemming from this variable will be interpreted within the context of its recognized constraints and regarded as tentative.

3.3.Second Stage: Country-Level Data and Analyses

The macro-level analysis necessitates country-level data regarding female tertiary education and the SDT levels for 1960 and 2010. These data are collected for 25 countries, including Austria, Belgium, Canada, Switzerland, Czechia, Germany, Denmark, Spain, Finland, France, Great Britain, Greece, Hungary, Ireland, Italy, Japan, Mexico, Netherlands, Norway, Poland, Portugal, Romania, Serbia. When considered a group, these countries constitute the majority of the member countries of the Organization of Economic Co-Operation and Development (OECD); thus, they share various contextual factors.

A critical problem regarding educational attainment and school enrollment data is the lack of detailed information for earlier periods. Therefore, we retrieved the percentage of tertiary schooling attained by the female population from Barro-Lee Datasets on Long-Run Enrollment Ratios and Educational Attainment (Lee and Lee, 2016). This dataset contains estimated school enrollment ratios from 1820 to 2010 and estimated educational attainment for total, female, and male populations from 1870 to 2010. The estimates are available for every five years in 111 countries, providing extensive coverage in time and geography.

Unfortunately, there is no universally accepted indicator for measuring SDT levels. Indeed, since the foundation of the theory in 1986, a consensus on the measurement of SDT levels has not been reached in the literature. Various scholars have attempted to operationalize the concept using individual indices that capture different behavioral aspects of SDT, encompassing factors like non-marital births, cohabitation, age at childbirth and marriage, total fertility rates, and divorce rates (van de Kaa, 2001; Lesthaeghe and Neidert, 2006b, 2006a; Potârcă, Mills and Lesnard, 2013; Bystrov, 2014; Liefbroer, Merz and Testa, 2015; Brzozowska, 2021). Additionally, there have been efforts to devise composite or summary indices (Sobotka, 2008; Valkonen *et al.*, 2008; Lesthaeghe and Neidert, 2009). While these composite indices are valuable for providing an overarching perspective and are easier to interpret than analyzing individual indicators, constructing them poorly can lead to information loss and reduced accuracy. Therefore, we opt to utilize single behavioral indicators of SDT.

As an indicator of a country's SDT levels, we have selected the proportion of births outside marriage, which we sourced from the OECD Family Database (OECD, 2021). The choice of the indicator is based on three reasons: non-marital births' frequent citation in theoretical and empirical works of SDT, the availability of long-term past data, and, most importantly, the relevance of SDT theory in explaining cross-country differences in non-marital birth shares. The increasing disconnection between childbearing and marriage has been one of the most remarkable changes in nuptiality regimes over the past 50 years (Sobotka and Toulemon, 2008). Its steep increase began during the early 1970s in Northern Europe and spread over most European countries, America, Australia, and Oceania. SDT framework interpreted this pattern as a progression driven mainly by value shifts that free individuals from conforming to conventional family forms (van de Kaa, 1987; Lesthaeghe, 2010). Several works have criticized this perspective due to its inability to explain "the pattern of disadvantage", meaning the negative educational and socioeconomic gradient of childbearing outside marriage, observed primarily in Latin American countries (Esteve, Lesthaeghe and López-Gay, 2012) as well as in some parts of Europe (Perelli-Harris *et al.*, 2010) and United States (Upchurch, Lillard and Panis, 2002). However, in their study comparing both perspectives' ability to explain non-marital birth shares, Lappegård, Klüsener and Vignoli (2014) showed that the SDT framework is essential for understanding the cross-countries disparities. However, the pattern of disadvantage hypothesis is more relevant for within-country comparisons observing variation between individuals or subnational regions.

The impact of long-standing inherited values on the SDT can be represented with the following linear model:

$$SDT_{ct} = \alpha_0 + \alpha_1 \widehat{\beta_{1\,ct}} \times E_{ct} + \Sigma^k \alpha_k X_{kct} + F_c + F_t + \eta_{ct} \quad (2)$$

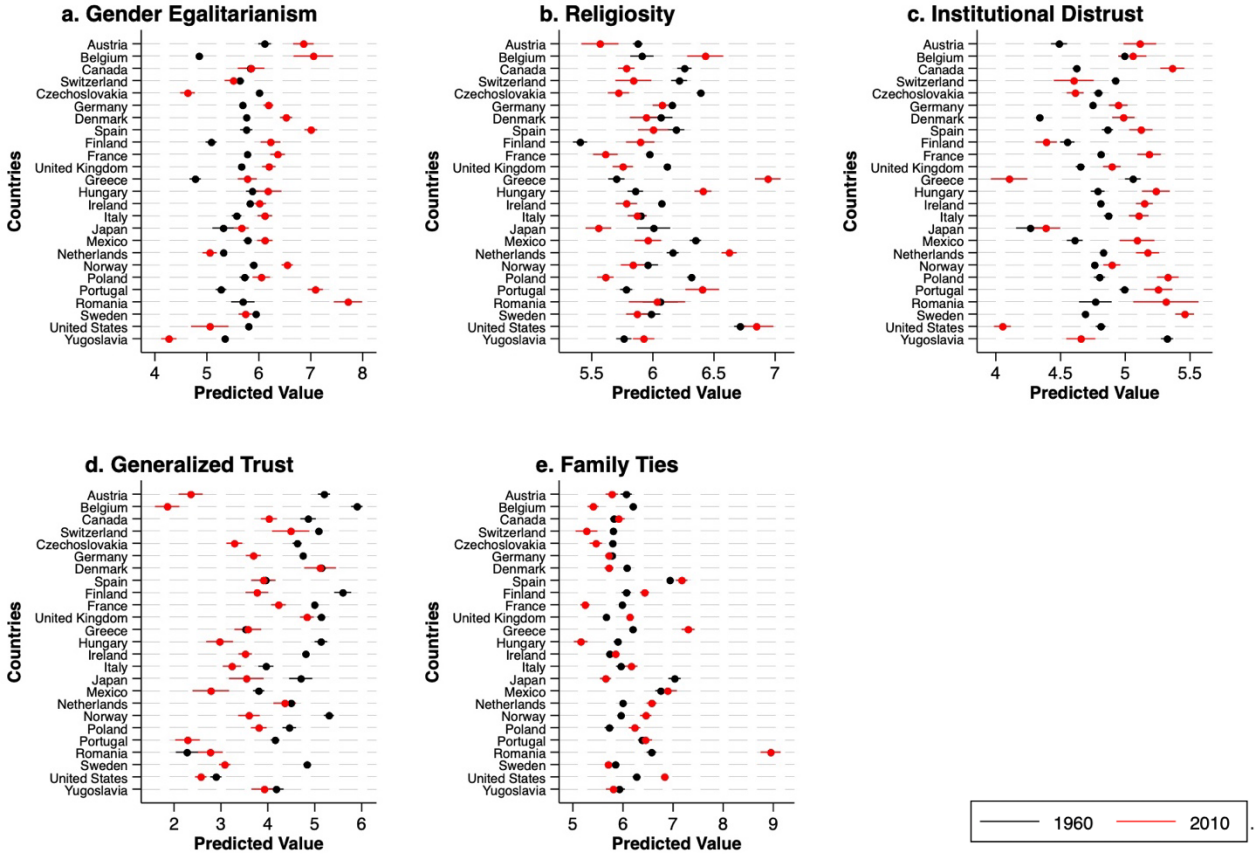
Here SDT_{ct} is non-marital birth rates of country c in year t, $\widehat{\beta_{1\,ct}}$ is the average level of a given value estimated at the 1st stage, E_{ct} is the average tertiary education level of females in country c in year t, the X are time-varying social, economic and institutional covariates and η_{ct} is the error term. Eventually, the coefficient linking inherited values to the non-marital birth rates, namely α_1, reflects the importance of specific long-standing values over the progress of SDT.

4. RESULTS

4.1.Variation of Values Over 1960 and 2010

Before delving into the results of macro-level analyses, it's crucial to understand how values have evolved over time. The exploration of country-level value changes will provide a comprehensive view of the sampled period. Panels A-E of Figure 3 plots for country averages with confidence intervals for five values in 1960 and 2010. These plots illustrate cross-country variations in both years and highlight the shifts in values over time.

Figure 3 Variation of Values Across 1960 and 2010



For example, gender egalitarianism experienced a big jump in the sampled countries over the 50-year period. In 1960, gender-egalitarian values were mostly within the range of 5-6, but by 2010, they had shifted beyond 6 (Panel A of Figure 3). Another notable change occurred in generalized

trust, which substantially decreased over the years. In 1960, most countries had values between 4-5, while in the subsequent 50 years, they moved within the range of 3-4 (Panel B of Figure 3). These distinct patterns of change are important to consider when interpreting the macro-level analysis, as significant overall increases or decreases could potentially impact the main effects of inherited values. However, our focus lies on the interaction of inherited values with female education; therefore, such noise in the main effects should not be a concern.

4.2.Impact of Inherited Values on Second Demographic Transition

Table 4 reports coefficients for 10 models estimating the impact of specific inherited values on the share of non-marital births in 1960 and 2010. For each value, the first model demonstrates the bivariate relationship, while the second includes fixed effects (FE). All models control for macro-level variables of median age, unemployment rate, and log GDP per capita. The focus of our analysis is the interaction between inherited values and female education, which allows us to delve deeper into the nuanced mechanisms driving the second demographic transition. Inherited values serve as a foundational backdrop that shapes individual attitudes and behaviors, while the level of female education functions as a catalyst that either amplifies or mitigates these values' influence on demographic trends. We hypothesize that higher levels of female education may intensify the effects of inherited values related to non-conformism, self-fulfillment, and individualization, thereby accelerating the adoption of alternative family arrangements and divergent fertility patterns.

Overall, three out of five inherited values' interaction with female education produce statistically significant effects in the expected direction; these include gender egalitarianism, institutional distrust, and generalized trust. We observe that the estimate's magnitude and statistical significance increase across specifications without and with fixed effects for each of these three values. For the case of inherited gender egalitarianism, both models indicate large positive effects ($b=0.75$ without FE, $b=0.89$ with FE), and the significance level increases from $p<0.05$ to $p<0.01$ across models.

Greater institutional distrust also has a sizeable significant effect on non-marital births in the expected positive direction (b=0.71 without FE, b=0.83 with FE), and the strength of significance increases from $p<0.1$ to $p<0.05$ across models. Also, we made further analyses using different types of institutional distrust, precisely the two-factor measurement suggested by Cook & Gronke (2001) and distrust of only governmental institutions suggested by Brehm & Rahn (1997). The results remain robust across all types of institutional distrust and are reported in Table A1 in the Appendix. However, the validity checks indicate a low negative correlation for institutional distrust in the first check, suggesting its relative volatility and sensitivity to socio-political climates. Consequently, results related to this variable should be regarded as tentative and further analyses using different data or methodologies are needed.

Moreover, generalized trust generates significant positive effects (b= 0.31 without FE, b=0.42 with FE), and the significance level rises from $p<0.1$ to $p<0.01$ across models. The validity checks for this value present a complex picture. Although generalized trust passed the first validity check, indicating persistence over the years, it failed to pass the second validity check. This failure suggests a possible decoupling from divergent demographic behaviors. However, the robustness of the significant positive effect indicates that generalized trust does impact non-marital birth rates. To strengthen this argument within the theoretical framework of second demographic transition, further analysis should be conducted using additional SDT indicators as more data becomes available.

In the case of inherited family ties, we observe that its interaction with education is in the expected direction for both models (b=-0.14 without FE, b=-0.39 with FE), but the statistical significance is present only when the fixed effects are included.

Though religiosity produces results in the expected negative direction, the estimates remain statistically insignificant across models with and without fixed effects.

Table 4 Non-Marital Births and Inherited Values

Non-Marital Birth Rates	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Gender Egalitarianism	-8.40	-14.45***								
	(5.49)	(4.25)								
Religiosity			4.77	13.20						
			(11.14)	(13.66)						
Institutional Distrust					-10.70	-17.25				
					(9.75)	(15.76)				
Generalized Trust							-8.91**	-12.71***		
							(3.63)	(2.46)		
Family Ties									6.10*	23.50***
									(3.47)	(7.99)
Female Education	1.44***	1.77***	0.77**	1.27***	0.79**	1.15***	1.05***	1.56***	0.80**	1.23***
	(0.35)	(0.31)	(0.35)	(0.29)	(0.31)	(0.26)	(0.35)	(0.34)	(0.34)	(0.28)
Gender Egalitarianism × Female Education	0.75**	0.89***								
	(0.28)	(0.21)								
Religiosity × Female Education			-0.14	-0.39						
			(0.42)	(0.30)						
Institutional Distrust × Female Education					0.71*	0.83**				
					(0.37)	(0.35)				
Generalized Trust × Female Education							0.31*	0.42***		
							(0.16)	(0.13)		
Family Ties × Female Education									-0.27	-0.75***
									(0.24)	(0.20)
Observations	44	44	44	44	44	44	44	44	44	44
Country FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.59	0.59	0.49	0.49	0.56	0.56	0.56	0.56	0.51	0.51

Note: Robust standard errors in parentheses * p<0.1; ** p<0.05; *** p<0.01

5. CONCLUSION

The SDT framework has emphasized a global shift in values as the main driver of the new union formation and fertility trends, and whereas it acknowledges a society's long-standing culture and, with it, important social norms, it has now paid much attention to how and which specific values impact these demographic trends. Against this backdrop, we identify five values likely to impact SDT, including gender egalitarianism, religiosity, institutional distrust, generalized trust, and family ties, then analyze its impact on one of the behavioral indicators of SDT, namely the percentage of non-marital births in a country.

An important contribution of this study is the acknowledgment that these values may come to the forefront when certain structural changes occur. Specifically, we have focused on the interaction between inherited values and levels of female tertiary education, as this interaction may amplify the effects of values related to non-conformism, self-fulfillment, and individualization. Consequently, it could accelerate the adoption of alternative family arrangements and divergent fertility patterns.

Gender egalitarianism, institutional distrust, and generalized trust were found to be significant predictors, with their effects becoming more pronounced when fixed effects were included in the models. For instance, this can be interpreted as, with the broad expansion of education that has taken place across all Western countries after the IIWW, the SDT spreads much faster in those societies where inherited gender egalitarianism are strong. Interpreted differently, the effect of education on the spread of SDT is more powerful, where inherited values have a strong component of gender egalitarianism.

In contrast, inherited family ties showed a significant negative impact in the fixed effects model, indicating that stronger family ties are associated with lower rates of non-marital births when controlling for fixed effects. This is to say, with the broad expansion of education that has taken place across all Western countries after the IIWW, the SDT spreads much slower in those societies where inherited family ties are strong. Interpreted differently, the effect of education on the spread of SDT is less powerful, where inherited values have a strong component of family ties. Our study

does not suggest that SDT will not happen in these countries but offers a tangible explanation for why it has spread more slowly.

The article consequently provides a comprehensive lens regarding the impact of the evaluative aspect of local culture on demographic outcomes. Hence, it extends the theoretical efforts for explaining the population change witnessed in the last decades. Also, its findings imply that studying the second demographic transition necessitates a finer-tuned cultural approach that acknowledges the importance of local values. By pointing towards specific value differences transmitted across generations, such an approach may bring more rigor to explaining persistent variations in demographic trends across societies.

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APPENDIX

Table A1 Non-Marital Births and Inherited Institutional Distrust

Non-marital Birth Rates	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
General Institutional Distrust	-10.70	-17.25						
	(9.75)	(15.76)						
Institutional Distrust (Order)			-16.30	-31.35*				
			(10.00)	(18.07)				
Institutional Distrust (Opposition)					-18.80**	-23.73**		
					(8.57)	(8.88)		
Institutional Distrust (Governmental)							-22.02	-33.99*
							(12.91)	(16.82)
Female Education	0.79**	1.15***	0.95***	1.34***	1.11***	1.48***	0.87**	1.29***
	(0.31)	(0.26)	(0.32)	(0.23)	(0.38)	(0.34)	(0.34)	(0.29)
General Institutional Distrust × Fem Ed	0.71*	0.83**						
	(0.37)	(0.35)						
Institutional Distrust (Order) × Fem Ed			0.81**	1.07***				
			(0.36)	(0.29)				
Institutional Distrust (Oppos.) × Fem Ed					1.04**	1.07***		
					(0.47)	(0.26)		
Institutional Distrust (Gov.) × Fem Ed							0.92**	1.14***
							(0.43)	(0.30)
Observations	44	44	44	44	44	44	44	44
Country FE	No	Yes	No	Yes	No	Yes	No	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.56	0.59	0.57	0.57	0.61	0.61	0.57	0.57

Note: Robust standard errors in parentheses * p<0.1; ** p<0.05; *** p<0.01

THE IMPACT OF LIBERALIZATION POLICIES ON FERTILITY: A SYSTEMATIC REVIEW OF QUANTITATIVE STUDIES

ABSTRACT

Background: Since the 1980s, the global landscape has undergone a profound economic transformation driven by liberalization policies. The impact of liberalization policies on fertility dynamics is complex and multifaceted, operating through economic, social, and cultural spheres. To date, scholars have explored the demographic consequences of liberalization policies, particularly on fertility dynamics, at country, region, and individual levels. However, there has not yet been a systematic review summarizing existing evidence.

Methods: We systematically reviewed studies from two electronic databases, Scopus and Web of Science, which use quantitative research methods and attempt to ascertain the causal effect of liberalization policies – specifically trade liberalization, deregulation, and privatization – on fertility outcomes. After grouping the studies according to the level of analysis (macro-, meso- and micro-levels), we synthesized the main findings through a narrative description.

Results: We identified 12 studies for inclusion. Macro-level studies offered empirical insights into the pivotal role of socio-economic development. Specifically, in less developed countries, trade liberalization demonstrates a significant positive impact on fertility. The micro-level studies highlighted the mediating influence of two critical factors on the relationship between liberalization and fertility: economic security and gender dynamics. A decline in economic security and prospects following liberal policies is likely to discourage individuals from entering into parenthood. Also, biological differences and gender roles may amplify or mitigate this impact. The persisting traditional male breadwinner model may discourage men's fertility decisions negatively if liberalization policies heighten economic insecurity, while women might opt for motherhood if perceived benefits outweigh career prospects, especially under biological clock pressure.

Conclusions: The impact of liberalization on fertility is multifaceted and manifests across multiple levels. While scholars have contributed valuable insights at macro- and micro-levels, there remains a need for more exhaustive methodologies and a comprehensive exploration of diverse variables and mechanisms. This study highlights the imperative for continued research efforts to enhance our understanding of the intricate interplay between liberalization policies and fertility dynamics.

1. INTRODUCTION

Since the 1980s, the world has witnessed a profound transformation in economic structures and policies driven by liberalization. Going hand-in-hand with globalization, liberalization defined the fundamentals of the modern economy, characterized by the declining centrality of national borders for economic transactions, the intensification of worldwide social relations, the liberalization of domestic industries and markets, and deregulations and privations (Held *et al.*, 2000; Guillén, 2001). At the macro level, liberalization policies have acted as catalysts for economic growth by attracting foreign direct investment, promoting trade expansion, and fostering technological advancements. However, these benefits have been counterbalanced by notable drawbacks, such as uneven economic growth, exacerbating income inequality, social disparities, and heightened economic instability in specific sectors or regions due to rapid changes in the labor market. Similarly, at the micro level, liberalization brought a spectrum of advantages and drawbacks. On the one hand, it empowered individuals by fostering entrepreneurial opportunities, broadening access to diverse goods and services, creating job opportunities, and encouraging skill development and innovation. However, on the other hand, the escalated competition and market dynamism also lead to the displacement of traditional industries, potential job losses, and financial instability for some individuals and businesses (Mills and Blossfeld, 2013).

The impact of liberalization policies on fertility dynamics is complex and multifaceted, operating through economic, social, and cultural spheres. Economic dynamics, including the aforementioned consequences of liberalization policies at the macro- and micro-level, play a critical role in shaping fertility rates and decisions. Becker's economic theory of fertility suggests that decisions regarding childbearing are influenced by rational calculations of costs and benefits (Becker, 1960). The theory posits that as the direct and opportunity costs of raising children increase – potentially due to economic liberalization and the resulting changes in educational opportunities and labor market dynamics – fertility rates decline. Concurrently, as a component of globalization, liberalization and the values associated with it changes the individual and collective aspirations. For instance, liberalization's prioritization of personal goals and freedoms, contribute to a redefinition of societal expectations around family size and structure (Lesthaeghe, 2010). Comprehension of the link between liberalization policies and fertility and the various moderating dynamics is crucial

for scholars and policymakers seeking to address demographic challenges in the liberalized modern economy. Further, the demographic resilience perspective explores the ability of populations to maintain fertility rates despite economic and social disruptions – such as those brought by liberalization policies (Myrskylä, Kohler and Billari, 2009; Barrett and Constas, 2014). Within such disruptions, key to understanding what factors enhance or undermine resilience are social support systems, cultural norms, and responsive governance.

To date, scholars have empirically explored the demographic consequences of liberalization policies, particularly fertility dynamics, at country, region, and individual levels. To our knowledge, there has not yet been a systematic review summarizing existing evidence. Against this backdrop, this study makes an essential contribution by undertaking the first systematic review employing established approaches that are rigorous and transparent. We systematically reviewed studies that adopted a quantitative approach to analyze liberalization policies' impact on fertility. We synthesized the results against the level of analysis, namely at macro-, meso- and micro-dynamics, in order to establish the moderating factors and motivations operating at each level.

2. METHODS

We performed the systematic review following the PRISMA guidelines (Page *et al.*, 2021). Our search strategy, inclusion criteria, and methods of analysis were specified in advance and documented in a protocol.

2.1. Search Strategy

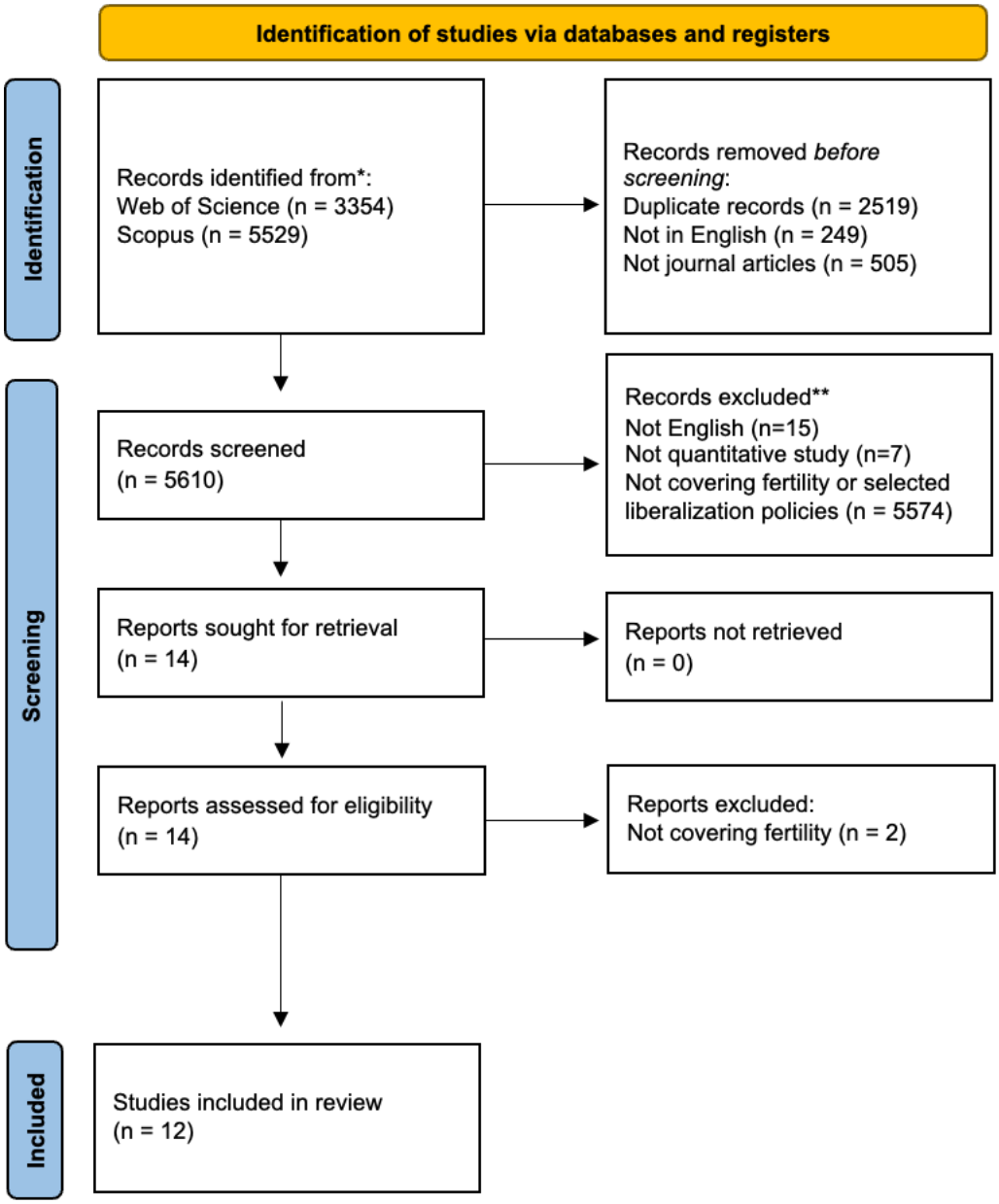
We searched Scopus and Web of Science on November 12th, 2022, for peer-reviewed articles with high-quality research designs aiming to establish the impact of liberalization policies on fertility outcomes.

To operationalize the search terms for liberalization, we first referred to a scoping review previously published on neoliberalism (Poirier *et al.*, 2022). Further, to advance our research strategy, we selected three liberal policy types included in the Washington Consensus, namely

trade liberalization, privatization, and deregulation (Rodrik, 2006). To specify search terms for each of these policies, we drew upon keyword variants that had been previously validated in prior systematic reviews: trade liberalization (McCorriston *et al.*, 2013; Barlow *et al.*, 2017; McNamara, 2017); privatization (Brogaard and Petersen, 2022); deregulation (Necoechea-Porras, López and Salazar-Elena, 2021). To cover fertility outcomes, we incorporated search terms identified by a previous systematic review (Thomas *et al.*, 2022) and a meta-analysis (Alderotti *et al.*, 2021). The final search string is reported in the Appendix.

Our initial search yielded 3354 articles in Web of Science and 5529 in Scopus. Of these 8883 articles, which were imported to Zotero reference management software (Roy Rosenzweig Center for History and New Media, 2022), 2519 were identified as duplicates, 249 were not written in English, and 505 were not journal articles, leaving a total of 5610 for screening and eligibility stages. Figure 1 shows the PRISMA flow diagram for study inclusion.

Figure 1 PRISMA Flow Diagram



2.2. Eligibility Criteria

We applied a series of inclusion and exclusion criteria regarding participants, intervention, comparison, outcomes, and study design (PICOS). The full details of the research and associated PICOS are available in Table 1. We included the articles if they were: i) in English, ii) published in a peer-reviewed journal (gray literature is excluded), iii) used quantitative methods, iv) analyzed policies legislating liberal policy reforms of trade liberalization, privatization, and deregulation, v) took fertility as the outcome measure. We did not apply any restrictions based on geographic scope.

Table 1 PICOS for inclusion and exclusion

Criteria	Inclusion	Exclusion
Participants	Macro-level: Countries where liberalization policies were legislated Meso-level: Regions, provinces, or cities impacted by the legislated liberalization policies Micro-level: Individuals impacted by liberalization policies	
Interventions	Three specific liberalization policies: trade liberalization, deregulation, privatization	Other liberalization policies such as tax reform, foreign direct investment etc.
Control	Countries, regions/provinces/cities, individuals who were not exposed to liberalization policies	
Outcomes	Fertility outcomes: Total fertility rate, age-specific fertility rates, parity, timing of childbearing, likelihood of having children, entry into first parenthood,	Adoption rates, reproductive health services utilization, infertility rates
Study design	Quantitative studies	Reviews and observational studies that do not use quantitative methods

Of 664 screened articles, we excluded 15 for not being in English, 5574 for not covering selected liberalization policies or fertility outcomes, and 7 for not employing quantitative methods, leaving 14 articles for retrieval. We were able to find the full text for all articles. Upon reviewing the complete text, we excluded another two articles for not taking fertility as the outcome variable, resulting in a final set of 12 articles for review.

2.3. Extraction and Analysis

For the 12 included studies, we extracted the data using a preestablished data entry format. We collected the following elements in the full text: authors, year of publication, country, sample, period, level of analysis (macro-, meso- and micro-level), type of liberalization policy, data type, research method, liberalization measure, fertility measure, direction of impact, summary of the results. We further grouped the studies according to the level of analysis and composed a data extraction table for each.

3. RESULTS

The thematic organization of the studies reveals a notable concentration on trade liberalization in the scholarly exploration of the relationship between liberal policies and fertility outcomes. Among the 12 included studies, 10 specifically address trade liberalization, while deregulation is examined in only two studies, and none focus on privatization. Further, the comprehensive geographic scope of the studies, encompassing a wide array of countries, offers a versatile perspective on how liberalization influences fertility across various socio-economic and developmental contexts.

The included studies demonstrate a notable distribution in terms of level of analysis. At the macro level, five studies offer comprehensive insights into the broader societal and policy contexts. These cross-country analyses delve into the effects of liberal policies on fertility at national scales, providing a holistic view of how liberalization shapes fertility patterns. Complementing this macro-level focus, two studies delve into meso-level dynamics within a single country, providing a more detailed and context-specific understanding. Moreover, five studies specifically concentrate on individual-level dynamics, exploring the micro-foundations of the liberalism-fertility nexus. They illuminate the complexities of individual decision-making by examining behavioral, social, and economic motivations.

Therefore, the results section is organized into three subsections. Firstly, attention is directed towards macro-level studies, providing a comprehensive and cross-country overview of the societal impact of liberalization on fertility trends. Following this, meso-level studies are explored,

offering insights into the impact within specific cases. Subsequently, micro-level studies are examined, providing a nuanced analysis of the intricate mechanisms influencing individual decision-making and behavior concerning fertility.

3.1. Macro-Level Studies on Liberalization and Fertility

We identified five studies (Kentor, 2001; Lehmijoki and Palokangas, 2005; Galor and Mountford, 2008; Doces, 2011; Gries and Grundmann, 2014) focusing on the liberalization's impact on fertility at the macro-level. All included studies are focused on trade liberalization, and the overall evidence suggests a multifaceted relationship between fertility and liberalization, influenced strongly by socio-economic development. With one exception, all studies provide empirical evidence supporting trade liberalization's positive influence on fertility, particularly in less-developed countries, particularly in the short term.

In a comprehensive analysis covering 160 countries from 1960 to 2006, both developed and developing, Doces (2011) identifies an inverse relationship between globalization and fertility. The research uses time-series cross-section regression analysis to explore the impact of international trade, measured as the sum of exports and imports as a share of GDP, on the total fertility rate (TFR). The empirical findings, interpreted within the framework of demographic transition and supply-demand models, suggest that international trade reduces the demand for children and encourages an earlier onset of the mortality revolution.

In contrast to Doces (2011), Kentor (2001) and Galor and Mountford (2008) present empirical findings indicating a positive and significant relationship between trade liberalization and fertility for less developed countries. Focusing on 88 less-developed countries between 1980 and 1997 using time-sequenced path analysis, Kentor (2001) reveals that two aspects of globalization, namely foreign capital investment and trade openness, positively affect fertility rates and foster population growth in less developed economies.

In a cross-country comparison of 132 countries, Galor and Mountford (2008) examine the impact of international trade, measured as the share of international trade on GDP, on TFR for the period

of 1985-1990. They find that international trade positively affects fertility in non-OECD economies while inducing fertility decline in OECD. Further, they elaborate on the mechanism at play, namely on education and comparative advantage. For another sample of 97 countries, they analyze the effect of trade on the change in the average years of schooling for OECD and non-OECD economies. They observe that in non-OECD countries, where international trade positively impacts fertility, increased international trade has a negative impact on education. On the contrary, in OECD countries, where international trade induces fertility decline, it also fosters human capital formation. They suggest that trade has a differential and asymmetrical impact on human capital accumulation and the factor content of trade (human capital-intensive vs. unskilled labor-intensive) for industrialized and non-industrialized economies. In non-industrial economies, international trade promotes specialization in producing industrial, skilled-intensive goods, stimulating demand for skilled labor, investment in population quality, and accelerating demographic transition and technological progress. Conversely, in non-industrial economies, international trade incentivizes specialization in unskilled-intensive goods, with limited incentives for investing in population quality, primarily utilizing gains from trade for population growth.

The findings of Galor and Mountford (2008) are supported by Gries and Grundmann (2014), who employed more detailed trade liberalization indicators, specifically manufacturing and primary exports per capita. Encompassing 70 countries from 1980 to 2005, Gries and Grundmann (2014) demonstrate a significant influence of international trade on fertility, particularly in less developed countries. The impact direction on fertility depends on the type of exports and their skill intensity; manufacturing exports negatively affect fertility, while primary exports, characterized by less-developed countries, have a positive impact. This negative influence is most pronounced in middle-income countries with structural modernization and a growing manufacturing-intensive export sector.

Within the framework of developing countries, Lehmijoki and Palokangas (2005) consider different scopes of time by focusing on both the short- and long-term impacts of trade liberalization on fertility. Exploiting pooled panel data for 53 low- and middle-income countries, they observe that trade liberalization initially increases population growth through an income effect, which aligns with the findings of the studies mentioned above. Nevertheless, differently, in the long run,

they see that the gender wage effect decreases fertility. Accordingly, higher levels of investment increase women's relative wages; thus, participation in production becomes more attractive than childrearing, which in return hinders population growth.

Table 2. The impact of liberalization policies on fertility at macro-level

Study	Sample	Period	Policy Type	Data Type	Research Method	Liberalization Measure	Fertility Measure	Direction of Impact	Results
Doces (2011)	160 countries including developed & developing	1960-2006	Trade Liberlization	Cross-sectional	Time-series cross-section regression analysis	Share of international trade on GDP	TFR	Negative	A large sample of developed and developing countries exhibits that international trade has a statistically significant and inverse effect on the birth rate.
Galor and Mountford (2008)	132 countries including OECD & non-OECD	1985–1990	Trade Liberlization	Cross-sectional	OLS & IV	Share of international trade on GDP	TFR	Mixed. Negative and insignificant for OECD; positive and significant for Non-OECD	Cross-country regressions demonstrate that trade has positive effects on fertility and negative effects on education in non-OECD economies, while inducing fertility decline and human capital formation in OECD economies.
Gries and Grundmann (2014)	70 countries including high-, middle- and low-income	1980 to 2005	Trade Liberlization	Panel	Panel regression model	Manufacturing exports per capita & primary exports per capita	TFR	Mixed. Negative if high-skill-intensive manufacturing goods are exported; and positive if low-skill-intensive goods are exported.	The type of exports (i.e., their skill intensity) is particularly important for the direction of impact on fertility. While manufacturing exports affect fertility negatively, primary exports affect fertility positively. Negative influence of manufacturing exports on fertility holds primarily and most strongly for middle-income countries.

Kentor (2001)	88 less developed countries	1980-1997	Trade Liberliza tion	Cross-sectional	Time-sequenced path analyses	Share of international trade on GDP	Population growth ratio & TFR & fertility rate change	Positive	Trade has positive effects on fertility rate, population growth and GNP per capita growth.
Lehmijoki and Palokangas (2005)	53 countries including low- and middle-income	1960-99	Trade Liberliza tion	Pooled panel	OLS	Share of international trade on GDP	TFR	Mixed. Positive in short-run; negative in long-run.	Two effects: an income effect, which raises population growth in the short run; and a gender wage effect, which decreases that in the long run. Higher income first increases population growth & families start invest more in capital. Because female labor is more complementary to capital, a higher level of investment increases women's relative wages and attracts more of them from child rearing into production.

3.2. Meso-Level Studies on Liberalization and Fertility

We identified two studies (Autor, Dorn and Hanson, 2019; Innocenti, Vignoli and Lazzeretti, 2021) that focus on the liberalization's impact on fertility at the meso-level. The results are rather mixed; Autor et al. (2019) identify a negative influence of the Chinese trade shock on fertility in US commuting zones, whereas Innocenti et al. (2021) find an overall positive impact of economic globalization on fertility in Italian provinces.

Exploiting the changes in exposure to international trade for US commuting zones, which is associated with the growth in US imports from China, Autor et al. (2019) find that shock significantly deters fertility on average. However, they observe a significant heterogeneity in results when shocks to male- and female-intensive employment are considered separately. They see that the shocks to male-intensive employment diminish fertility, yet on the contrary, shocks to female-intensive employment foster it. Additionally, they find that shocks negatively impact men's relative employment and earnings curtail the availability and desirability of potentially marriageable young men by reducing the share of men among young adults in a commuting zone and increasing the prevalence of idleness. Referring to Becker's model of household specialization, the authors argue that shocks that increase men's economic insecurity reduce their gains from marriage and fertility, discouraging these choices. Conversely, for women, shocks that diminish their earnings and employment make marriage and fertility more attractive options.

Contrasting with the findings of Autor et al. (2019), Innocenti (2021) observed a positive association between economic globalization and fertility in Italian provinces between 2006-2015. Criticizing previous studies for employing indicators of globalization that operationalize its negative forces, they use the indicator economic complexity regarding the sophistication of a context's productive structure. Provinces with higher economic complexity exhibit higher Total Fertility Rates (TFR), with results remaining robust when stratified by north and south. While causal mechanisms are not statistically tested, the authors suggest that in industrialized economies such as Italy, climbing the ladder of industrial complexity can foster a province's fertility since, in high-income countries, a more complex economy is associated with economic opportunity, personal and societal well-being, and lower levels of economic uncertainty.

Table 3. The impact of liberalization policies on fertility at meso-level

Study	Country (Unit)	Period	Policy Type	Data Type	Research Method	Liberalization Measure	Fertility Measure	Direction of Impact	Results
Autor, Dorn, and Hanson (2019)	United States (Commuting zones)	1990-2014	Trade Liberlization	Cross-sectional	OLS 2SLS	Changes in exposure to international trade for US CZs associated with the growth in US imports from China	Births per 1,000 women ages 20–39	Mixed. Negative on avarage. When looked seperately, negative for shocks to male-intensive employment & positive for female-intensive	Trade shocks significantly deter fertility on avarage. Shocks to male-intensive employment diminish fertility while shocks to female-intensive employment raise it. Specifically, shocks diminishing earnings capacity for the high-earning spouse (typically male) reduce these gains, deterring marriage and fertility and vice versa for shocks that diminish earnings and employment for the low-earnings spouse (typically female).
Innocenti, Vignoli and Lazzeretti (2021)	Italy (Province)	2006-2015	Trade Liberlization	Panel	Multivariate panel regression	Economic complexity: the sophistication of a region's productive structure by combining information on the area's diversity in terms of the products exported and their ubiquity	TFR	Positive	Increase in economic complexity (EC) is a strong driver of fertility. Robust when stratified by north and south. In areas with pre-existing high levels of EC (the centre–north of Italy), an additional increase in EC is associated with rise in TFR. Two suggested reasons: Economic complexity may improve conditions, opportunities and reduce social inequalities. It reshaped labor markets, communication dynamics, and individuals' cultural behaviors and perceptions of uncertainty.

3.3. Micro-Level Studies on Liberalization and Fertility

We identified five studies analyzing the impact of liberalization on fertility at the micro-level, focusing on individual behavior and decision-making (Golsch, 2003; Barbieri *et al.*, 2015; Keller and Utar, 2022; Li, Shao and Shi, 2022; Piriu, 2022). Whereas two papers analyze the impact of deregulation policies (Golsch, 2003; Barbieri *et al.*, 2015), the other three focus on trade liberalization (Keller and Utar, 2022; Li, Shao and Shi, 2022; Piriu, 2022). The results can be read along two potential mechanisms mediating the effect of liberal policies on individual fertility: economic security and gender differences.

The first potential mechanism, the economic security hypothesis, posits that life course decisions are often based on actual or perceived economic security, stable career, or income prospects. Specifically, the anticipation is that a decline in economic security and prospects following liberal policies is likely to discourage individuals from fertility decisions. Conversely, an improvement in economic conditions is expected to encourage parenthood. Four of the five papers included in this analysis focused on and supported this hypothesis through diverse methodologies and contextual lenses.

Analyzing the impact of increased labor market deregulation on fertility in Italy and Spain, Barbieri et al. (2015) reveal that a lack of job stability, heightened by economic insecurity and an insufficient welfare system, contributes to delayed fertility decisions. They also observe that individual economic status, proxied by women's social class position, and having an employed partner support the transition to motherhood. Further, through a comparative lens, they identify that such a negative association between deregulation and motherhood is absent in Germany and the USA. They comment on this comparison from an institutional perspective: While Germany has a segmented labor market but a more generous welfare state, the USA has a welfare system that adopts residualism but a more flexible labor market.

The results of Li et al. (2022) also provide empirical support to the economic security hypothesis. Exploring China's experience with trade liberalization, authors see a positive net effect on married women's fertility intentions as external tariffs decline. They emphasize the role of family income

as a mechanism through which liberal change in external tariffs influence reproductive choices, aligning with the idea that economic security is likely to encourage entrance into parenthood.

The average results of Golsch (2003), focused on the impact of deregulation in Spain during 1994-1997, and Piriu (2022), focused on the impact of trade liberalization in Germany between 1995-2016, empirically support the hypothesis. While the overall effect for both studies is negative due to increasing economic insecurity, they also portray a more nuanced picture of fertility decisions along gender lines, with negative effects for men but positive effects for women. This underscores the importance of considering not only the overall economic impact of policies on fertility but also the differential effects on men and women. Turning to the second potential mechanism based on gender differences, biological differences, and societal norms and expectations regarding traditional gender roles may amplify or mitigate the impact on fertility. Specifically in societies where rigid gender roles, thus the male breadwinner model persists, economic insecurity heightened by liberalization is likely to affect men's fertility decisions negatively. However, it may positively impact women's fertility, as they may choose to opt for a motherhood role within a traditional family structure if the perceived benefits outweigh their career prospects, specifically if the biological clock pressures them.

Providing empirical support to this hypothesis, Golsch (2003) observes that, in Spain, men in precarious, permanent positions exhibit a higher likelihood of becoming fathers, whereas women with weak labor market attachments show the highest probability of motherhood. Piriu (2022) elaborates on the resulting positive effect on female fertility by arguing that as female earnings fall and their opportunity cost of work decreases, the prospect of having children becomes a potentially more rewarding alternative.

Moreover, Keller and Utar (2022) offer a perspective on the gender hypothesis grounded in biological reasoning. They see that in Denmark, the same gender-neutral labor demand shock during the 2000s, resulting from imports from China, led to distinct labor market and family adjustments for men and women. Consequently, this disparity is likely to result in significant long-term gender inequality. The gender gap, as outlined by the authors, is influenced by the female biological clock, suggesting that women are unlikely to conceive beyond their early forties. Thus,

fertile-age women have a higher reservation value to stay in the labor market than men. Specifically, their research documents that women in their late 30s approaching the end of their biological clock, are likely to shift towards their role in family and to have a baby due to import competition from China causing displacement. Also, they show that the gender differential in the workers' family-market work adjustment is not attributable to women being employed in specific firms, industries, or occupations, nor is it due to women being more adversely affected by concurrent shocks.

Table 4. The impact of liberalization policies on fertility at micro-level

Study	Country	Sample	Period	Policy Type	Data Type	Research Method	Liberalization Measure	Fertility Measure	Direction of Impact	Results
Barbieri Bozzon, Scherer, Grotti and Lugo (2015)	Italy & Spain (Germany & USA)	Women aged 15 to 45	1997–2005	Deregulation	Longitudunal	Discrete time event history & probit models	Precarious employment history (having spent at least 3 years in atypical contracts or at least three job episodes with unstable contracts)	Likelihood of having a child at age 30	Negative	In Italy and Spain, where 'familistic' sub-protective welfare system prevails, but not in other institutional contexts such as Germany & USA, the lack of employment stability produces a delay in fertility decision. Individual economic conditions, support fertility decisions. Well-educated women delay maternity even more when in insecure employment. Having an employed partner has positive effect on transition to motherhood.
Golsch (2003)	Spain	Men and women aged 16 to 38	1994-1997	Deregulation	Longitudunal	Discrete-time transition models	Job insecurity according to activity status & employment relationship	Entry into first parenthood	Mixed. Negative on average. Positive for women & negative for men.	Employed individuals are more likely to transition to parenthood than those in school, unemployed, or inactive. Results align with the insecurity and gender hypotheses.
Keller and Utar (2022)	Denmark	2 cohorts of workers: entire private-sector & a subs of textile workers	1999-2009	Trade Liberlization	Longitudunal	Natural experiment (Dif-in-dif)	Exposure to import competition (if employed in a firm producing a quota-protected good from China)	Number of childbirths	Mixed. Positive for women & negative for men	Different labor market and family adjustments driven by the female biological clock. Women in their late 30s, decide to have a baby as the shock causes displacement.

Li, Shao and Shi (2022)	China	Married, divorced and widowed women under 52 years old	1997 to 2011	Trade Liberlization	Longitudunal	Logistic regression	The specific regional external tariff calculation using Atkin's method	Desired fertility	Positive	The overall impact on married women is positive. Result holds consistently across various robustness checks, such as the inclusion of different control variables, addressing endogeneity concerns through the construction of Bartik export demand variables, employing different methods for calculating average tariffs, and accounting for son preference. The mechanism test demonstrates that fluctuations in external tariffs can influence the reproductive intentions of married women by impacting family income.
Piriu (2022)	Germany	All individuals employed in a manufacturing industry at least once since 1984	1995-2016	Trade Liberlization	Longitudunal	OLS & IV	Monetary exposure to Chinese imports for an employee	Probability of having a child	Mixed. Negative on average. Positive for women & negative for men.	Overall effect on fertility is negative. Results indicate a reduction in the employment opportunity of individuals, an increase in marginal employment and higher economic insecurity.When investigating by gender, the effect is still negative for men but positive for women. There is a substitution effect in the labor supply of women, here prevalently concentrated in low-technology sectors. As female earnings fall and their opportunity cost of work is lower, the prospect of having children possibly becomes a more rewarding alternative.

4. CONCLUSION

Numerous findings can be drawn from our review encompassing the impact of liberal policies, namely trade liberalization, deregulation, and privatization, on fertility spanning multiple levels of analysis – macro, meso, and micro. Firstly, though limited in quantity, existing research offers nuanced insights, revealing a complex interplay of economic, social, and individual factors shaping liberalization's influence on fertility. As macro-level studies offer a cross-country panorama, micro-level studies delve into individual-level mechanisms and factors. The included macro-level studies provide empirical evidence on the critical role of socio-economic development. Specifically, in less developed countries, trade liberalization creates a significant positive impact on fertility. Unfortunately, the number of studies at the meso-level is rather scarce and provides mixed results; thus, it is not possible to retract coherent conclusions. The micro-level studies highlight the importance of two factors mediating the impact of liberalization on fertility, one being economic security and the other gender. A decline in economic security and prospects following liberal policies is likely to discourage individuals from entering into parenthood. Also, biological differences and societal norms regarding traditional gender roles may amplify or mitigate the impact on fertility. The persisting traditional male breadwinner model may discourage men's fertility decisions if liberalization policies heighten economic insecurity. Instead, women may opt for a motherhood role within a traditional family structure if the perceived benefits outweigh their career prospects, specifically if the biological clock pressures them.

As with all systematic reviews, ours has several limitations. Firstly, by focusing exclusively on quantitative research, this review aimed to provide a quantitative synthesis of evidence and a rigorous analysis of fertility associated with liberal policies. However, it may overlook valuable insights from qualitative studies on contextual nuances, patterns, and lived experiences related to fertility and liberalism. Secondly, it was not possible to do a meta-analysis due to the restricted number of papers and substantial heterogeneity among them regarding methodology, level of analysis, and variable identifications. This heterogeneity extended even within categories of liberal policies, where differences in the identification and measurement of independent variables were prevalent. For instance, the share of international trade on GDP, cross-country ties, and tariff calculations are all preferred indicators of the independent variable trade liberalization across

papers. Moreover, fertility, the dependent variable, exhibited varied units and time frames across studies, complicating comparisons.

We identified multiple limitations to existing studies. Firstly, a great majority of the papers studying the impact of liberal policies on fertility focus on trade liberalization. Deregulation receives relatively less attention, while privatization receives no attention. Secondly, the majority of the studies, aside from the ones using instrumental variable analysis or natural experiments, did not address potential endogeneity issues. Specifically, the decision to implement liberal policies might not be random but driven by specific economic and demographic concerns. Further, the simultaneity might potentially be an issue as liberal policies and fertility changes might occur concurrently. Lastly, the potential selection bias should have been discussed, especially for meso- and micro-level studies where samples are taken from one specific country. Regions or countries that adopt liberal policies may differ systematically from those that do not, and it might impact the study's external validity.

Notwithstanding these limitations, our study has key strengths. Firstly, it is the first systematic review focusing on liberal policies' impact on fertility. Secondly, it offers a quantitative synthesis of evidence at diverse levels of analysis, namely macro-, meso- and micro-levels. Additionally, the review is grounded on a rigorous methodology for study selection, data extraction, and analysis. This methodology is predetermined and thoroughly documented, ensuring the research's transparency, reliability, and reproducibility.

Our review also underscores specific research gaps that might be worth further attention. Firstly, liberalization policies such as deregulation and privatization did not receive enough attention in the existing literature, warranting more in-depth investigations into their distinct impacts on fertility dynamics. There is also an imbalance in terms of level of analysis since macro- and micro-level studies receive relatively more attention compared to meso-level. Secondly, there is an opportunity for researchers to help advance this area by addressing a broader range of mechanisms and outcomes. For example, macro-level studies do not sufficiently address institutional factors such as welfare state. Welfare state generosity and comprehensiveness of welfare provisions are likely to mitigate individuals' actual or perceived economic security following the introduction of

liberal policies. Also, cultural factors, acknowledged as critical factors affecting fertility dynamics and convergence or divergences, are not incorporated in the papers. For meso-level studies, the inclusion of contextual factors such as healthcare access and urbanization as factors mediating the association between liberalization and fertility might provide important insights. Further, micro-level studies might benefit from including cultural shifts and social safety nets in the analysis. Thirdly, the choice of fertility variables can be diversified. All macro- and meso-level papers included in the study take TFR as the outcome variable; an interesting aspect might come from focusing on desired fertility as it can provide valuable insights into a population's reproductive intentions and preferences. Micro-level studies can also benefit from focusing on desired fertility as it will reflect individual or couple preferences and intentions, which may or may not align with their actual behavior due to other potential mechanisms. Lastly, the geographic scope of studies is comprehensive for macro-level studies, including countries from various socio-economic backgrounds. Nevertheless, meso- and micro-level studies, aside from the ones focused on China, are focused on developed countries. Focusing on individual and regional-level dynamics in developing or underdeveloped countries would be interesting.

In conclusion, our systematic review delves into the multifaceted impact of liberalization policies on fertility across macro, meso, and micro levels. Despite valuable insights, inherent limitations exist, emphasizing the need for more exhaustive methodologies and a more comprehensive exploration of diverse variables and mechanisms. Nevertheless, our study is the pioneering quantitative synthesis in this field, providing a foundation for future research to bridge existing gaps and contribute to a nuanced understanding of the intricate relationship between liberalization and fertility dynamics.

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APPENDIX

We applied the following keyword variants for each search term to the title, abstract, and keywords section of the articles:

- Liberalization:
    - Trade liberalization: liberalization, trade liberalization, investment liberalization, trade agreement, investment agreement, bi-lateral agreement, multi-lateral agreement, preferential trade agreement, trade and investment agreement, regional trade agreement, trade policy, investment policy, globalization, regionalism, multilateralism, multinationalism, economic integration, export subsidy, trade barrier, tariff, World Trade Organization, nontariff barriers to trade, free trade, General Agreement on Tariffs and Trade, international trade, trade relations, trade agreements, trade negotiations, terms of trade, comparative advantage, global economy, transborder
    - Privatization: privatization, non-public, contracting out, outsourcing
    - Deregulation: deregulation, economic deregulation, financial deregulation, regulatory reform
- Fertility outcomes: fertility, childbirth, childbearing, natality, family formation, childlessness, parenthood, have children, postponement of childbearing, postponement of birth, delayed childbearing, delayed birth, onset of parenthood, age at first birth.

These keywords yielded the following search strings for Web of Science and Scopus:

For Web of Science:

TS=(liberali?ation OR “trade liberali?ation" OR "investment liberali?ation" OR "trade agreement*" OR "investment agreement*" OR "bi-lateral agreement*" OR "multi-lateral agreement*" OR "preferential trade agreement*" OR PTA OR "trade and investment agreement*" OR TIA OR "regional trade agreement*" OR RTA OR "trade polic*" OR "investment polic*" OR globali?ation OR regionalism OR multilateralism OR multinationalism OR "economic integration" OR "export subsid*" OR "trade barrier*" OR tariff* OR World Trade Organi*ation

OR "nontariff barrier* to trade" OR "free trade" OR "General Agreement on Tariffs and Trade" OR "international trade" OR "trade relation*" OR "trade agreement*" OR "trade negotiation*" OR "terms of trade" OR "comparative advantage" OR "global econom*" OR transborder OR privat* OR non-public OR "contracting out" OR outsourcing OR deregulat* OR "economic deregulat*" OR "financial deregulat*" OR "regulatory reform") AND TS=(fertility OR childbirth OR childbearing OR natal* OR "family formation" OR childlessness OR parenthood OR "have a child" OR "have children" OR "postponement of childbearing" OR "postponement of birth" OR "delayed childbearing" OR "delayed birth" OR "onset of parenthood" OR "age at first birth")

For Scopus:

TITLE-ABS-KEY(liberalization OR liberalization OR "trade liberalization" OR "trade liberalization" OR "investment liberalization" OR "investment liberalization" OR "trade agreement*" OR "investment agreement*" OR "bi-lateral agreement*" OR "multi-lateral agreement*" OR "preferential trade agreement*" OR PTA OR "trade and investment agreement*" OR TIA OR "regional trade agreement*" OR RTA OR "trade polic*" OR "investment polic*" OR globalization OR globalization OR regionalism OR multilateralism OR multinationalism OR "economic integration" OR "export subsid*" OR "trade barrier*" OR tariff* OR "World Trade Organization" OR "nontariff barrier* to trade" OR "free trade" OR "General Agreement on Tariffs and Trade" OR "international trade" OR "trade relation*" OR "trade agreement*" OR "trade negotiation*" OR "terms of trade" OR "comparative advantage" OR "global econom*" OR transborder OR privat* OR non-public OR "contracting out" OR outsourcing OR deregulat* OR "economic deregulat*" OR "financial deregulat*" OR "regulatory reform") AND TITLE-ABS-KEY(fertility OR childbirth OR childbearing OR natal* OR "family formation" OR childlessness OR parenthood OR "have a child" OR "have children" OR "postponement of childbearing" OR "postponement of birth" OR "delayed childbearing" OR "delayed birth" OR "onset of parenthood" OR "age at first birth")