

## **Online Appendix for “A Review of the Economics of Sexual Orientation and Gender Identity”**

### **Appendix A. Historical and Social Context**

#### **A.1 Introduction**

In 1895, Oscar Wilde was convicted because of “the love that dare not speak its name”. Alan Turing, one of the founders of computer science and artificial intelligence, was prosecuted for homosexual acts and forced to undergo chemical castration in 1952, leading to his suicide shortly afterwards. In Nazi Germany, homosexual individuals were actively prosecuted and sent to concentration camps (Apostolou 2020c). For most of the 19<sup>th</sup> and 20<sup>th</sup> centuries, sexual and gender minority individuals had to live in an environment with widespread invisibility in language, without a formal conceptualization of LGBTQ+ identities, rejected by their families, and without a community that could offer support or guidance (Margolin 2021). Same-sex desire was “without name... it is a word unsaid, it is not in any dictionary, utterance, symbol” (Whitman 1855). Today, same-sex sexual acts can still be punished by death in 11 countries in Sub-Saharan Africa and the Middle East (ILGA 2020), and in 2021 the International Transgender Day of Remembrance honored the lives of 375 transgender and gender-diverse people murdered in the previous 12 months (TvT 2021).

As described in this section, for decades (or even centuries), LGBTQ+ individuals have often faced negative attitudes, laws, and policies preventing them from achieving their full economic potential, thus likely leading to lower aggregate economic growth. Indeed, Badgett, Waaldijk, and Rodgers (2019) have found a positive association across countries between legal rights for LGBTQ+ individuals and real GDP per capita since the 1960’s.

At the same time, it is worth mentioning that, while recent and current attitudes and policies affecting LGBTQ+ individuals have been shaped by political views in Western Europe, as well as by the Abrahamic religions, indigenous cultures in the other continents (as well as ancient European civilizations) have often held diverse views on sexual orientation and gender identity. In many – but not all – of these cultures, same-sex attraction and sexual behavior were generally accepted (although most individuals were still expected to eventually be in a different-sex marriage and have children), and gender nonconforming individuals were tolerated or even welcomed. This is particularly important to remember when analyzing data or when designing survey questions (Bauer et al. 2017). For instance, sexual and gender minorities may use different terminologies – such as the term two-spirit used by gender-diverse Indigenous individuals in North America – and the rate of misreporting in surveys may be lower in countries such as India or Pakistan where a third gender population has been traditionally recognized. Also, some cultures might map sexual behavior onto identity categories defined by gender identity as well as the sex of sexual partners. Altman (2001) points to categories that involve both gender-crossing and homosexual behavior, such as *waria* in Indonesia, or *bayot* in the Philippines.

An additional goal of this section is to emphasize that current LGBTQ+ policies and laws have a long history. For instance, sodomy laws have been the bedrock of anti-gay discrimination policies (Eskridge 2008). Sodomy laws were used in the US against sexual minorities to limit

their rights to adopt or raise children, to justify firing them or denying jobs, and to allow unequal treatment such as excluding them from hate-crime laws (ACLU 2019). Old discriminatory laws can have long-lasting effects even after being repealed, while inertia in governments can lead to laws and organizational rules not being modified or updated, thus contributing to institutional discrimination (Small and Pager 2020). For instance, homosexuality is still illegal in many countries due to laws introduced by the British Empire and retained – even in high-income countries such as Singapore (until 2022) – after former colonies gained independence (HRW 2008). In addition, most countries do not include a third gender in official documents, and many laws restrict or limit the ability of transgender and intersex individuals from modifying their gender marker on their driver’s license or from changing their name, thus affecting their voting and civil rights.

## **A.2 Legal and Historical Views Regarding LGBTQ+ Individuals**

### **A.2.1 Sodomy Laws**

The word *Sodomy* comes from the Latin expression *peccatum Sodomiticum* (sin of Sodom), referring to the Genesis chapters on the cities of Sodom and Gomorrah. The sexual acts indicated as *sodomy* historically referred to both oral and anal sex. Sodomy laws are laws that criminalize these specific sexual activities.

While having clear religious foundations in Judaism, Christianity, and Islam, sodomy laws targeting same-sex sexual activities were turned into secular laws and spread around the world mainly through the British Empire (Sanders 2009; Asal, Sommer, and Harwood 2013). Sodomy was also punished by death in the Kingdom of Spain (Apostolou 2020b). In contrast, the Penal Code adopted in France in 1791 and influencing legislation in many countries in Continental Europe followed the ideal of *universalité* disseminated during the French Revolution, and it did not make distinctions between heterosexual and homosexual acts (Chang 2021; Gunther 2009). Many decriminalization efforts in the rest of the world have been recent and have started only after WWII: for instance, sodomy laws were repealed in England and Wales in 1967, Canada in 1969, South Africa in 1998, United States in 2003, and more recently in India in 2018 and Singapore in 2022. Despite this progress, same-sex sexual activity is still criminalized in more than 60 countries (ILGA 2020).

The path to decriminalization has been particularly tortuous in the US (Ciacci and Sansone 2023). Sodomy was a capital crime punishable by death in most American colonies. Even after the US declaration of independence and throughout the 20<sup>th</sup> century, sodomy was a crime often punishable by a life sentence. The years after WWI were characterized by a “gay panic”: a widespread belief that homosexuals were sexual predators targeting children and susceptible young adults to make them gay. The legal and social environment remained hostile even after WWII. The FBI created a data bank of known homosexuals (Eskridge 2008). During the “Lavender Scare” in the 1950s and 1960s, thousands of US government employees were fired because they were suspected to be homosexual (D. K. Johnson 2004). In states such as California and Florida, homosexual teachers and university professors were regularly fired for “immoral conduct”. In the same period, the armed forces discharged between 2,000 and 5,000 persons, especially women, as suspected homosexuals (Williams and Weinberg 1971).

Thanks to the work done by legal experts trying to persuade states to modernize their criminal codes, and later by activists targeting state and federal judicial courts, more and more states started to repeal their sodomy laws: Illinois became the first state to decriminalize consensual sodomy in 1961. Connecticut did the same in 1969. Despite those shifts, homosexual behavior was still illegal in 14 US states before the remaining laws were struck down by the US Supreme Court in *Lawrence v. Texas* in 2003. And yet, these rights are not secure: in 2022 Justice Clarence Thomas argued in *Dobbs v. Jackson Women's Health Organization* that the Court should revisit past decisions based on substantive due process such as *Lawrence*.

In conclusion, sodomy laws not only led to LGBTQ+ individuals being treated as criminals, but they were used to justify numerous forms of discrimination, harassment, and blackmail (Ciacci and Sansone 2023; Badgett 2020). It is still not clear what have been the effects of the decriminalization of same-sex sexual activity on labor market outcomes for sexual minorities, attitudes towards sexual minorities, incidence of sexually-transmitted infections, and mental health in high-income countries such as the US as well as in countries that recently repealed their sodomy laws such as India.

### **A.2.2 Sexual Orientation and Gender Identity in Ancient and Non-Western Societies**

Within Europe, same-sex sexual behaviors were approved or at least tolerated in ancient Greece, in the Roman Empire, and among the Celts (Apostolou 2020b), although the extent and level of acceptance are still discussed (Clarke 1978). Similarly, there is some evidence of same-sex sexual acts and relationships in Islamic societies and among Arab rulers (Apostolou 2020c). Same-sex relationships were common or even fashionable among the higher social classes in Imperial China, the samurai in Japan, and some Buddhist monks in Tibet (UNESCO 2015). Archeological evidence of same-sex behaviors and even approval of same-sex relationships have also been found for pre-Columbian societies such as the Maya, while the Aztecs and the Incas are believed to have been hostile to such relationships (Apostolou 2020c), and there is no clear understanding of homosexual views and laws in ancient Egypt (Reeder 2000).

With a few exceptions, women are conspicuously invisible throughout history and across culture, with scant evidence of same-sex relationships between women: either these sexual acts and relationships were ignored, less frequent, or they were considered less threatening to social stability (Apostolou 2020a).

On the other hand, several cultures have traditionally tolerated, accepted, or even embraced transgender, third gender, or intersex individuals for thousands of years. For instance, in many countries in Southeast Asia, these individuals perform at celebrations and ceremonies, or they are considered healers, shamans, and spiritual leaders (UNESCO 2015). *Hijras* have similar roles in Hindu communities, and are legally protected in South Asia (Khaleeli 2014). Another example is provided by *köçeks* – young male dancers cross-dressed in feminine attire – in the Ottoman Empire (Apostolou 2020c). Relatedly, cultures from Indigenous Australians to Native Americans accept individuals born with both male and female “spirits” in one body. Sexually and gender diverse gods, deities with both masculine and feminine characteristics, and

references to more than two genders can be found, among others, in Indonesia, Nepal, and in some Buddhist texts (UNESCO 2015).

### **A.2.3 Economic contexts for the Emergence of Identities**

In many contemporary societies, people with same-sex attraction or with same-sex sexual partners often developed specific sexual identities as homosexual, gay, lesbian, bisexual, or queer persons (Laumann et al. 1994). Similarly, some individuals whose gender expression or gender identity differs from the sex assigned at birth have come to identify as transgender (James et al. 2016). As noted in an earlier section, these different dimensions of sexuality (attraction, behavior, identity) or gender (expression, identity) are positively but not perfectly correlated (Laumann et al. 1994). For example, individuals might feel an attraction to someone of the same sex without acting on it or without identifying as gay or bisexual.

Economic contexts that have shaped the development of those sexual and gender identities might well explain some of that imperfect correlation. In particular, some historians of the United States have pointed to economic shifts that created opportunities for people to not only find same-sex partners but to also develop a sense of sexual orientation as a personal characteristic or identity. That identity defined them in some important way and linked them to communities made up of others with those identities. The development of industrial capitalism generated jobs that provided economic independence from families of origin, particularly for men (D'Emilio 1983). Those jobs often drew men to cities, where boarding houses, laundries, and restaurants made living outside of families possible, and where the presence of other men seeking male partners enhanced their opportunities for finding sex partners (Chauncey 1995; Posner 1994; D'Emilio 1983). As communities of men who loved other men developed, an individual's homosexual or gay identity became a way to pull people together for common purposes, such as for building new cultural or economic settings or for political efforts to resist oppression (D'Emilio 1983).

For women, Matthaei (1995) noted the importance of expanding opportunities for education and employment that made it possible for women to live outside of heterosexual marriages in the early 20<sup>th</sup> century. The fact that those opportunities existed in sex-segregated settings, such as women's colleges or jobs held only by women, also enhanced their usefulness for the development of lesbian identities.

Similarly, historians of transgender people have pointed to how the limited economic opportunities for women might have led some to cross-dress or even live as men or husbands of women, particularly in the 19<sup>th</sup> century, although these different gender expressions do not mean they should be thought of as what we mean by transgender today (Stryker 2008; Manion 2020; Matthaei 1995). More recently, opportunities for transgender people have also been shaped by medical technologies (Stryker 2008) and communications technologies, such as newspapers (Manion 2020) and the internet (Stryker 2008).

In the late 20<sup>th</sup> century, globalization contributed to the spread of LGBTQ+ identities beyond the frequently-studied wealthy industrial countries (Altman 2001). The movements of people (travel and tourism) and ideas (through the internet and other communications media) across borders also brought new ways of defining sexual minorities and gender minorities.

### **A.3 How the Medical Community Has Viewed and Treated LGBTQ+ Individuals**

#### **A.3.1 When Being LGBTQ+ Was Considered a Disease**

During most of the 20<sup>th</sup> century, LGBTQ+ individuals were often ostracized by the medical community, marginalized, considered sick or, worse, spreaders of dangerous diseases. For instance, between 1946 and 1957, 29 US states expanded or introduced sexual psychopath laws allowing medical treatment of homosexuals, with potential indefinite detention (Eskridge 2008). The legacy of such an approach – with stigma among LGBTQ+ individuals, lack of training of healthcare professions on transgender and intersex care, as well as HIV treatment and prevention strategies, and explicit or implicit biases and prejudices held by doctors and nurses – is likely to have persisted nowadays and to be linked to the observed large health disparities by sexual orientation and gender identity (IOM 2011), as well as the discrimination routinely experienced by LGBTQ+ patients (Ayhan et al. 2020; Sabin, Riskind, and Nosek 2015).

The past decades have seen monumental and highly visible changes in the medical community's approach to sexual orientation and gender identity. In the US, the American Psychiatric Association removed homosexuality from the Diagnostic and Statistical Manual of Mental Disorders in 1973 (Lamberg 1998), while the World Health Organization removed homosexuality from the International Classification of Diseases in 1990. Regarding gender identity, being transgender was depathologized in the US by 2013 (Drescher 2015), and by the World Health Organization in 2018. In addition, intersex medical interventions are becoming increasingly controversial, especially when conducted during infancy and childhood (WHO 2015; Council of Europe 2015). Indeed, the Constitutional Court of Colombia restricted the age for surgical interventions on intersex children in 1999, and Malta passed a law in 2015 protecting intersex minors from non-consensual medical interventions (Malta 2015), followed by Portugal in 2018, Iceland in 2020, Germany in 2021, and Greece in 2022 (Guilbert 2018; Maltezou and Heinrich 2022; ILGA 2023b).

Despite these developments, pseudo-scientific 'conversion therapy' methods are still commonly used in most countries in an unsuccessful effort to modify a person's sexual orientation or gender identity (Salway et al. 2021), often causing long-lasting mental and physical damages (Turban et al. 2020; Ryan et al. 2020; Campbell and van der Meulen Rodgers 2023). Bans against these methods have been introduced in Brazil (1999), Ecuador (2013-2014), Malta (2016), Germany (2020), Canada (2022), France (2022), Greece (2022), Israel (2022), New Zealand (2022), Vietnam (2022), Cyprus (2023), and Iceland (2023), as well as several states and territories in Australia, Mexico, Spain, and the US (ILGA 2020; 2023a). On the other hand, countries such as Indonesia and Malaysia continue to officially support conversion therapy (ILGA 2020).

### **A.3.2 How HIV/AIDS Impacted LGBTQ+ Individuals**

An historical discussion of the economic and social lives of sexual minorities is not complete without an explicit discussion of the HIV/AIDS epidemic, which had a disproportionate impact on gay men and the evolution of the gay rights movement, especially in the US. Two broad strands of economics research are especially noteworthy. One examines the sociopolitical implications of HIV/AIDS and the associated policy responses to combat the disease. A different set of studies has used HIV/AIDS and related treatments – both Highly Advanced Anti-Retroviral Treatment (HAART) and Pre-Exposure Prophylaxis (PrEP)<sup>1</sup> – to understand the effects of disease and lifesaving technologies on sexual behaviors and economic outcomes of sexual minorities (as well as heterosexual individuals).

Some effects are very broad, as the epidemic appears to have shifted tolerance of LGBTQ+ people and political outcomes. Focusing on the societal impacts of the HIV/AIDS epidemic, Fernández, Parsa, and Viarengo (2021) showed that places with greater exposure to the gay community – as proxied by AIDS state rates and the share of same-sex couples in the 1990 US Census – experienced a larger increase in approval of same-sex sexual relations after the 1992 Presidential elections. This result suggests that the AIDS/HIV epidemic unified activist groups, increased exposure to the gay community, pushed the debate about LGBTQ+ rights in the national political arena, influenced the institutional development of the LGBTQ+ rights movement – as also mentioned in Badgett (2001) – and led to improvements in attitudes. In addition, the authors argued that these improvements reduced suicide rates among young people. Relatedly, Mansour and Reeves (2022) documented how Democratic candidates for the US House of Representatives in districts with high HIV/AIDS mortality rates in the 1980s obtained larger campaign contributions, experienced higher Democratic voter turnout, and received a larger share of votes in the 1990s, thus increasing their chances of winning. Other researchers have examined the policy responses to HIV/AIDS: in particular, Dillender (2023) estimated that local funding to US cities with high numbers of AIDS deaths following the Ryan White CARE Act in 1990 led to a larger reduction of AIDS deaths in cities receiving the funds.

Focusing instead on individual responses to HIV/AIDS and related treatments, early studies looked at the effect of the epidemic on sexual behavior and condom use (Martin 1987; McKusick, Horstman, and Coates 1985; Francis 2008). Multiple studies have since then examined the possible moral hazard effects of lifesaving HIV/AIDS treatments (Lakdawalla, Sood, and Goldman 2006; Chan, Hamilton, and Papageorge 2016) as well as the effect of HAART on labor market choices (Papageorge 2016; Hamilton et al. 2021).

A few studies have analyzed the recent introduction of PrEP medications to prevent HIV infections in HIV-negative individuals (Holloway et al. 2020; Tello-Trillo and McManus 2021). In line with the literature on antiretroviral treatments and moral hazard, Eilam and

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<sup>1</sup> HAART is a combination of prescription drugs that prevents HIV from replicating in the body. When taken as prescribed, the latest generation of HAART usually leads to undetectable viral loads among HIV-positive individuals within a few months, which is now considered too low for infecting another person even in the case of unprotected sex (Eisinger, Dieffenbach, and Fauci 2019). PrEP is a daily medication that people at risk of HIV can take to reduce their risk of transmission. PrEP is highly effective when taken as prescribed: it reduces the risk of HIV transmission through sex by 99 percent.

Delhommer (2021) noted that PrEP decreased the cost of sex without condoms, thus leading to moral hazard and an increase in other sexually-transmitted infections. In addition, Lennon (2022) showed that PrEP availability increased the costs of providing health insurance for employers in the US, thus leading to a reduction in employment, hours worked, and earnings for men in same-sex couples.<sup>2</sup>

Finally, the economic consequences of HIV criminalization laws are still unclear (Lazzarini et al. 2013). For instance, some US states criminalize non-disclosure of HIV status, or require people living with HIV to register as sex offenders. Some states even criminalize exposure to body fluids that poses only a remote (if any) possibility of HIV exposure. In other states, HIV status can affect the severity of a sentence upon conviction for crimes such as prostitution or solicitation (CHLP 2021). Similar laws have been enacted in many other countries around the world (GNP+ 2010). It is important to note that “most HIV criminalization laws do not reflect current scientific and medical evidence” (CDC 2021). Furthermore, HIV criminalization laws do not seem to actually affect HIV-positive status disclosure, HIV transmission rates, or to be related to any HIV prevention behaviors (Harsono et al. 2016) – although some studies found somewhat different results (Delavande, Goldman, and Sood 2010). Negative consequences of these laws have also been documented, such as deterring people from seeking HIV care and remaining on HIV treatment, exacerbating HIV-related stigma and discrimination, and being disproportionately used to target disadvantaged or marginalized groups (Harsono et al. 2016). In particular, transgender women and gay and bisexual men of color are at increased risk of being prosecuted under these laws (Goldberg et al. 2019).

#### **A.4 Current Attitudes Towards LGBTQ+ Individuals**

Historically, attitudes towards sexual and gender minorities have been important constraints on the lives of LGBTQ+ people, working through labor markets and other socio-economic contexts. Low levels of acceptance or tolerance are associated with a range of negative social outcomes (Flores 2021), such as bullying, violence or harassment, physical and mental health problems (Francis and Mialon 2010), low employment levels, productivity, and earnings (Hansen, Martell, and Roncolato 2022; Burn 2019; Hammarstedt, Ahmed, and Andersson 2015), low business profits, and low political representation. At a macroeconomic level, the link between tolerance and economic growth is actively debated (Berggren and Elinder 2012a; Bomhoff and Lee 2012; Berggren and Elinder 2012b; Badgett, Waaldijk, and Rodgers 2019; Florida, Mellander, and Stolarick 2008).

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<sup>2</sup> The studies mentioned in this section are focused on the US, where gay or bisexual men and transgender individuals were more likely to be affected by HIV/AIDS. HIV/AIDS has disproportionately affected African Americans as well (R. C. Johnson and Raphael 2009). Broader effects of the HIV/AIDS epidemic on the general US population are discussed by, among others, Ahituv, Hotz, and Philipson (1996); Cardazzi, Martin, and Rodriguez (2021); and Spencer (2021). Several researchers have instead looked at Africa – a region in which the virus has infected a larger share of people in the general population – and analyzed the economic, health, and political impact of the HIV/AIDS epidemic (Chicoine 2012; Chin 2013; Chin and Wilson 2017; Fortson 2009; 2011; Karlsson and Pichler 2015; Oster 2012), as well as of the latest generation of antiretroviral treatments (Baranov, Bennett, and Kohler 2015; Baranov and Kohler 2018; Lucas and Wilson 2013).

#### **A.4.1 Recent Levels and Trends**

Researchers in other social sciences have analyzed changes in attitudes over time. One analysis of trends in attitudes at a global level has been conducted by Flores (2021). Flores harmonized several global and regional surveys in order to create a new index of attitudes towards LGBTQ+ people and rights in 175 countries and territories between 1981 and 2020. The author showed that around one third of countries and territories experienced no change in attitudes in the past decades, one third saw improvements in attitudes, and the remaining one third had a decrease in acceptance. From a regional perspective, there have been clear upward trends in North America, Western Europe, and Oceania, with recent declines in Eastern Europe and Sub-Saharan Africa. Similar trends have been described in Smith, Son, and Kim (2014).

The existence of large heterogeneity across countries is also clear from the World Values Survey. Looking at the 2017-2020 wave, less than 2 percent of respondents in Iceland mentioned that they would not like having homosexuals as neighbors, less than 4 percent mentioned it in the Netherlands, and around 5 percent of respondents mentioned it in the UK. On the other hand, in countries such as Jordan, Myanmar, Zimbabwe, and Nigeria, around 90 percent of respondents mentioned that they would not like homosexuals as neighbors. In the US, 13 percent of respondents gave a similar answer (down from 39 percent in the 1989-1993 wave).<sup>3</sup> Similar results were obtained in the Gallup World Poll, in which individuals were asked whether their city or area was a good place for gay and lesbian people to live. The share of residents who felt that their area was accepting of gay and lesbian individuals was higher than 75 percent only in Canada, Uruguay, and most countries in Western Europe. The lowest shares were estimated in Sub-Saharan Africa, Azerbaijan, Pakistan, and Indonesia (McCarthy 2015).

In line with these findings, most individuals supported LGBTQ+ individuals and the expansion of LGBTQ-related rights according to a survey conducted by Ipsos in 27 middle-income and high-income countries in 2021, although there were large variations across countries and demographic groups (Boyon 2021). For instance, 42 percent of respondents across countries said that they had a friend, relative, or colleague who was gay, lesbian, or homosexual, 24 percent one who was bisexual, 10 percent one who was transgender, and 9 percent one who was nonbinary, nonconforming, or gender fluid. In countries such as Spain, the UK, and the Netherlands, almost 60 percent of respondents had a gay or lesbian friend, relative, or colleague, but this share was much lower in countries such as Japan (7 percent) or South Korea (7 percent). Similarly, around 51 percent of respondents across countries supported individuals being open about their sexual orientation and gender identity with everyone, although fewer people (37 percent) supported public displays of affection.

Focusing on the US, the last few decades have seen a dramatic change in public opinion towards LGBTQ+ individuals (Flores 2021), as also discussed in the introduction. In line with these trends, a 2021 YouGov poll found that 66 percent of Americans would be supportive if their child, sibling, or other close family member came out as gay, lesbian, or bisexual, while

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<sup>3</sup> Based on authors' own calculations using the WVS Online Analysis tool (Accessed 29/Nov/2021) <https://www.worldvaluessurvey.org/WVSONline.jsp>



57 percent would be supportive of a family member who came out as transgender or nonbinary (Ballard 2021). However, Coffman, Coffman, and Ericson (2017) cautioned that a large share of individuals may not answer truthfully in surveys, and that anti-LGB attitudes may be substantially more widespread than usually reported.<sup>4</sup> Moreover, attitudes towards transgender issues are often mixed, context-dependent, and may not experience the generational change that has been documented for attitudes towards sexual minorities and driven by the younger cohorts (McCarthy 2021). In line with Coffman, Coffman, and Ericson (2017), Aksoy, Carpenter, and Sansone (2022) found evidence of social desirability bias and underreporting of transphobic attitudes, although they showed that – after accounting for such misreporting – most Americans do support employment non-discrimination protection laws for transgender individuals and would be comfortable with a transgender manager at work.

Finally, although the Implicit Association Test has been used by economists when analyzing implicit attitudes and discrimination towards women or minorities such African-Americans and Muslims (Bertrand and Duflo 2017), its application to measure implicit attitudes towards LGBTQ+ individuals has been limited and predominantly concentrated in fields outside economics (see, among others, Steffens, 2005; Breen and Karpinski, 2013; Sabin, Riskind, and Nosek, 2015; Wang-Jones et al., 2017).

#### **A.4.2 Determinants of Attitudes**

Researchers have investigated how the patterns highlighted in the previous section are related to demographic characteristics, economic factors, and cultural influences (Goldberg et al. 2019). Demographic correlates such as age, sex, education, and urbanicity are discussed, among the others, in Stephan and McMullin (1982), Kite (1984), Chang (2021), Yang (2022), and Ekstam (2023). Fernández and Parsa (2022) further showed that highly-educated individuals were the ones initially driving the political divergence in the US between Democratic and Republican views and proposed policies regarding gay and lesbian people in the 1980s and 1990s. Personal experiences can also affect individual views: Becker and Jones (2020) noted that individuals who suffered from gender discrimination were more likely to support transgender people.

Andersen and Fetner (2008) underscored instead the relationship between attitudes and economic factors. The authors argued that tolerance towards homosexuality declines as income inequality rises, and that higher per-capita GDP is associated with higher tolerance levels only among the middle classes, but not among the working class. Inglehart (2008) has also argued that attitudes about homosexuality are positively correlated with economic development. As economies grow beyond the subsistence-level, more traditional and authoritarian cultural traditions give way to “post-materialist values” that recognize individual rights and self-expression, including rights for women and LGBTQ+ people. In addition, Berggren and Nilsson (2013; 2016) linked economic freedom – such as the quality of the legal system, the stability of monetary policy, and the progressiveness of the tax system – with tolerance towards homosexuality.

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<sup>4</sup> A similar study has also been conducted in Mexico, although with mixed results (Gutiérrez and Rubli 2023).

Focusing on historical factors and institutions, the role of religion has been extensively discussed (Adamczyk and Pitt 2009; Jäckle and Wenzelburger 2015; Roberts 2019). For instance, Ananyev and Poyker (2021) showed that colonial Christian missions led to a long-term increase in homophobic attitudes in Africa. Similarly, Bentzen and Sperling (2020) underlined the link between recent faith-based initiatives in the US, increasing religiosity and negative views on homosexuality. Kenny and Patel (2017) emphasized instead the role played by legal institutions (i.e., sodomy laws and being a former British colony), while Gunadi (2019) highlighted the relationship between the historical incidence of slavery in the US and current hate crime rates. Relatedly, Corneo and Jeanne (2009) noted that tolerance of homosexuality increased in countries from Central and Eastern Europe after those countries became members of the European Union and implemented European directives (including laws prohibiting discrimination based on sexual orientation).

Other examples of historical factors that have been identified in the literature include Baranov, De Haas, and Grosjean (2020) on immigration patterns: the authors found in Australia that higher historical rates of convicts were associated with more liberal views towards sexual minorities. Ananyev and Poyker (2022) found a different pattern in the 20<sup>th</sup> century, estimating that Gulag prisoners released in the Soviet Union after the death of Stalin were responsible for a long-lasting rise in homophobic sentiments in the general population: prison experiences led to negative attitudes towards homosexuality among those male inmates and their families. They also noted similar patterns more recently in Australia among formerly incarcerated people.

Another historical-institutional factor is sex ratios. Apostolou (2020a) argued that, in theory, societies with unbalanced sex ratios of available men and women (e.g., because of polygyny) or with segregated sexes (e.g., to protect a daughter until marriage) would require high levels of tolerance for same-sex sexual behaviors to reduce the risk of social disorder. Indeed, gold rushes in the US led to temporary increases in the male-to-female ratio and were located in counties lacking a notable place of religious worship. These channels, in turn, contributed to the persistence of pro-LGBT attitudes (Brodeur and Haddad 2021). In contrast with these findings, but in line with the literature linking skewed sex ratios to more conservative gender attitudes, Grosjean and Khattar (2019), as well as Baranov, De Haas, and Grosjean (2023), showed how areas in Australia with historically high male-female ratios had more negative attitudes towards same-sex relationships, probably due to presence of traditional masculinity norms stirred by past male-to-male competition. Similarly, Chang (2021) found that countries with high male-female sex ratios were less likely to decriminalize same-sex sexual activities, likely due to the fact that men are on average less tolerant than women with regards to homosexuality. These opposite sets of results suggest that sex ratios may interact with local institutions (conservative Victorian Australia versus non-religious US gold rush counties) to produce different current attitudes toward sexual minorities, although selective migration patterns may also have played a role.

Contact theory, the idea that interpersonal contact (e.g., friends or siblings) between majority and minority group members may reduce prejudice, has been tested both for interpersonal contact with gay, lesbian, or bisexual individuals (Herek and Capitanio 1996; Lewis 2011), and with transgender individuals (Tadlock et al. 2017). Similar results have been found when

looking at the role played by LGBT members of parliaments around the world (Reynolds 2013). As expected from the literature linking mass media with gender norms and attitudes (Jensen and Oster 2009; Banerjee, Ferrara, and Orozco 2019), media coverage can also play a role in shaping attitudes towards sexual minorities (Manning and Masella 2018) and transgender individuals (Miller et al. 2020), although if not properly design media exposure can lead to backlashes (Gulesci, Lombardi, and Ramos 2023). In addition, Tavits and Pérez (2019) showed that the use of gender-neutral pronouns can lead to more positive attitudes towards LGBT individuals.

Those practices might or might not be deliberately planned to change attitudes, but other efforts have been more clearly designed to affect the attitudes of others. One example of an effective direct intervention is provided by a door-to-door canvassing program described in Broockman and Kalla (2016) aimed at affecting anti-transgender prejudice. Emphasizing the economic costs to society of discrimination against sexual minorities or that homosexuality is no longer considered a disease by the World Health Organization can also be effective in some contexts (C. G. Aksoy et al. 2023).

## **Appendix B. Housing and Residential Location**

### **B.1 LGBTQ+ People Face Housing Market Discrimination**

The fertility choices reported in Section 3 and the disparities and barriers faced by LGBTQ+ individuals in the labor market summarized in Section 4 are both related to the challenges faced by these individuals in the housing market and influence where sexual and gender minorities decide to live: migration rates in this sub-population are high; sexual minorities are less likely to be homeowners; they are more likely to be denied a mortgage or – if approved – to pay higher interest rates; and LGBTQ+ individuals often face discrimination by landlords, hotel managers, and Airbnb hosts.

A few studies have documented low home-ownership rates among same-sex couples. Both Leppel (2007a; 2007b) and Jepsen and Jepsen (2009) documented using the 2000 US Census that women and men in same-sex couples were less likely to own a home than comparable married individuals in different-sex couples, but more likely than unmarried cohabiting individuals in different-sex couples. Similar differentials by couple type and sexual orientation can still be observed using more recent ACS data, and new surveys directly asking respondents about their sexual orientation have allowed researchers to document particularly low home-ownership rates among bisexual individuals (Badgett, Carpenter, and Sansone 2021). Leppel (2007b) emphasized that these differences in home-ownership rates could only partially be explained by differences in observable characteristics such as age, household income, preference for living in city centers, and presence of children. Furthermore, Jepsen and Jepsen (2009) noted that, among home-owners, individuals in same-sex couples were slightly less likely to have a mortgage than married different-sex couples: the authors saw this result as suggesting the existence of barriers preventing sexual minorities to access the credit market.

Indeed, these findings are likely to be connected to the increasing evidence of sexual minorities being treated differently when applying for a mortgage. Sun and Gao (2019) showed that individuals in same-sex households were more likely to have their mortgage applications

rejected than comparable different-sex households in the US. If accepted, same-sex borrowers were charged on average higher interest rates, even if they had no higher risk of default.<sup>5</sup> Even more remarkably, lending conditions for both same-sex and different-sex applicants in the same neighborhood worsened when its share of residents in same-sex households increased. Similarly, even for mortgages insured by the US Federal Housing Administration and thus covered by anti-discrimination policies including sexual orientation among their protected categories, same-sex male co-applicants were less likely to have their loan application accepted than comparable different-sex co-applicants (Dillbary and Edwards 2019). The authors also reported clear evidence of intersectionality: while all same-sex applicants were penalized, pairs with one or two male Black co-applicants were significantly and substantially less likely to be accepted than other couples. There were fewer signs of discrimination against same-sex female co-applicants, although a race penalty was evident among same-sex couples with one or two female Black co-applicants as well. Despite the high likelihood that transgender individuals face legal challenges in the credit market, especially in states and countries with strict requirements for legal changes to name and gender marker on identity documents, no study has specifically looked at gender minorities in this context.

Following the same strategy of the correspondence and audit experiments with real job openings discussed in Section 4, economists have conducted similar experiments in the rental market, usually signaling minority sexual orientation with a reference to a same-sex partner or spouse. Overall, studies have found evidence of discrimination against men in same-sex couples in the US (Page 1998; Friedman et al. 2013; Schwegman 2019; Levy et al. 2017), Canada (Lauster and Easterbrook 2011; Page 1998), Sweden (Ahmed and Hammarstedt 2009), Serbia (Koehler, Harley, and Menzies 2018), and Portugal (Gouveia, Nilsson, and Berggren 2020). In addition, Schwegman (2019) highlighted that Black men in same-sex couples were especially unlikely to receive a response to inquiries about rental units, while Levy et al. (2017) found suggestive evidence of less discrimination towards Hispanic individuals in same-sex couples. Findings in Lauster and Easterbrook (2011) support the contact theory hypothesis, i.e., that men in same-sex couples were less likely to be discriminated in city centers where landlords were more familiar with new household structures. In contrast, Hellyer (2021) did not see substantial differences in response rates between US urban and rural rental markets.

There are a few exceptions regarding such a negative treatment of men in same-sex couples: Murchie and Pang (2018) found higher likelihood of receiving a response to an inquiry email in the US for this minority group (especially White men in same-sex couples), although their comparison group was single applicants, so landlords may have favored same-sex couples given the presence of another potential earner to assist in paying rent. The probability of receiving a positive email response was not different between same-sex and different-sex couples in Hellyer (2021), but the author emphasized that the study was conducted in early 2020 at the beginning of the COVID-19 pandemic, at a time when housing demand in the US was low. Similarly, Mazziotta, Zerr, and Rohmann (2015) found no evidence of discrimination

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<sup>5</sup> Negrusa and Orefice (2011) also noted using the 2000 US Census that individuals in same-sex couples, especially women, had higher mortgage payment to house value ratios than married different-sex couples. However, the authors interpreted this finding as an indicator for different saving rates among women in same-sex couples rather than a proxy for differential treatment by financial institutions.

against gay male couples in large German cities, similar to the findings in Abbate et al. (2023) for Latin America. Therefore, more research is needed to investigate whether such estimates are specific to certain contexts and time periods, or they are part of a larger trend reflecting improvements in the treatment of sexual minority men.

With the exception of the earlier studies in the US (Page 1998; Friedman et al. 2013), plus some mixed results from Serbia (Koehler, Harley, and Menzies 2018), there is no evidence from most of the studies mentioned above of women in same-sex couples being treated on average differently than individuals in different-sex couples. As hypothesized in Ahmed, Andersson, and Hammarstedt (2008), landlords' preference for female tenants may compensate any distaste for renting to sexual minorities.

The meta-analysis by Flage (2021) combines most of these studies and reports a statistically significant 10 percent lower likelihood of receiving a positive response from landlords for men in same-sex couples than individuals in different-sex couples, and no statistically significant difference for women in same-sex couples. While one could argue that these differences are due to statistical discrimination (e.g., landlords believing that gay men earn less, are promiscuous, and are more at risk of drug abuse, suicide, and HIV), Flage noted that discrimination against men in same-sex couples did not decrease when providing information about applicants' financial stability. Moreover, the level of discrimination was higher in countries with less tolerant attitudes towards homosexuality.<sup>6</sup> These finding suggests that taste-based discrimination may be the primary factor driving differences in call back rates by landlords. It is also worth noting that prejudiced landlords in high-demand markets do not see their profits substantially hit due to their taste-based discrimination since they can choose from a large number of qualified applicants (Schwegman 2019).

In this context, it is important to stress that, even if some US states have passed laws banning housing discrimination and the US Department of Housing and Urban Development currently interprets discrimination based on sexual orientation and gender identity as sex discrimination, there is no federal law protecting sexual and gender minorities against housing discrimination (unlike most EU countries). One may wonder if government interventions may reduce these disparities, but Friedman et al. (2013) showed in their correspondence experiment that the rate at which different-sex couples were favored over men in same-sex couples was not lower in states with laws prohibiting housing discrimination on the basis of sexual orientation. Similar results were reported in Hellyer (2021), while Schwegman (2019) found mixed evidence. Relatedly, Leppel (2007a) found no higher home-ownership rates among same-sex couples in states that had equal housing laws protecting sexual minorities. However, these laws are correlated with housing prices. Due to intrinsic data limitations, none of these studies could properly account for the endogeneity of such laws and recover the causal impact of housing anti-discrimination policies. This concern is at least partially addressed by Dillbary and Edwards (2019) using a difference-in-difference approach to estimate the impact of local laws

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<sup>6</sup> Relatedly, it is worth noting that Gouveia, Nilsson, and Berggren (2020) found *lower* levels of discrimination in *more* religious Portuguese parishes. The authors suggested that in this context the Catholic norms of compassion and care may have reduced discrimination against minorities, although this is not consistent with the relationship between Christianity and homophobic attitudes discussed in Appendix A.

expressly prohibiting discrimination based on sexual orientation in lending. The authors did find a reduction in disparities between male same-sex co-applicants and different-sex co-applicants following the passage of such laws, thus providing a more optimistic view of the effectiveness of anti-discrimination laws.

Studies on gender minorities are, as usual, quite rare. Langowski et al. (2018) implemented an audit study in Boston comparing the rental experiences of transgender and gender-nonconforming testers with the experiences of cisgender and gender-conforming testers. Transgender and gender-nonconforming testers in site visits were more likely to be quoted a higher rental price, were shown fewer areas in a building, and were less likely to be offered a financial incentive to rent the apartment. Transgender testers in Levy et al. (2017) were quoted the same rent as cisgender testers, but they were told about fewer available units. Fritzson and Jansson (2022) implemented a correspondence experiment in Sweden indicating a name change in their messages to landlords: all fictitious applicants reported a name change in their message, with cisgender applicants reporting a name change of the same gender, and transgender applicants reporting a switch to a name typically used for individuals of a different gender. The authors found that transgender individuals were more likely to receive invitations to showings than cisgender men but were less likely to receive invitations to showings than cisgender women. Another correspondence experiment in Latin America found discrimination against couples with a transgender individuals (Abbate et al. 2023). The authors then noticed lower discrimination for couples with high socio-economic status: thus suggesting that in this case, unlike the studies on same-sex couples discussed in the previous paragraphs, the differential treatment may be partly driven by statistical discrimination.

Correspondence experiments have also been implemented to analyze the treatment of sexual minorities in short-term accommodations. In a pioneering study, Jones (1996) posted letters requesting reservations for a room with one bed: both men and women in same-sex couples were less likely than different-sex couples to be granted a hotel reservation, especially in establishments with a small number of rooms. Similarly, Ahuja and Lyons (2019) created fictitious guest accounts on Airbnb to show that men in same-sex couples were less likely to receive a positive response from hosts than guests in different-sex couples. On the other hand, in line with the aforementioned treatment of sexual minority women in the housing rental market, the authors found no evidence of lower acceptance rates for female guests in same-sex couples. Using instead observational data from Airbnb listings in San Francisco, Kakar et al. (2018) focused on hosts rather than guests and found that whether the host was gay did not affect the listing rental price or occupancy rate. However, the host's sexual orientation could be inferred only if disclosed on their profile, and the number of listings from gay hosts was small.

## **B.2 LGBTQ+ Residential Location Choices**

A different branch of this literature has investigated the location choices of LGBTQ+ individuals, and the impact of such choices on their neighborhood. As expected given the preference to live in tolerant and welcoming places, Black, Sanders, and Taylor (2007) noted that individuals in same-sex couples are more likely to migrate from their state of birth and tend to locate in urban areas. One possible explanation for these choices is that individuals in

same-sex couples – especially men – are less likely to have children in their households, so they can afford to spend a higher share of their disposable income in non-child goods such as high-amenity urban locations (Black et al. 2002). These patterns have been confirmed using more recent data by Badgett, Carpenter, and Sansone (2021): individuals in same-sex couples continue to be overrepresented in places such as Washington DC and San Francisco CA. They are still less likely than individuals in different-sex couples to live in their state of birth, although the gap seems to have been shrinking in the past few years, especially for young women, potentially reflecting more widespread tolerant attitudes. Similarly, survey data including information on respondents’ sexual orientation have confirmed that gay men – and to a lesser extent, lesbian women – are particularly mobile, while rates of geographical mobility for bisexual individuals are closer to their heterosexual counterparts (Levine 2022). Related to their higher geographical mobility, women in same-sex couples are willing to accept jobs farther from home (Oreffice and Sansone 2023).<sup>7</sup>

A complementary question is what happens to neighborhoods experiencing an inflow of same-sex couples. There is evidence that an area with a higher share of same-sex couples is more likely to gentrify, i.e., to improve its relative standing with respect to average income or house prices (Christafore and Leguizamon 2018). At the same time, there are some important heterogeneities based on the racial composition of the local community: Christafore, Leguizamon, and Leguizamon (2013) documented a decline in house prices in predominantly Black neighborhoods following an increase in same-sex couples living in the area, while the opposite pattern was observed in predominantly White neighborhoods.

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<sup>7</sup> Relatedly, Oreffice and Sansone (2022) analyzed differences in choices for transportation to work between individuals in same-sex and different-sex couples.

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