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The relationship between LGBT inclusion and economic development: Macro-level evidence

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ABSTRACT

This study analyzes the relationship between social inclusion of lesbian, gay, bisexual, and transgender (LGBT) people and economic development. It uses legal and economic data for 132 countries from 1966 to 2011. Previous studies and reports provide substantial evidence that LGBT people are limited in their human rights in ways that also create economic harms, such as lost labor time, lost productivity, underinvestment in human capital, and the inefficient allocation of human resources. This analysis uses a fixed effects regression approach and a newly-created dataset – Global Index on Legal Recognition of Homosexual Orientation (GILRHO) – to assess how these detriments are related to the macroeconomy. Our study finds that an additional point on the 8-point GILRHO scale of legal rights for LGB persons is associated with an increase in real GDP per capita of approximately $2000. A series of robustness checks confirm that this index continues to have a positive and statistically significant association with real GDP per capita after controlling for gender equality. In combination with the qualitative evidence from previous studies and reports, our quantitative results suggest that LGBT inclusion and economic development are mutually reinforcing. Also, a back-of-the-envelope estimate suggests that about 6% to 22% of the finding could reflect the costs to GDP of health and labor market stigmatization of LGB people. Results from this study can help to better understand how the fuller enjoyment of human rights by LGBT people can contribute to a country's economic development.

1. Introduction

In recent decades a growing number of economists and policy makers across regions have explicitly embraced the idea that inclusion of all groups in a population – especially women and other marginalized individuals – will promote shared prosperity and economic development. This perspective is the main motivation behind our analysis of how the social inclusion of lesbian, gay, bisexual, and transgender (LGBT) people affects economic development, an important question as development agencies have focused increasing attention on LGBT issues but still lack a strong empirical foundation to guide policy (Lind, 2009; Bergenfield & Miller, 2013–2014; Badgett & Crehan, 2017). In principle, when LGBT people are denied full participation in society due to their identities, their human rights are violated. Those exclusions and violations in turn are likely to have an adverse impact on a country's level of economic development. Yet few empirical studies have tested this hypothesis, and virtually no research has examined the broader concept of LGBT inclusion and the lived experiences of LGBT people in a macroeconomic framework (Berggren & Elinder, 2012; Badgett et al., 2014). One of the main obstacles to pursuing this research agenda has been the dearth of comparable international indicators of even the most basic dimensions of actual LGBT life, such as population size, income, poverty, or health.

Given the actual and potential rapid changes in legal rights and social status for previously marginalized groups in industrializing economies, this study seeks to measure the relationship between rights of LGBT people and the level of economic development. The empirical analysis, which is based on OLS regressions estimated with repeated cross-sections of country-level data, is grounded in a multi-pronged theoretical framework in which inclusion of LGBT people is linked to a stronger economy. This theoretical framework focuses on the lived experiences of LGBT individuals and defines inclusion as the ability to live one's life as one chooses, a definition that is consistent with the human capabilities approach to development (Nussbaum, 2001; Sen, 1999).

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To identify barriers to freedoms for LGBT people that can have an effect on economic development, this part of the study draws on a review of research on the rights of LGBT people across regions and evidence of exclusion with respect to violence, workplace discrimination, and disparities in health and education. This review indicates that LGBT people across countries are limited in their freedoms in ways that also create economic inefficiencies, including lost labor time, reduced productivity, underinvestment in human capital, and the suboptimal allocation of human resources through discrimination. The decreased investment in human capital and inefficient use of human resources, in turn, may dampen growth at the broader level of the macroeconomy.

This study's empirical strategy addresses the key question: how is LGBT inclusion related to economic development? The empirical approach is based on OLS regressions that estimate the relationship between inclusion and economic development after controlling for other factors that influence development. The empirical analysis uses legal rights of LGB people to represent LGBT inclusion. Unfortunately we do not have multi-year data on the actual social position of LGBT people across the world, nor do we have a multi-year dataset on the legal rights of transgender people in many countries.[1] (Accordingly, we remove the T from LGBT to acknowledge our shift in focus to LGB rights.) More specifically, inclusion is measured through a newly-created comprehensive dataset on legal rights for LGB individuals spanning a large range of countries from 1966 to 2011, and economic development is measured by per capita gross domestic product (GDP). We use a fixed effects regression approach to estimate the relationship between per capita GDP and legal rights for LGB people across countries, as measured by the Global Index on Legal Recognition of Homosexual Orientation (GILRHO).

Results show that one additional legal right in the GILRHO index (out of eight legal rights in the index) is associated with $2065 more in per capita GDP in our full model with other economic predictors of economic development. That positive association remains even after several robustness checks, also when using a 1997–2011 sub-sample that includes a proxy for gender equality (although the effect for this sub-sample is smaller than for the full sample, with a GILRHO coefficient of $510 without the gender equality variable, and $514 with the gender equality variable). The relationship between the GILRHO and GDP per capita is also positive and statistically significant in several (not mutually exclusive) regions: Europe & Central Asia, East Asia & the Pacific, and the European Union. Hence the analysis supports the argument that greater social inclusion through more legal rights is related to higher levels of economic development. A back-of-the-envelope exercise suggests that up to one fifth of this association likely reflects the costs to GDP of excluding LBG people through insufficient legal rights.

2. Theoretical underpinnings

Full inclusion of LGBT people in economic, social, and political settings may well be linked to improved well-being at the macroeconomic level, an assertion that is supported by scholarship across disciplines on various dimensions of inclusion. Although theoretical perspectives on inclusion differ by discipline and analytical approach, these perspectives tend to be consistent with definitions used by the World Bank and the United Nations Development Program (UNDP, 2016). Some of the conceptual framings are intended to explain cross-national differences in attitudes toward homosexuality (e.g. Inglehart, 2008). In other cases, the framework was designed to explain changes in legal rights and policies for LGBT people or attitudes that also relate to their economic status (e.g. Reynolds, 2013). In yet others, economic development is itself the outcome measure that is influenced by attitudes or policies related to LGBT people (e.g. Berggren & Elinder, 2012; Florida, 2014; Noland, 2005).

In this paper, these varying theoretical perspectives are incorporated into a unified framework using a broad concept of inclusion that incorporates human rights (providing legal and political opportunities for LGBT people) and positive attitudes (providing social, economic, and cultural space for LGBT people), all in multidimensional contexts in which LGBT people face barriers. However, the link between inclusion (broadly defined) and economic development is not the same across these contexts. In this section, we present four distinct ways of conceptualizing the causal relationship between LGBT inclusion and economic development. As will become clear, the causal link can work in both directions depending on the particular framework – that is, more inclusiveness of LGBT individuals can cause higher levels of economic development, while economically more developed countries are more likely to introduce more legal rights for LGBT individuals and be more inclusive.

2.1. Human capital approach

One of the more readily apparent perspectives in which to frame the link between LGBT inclusion and economic development draws on human capital theory in labor economics. Human capital includes skills, ability, knowledge, and health attributes that shape individuals' productivity and influence overall economic output (Mincer, 1958; Becker et al., 1990). From this perspective, greater inclusion of LGBT people could expand an economy's human capital by generating opportunities for LGBT people to enhance their human capital through more education, better health outcomes, or additional job-related training. On the flip side, exclusion of LGBT people in educational settings and health-related contexts will diminish their human capital.

Inclusion can also lead to a more efficient utilization of existing human capital, which increases overall productivity and economic output. In Gary Becker's theory of discrimination, employers who discriminate will be giving up monetary profit when they refuse to hire productive minority workers who are less costly and at least as productive as majority workers (Becker, 1971). If there are not enough nondiscriminatory employers, minority workers will then end up in less productive and lower paying jobs than they are qualified for. In addition, workers facing discrimination may be crowded into jobs where they are less productive or might be unemployed (Bergmann, 1971). In either case, with a diminished stock of human capital or with inefficient use of existing human capital, an economy is not operating at its potential.

An analogous perspective comes from the gender and development literature. Some research concludes that gender inequality inhibits economic development (Berik, Rodgers, & Seguino, 2009). Education plays a key role, and many studies conclude that inequality in women's education is associated with lower economic growth (Knowles, Lorgelly, & Owen, 2002; Klasen, 2002; Klasen & Lamanna, 2009). Exclusion of LGBT people in educational settings would have a similar effect, where, for example, discrimination and discouragement lead LGBT people to drop out of school and have lower educational attainment than they are capable of.

We can also extend the gender analogy into family decisions related to LGBT young people in families. Parental investments in their children will affect their productivity as adults, since the investments enhance the development of capabilities, which in turn lead to a higher socioeconomic status and better health in

[1] Accordingly, we truncate LGBT to LGB to reflect the stronger connection of our legal measure to rights related to sexual orientation. A related study (Badgett et al., 2014) draws on one year of data from a transgender rights index and finds a similar positive correlation with economic development, as in this paper.

adulthood (Cunha & Heckman, 2009). However, families do not always make equal investments in each child. Research has shown that men and boys get larger and more nutritious meal portions than do women and girls, thus limiting women's and girls' ability to engage in productive work that requires good health (Pitt, Rosenzweig, & Hassan, 1990). LGBT or otherwise gender non-conforming children might face similar unequal treatment within families, such as reduced access to food, housing, or schooling.

A closely-related approach links inclusion and economic output through the "business case for LGBT diversity." This argument posits that employers who treat LGBT people equally in the workplace will see positive business outcomes, such as higher productivity of LGBT workers or lower costs that would be associated with exclusion (including health care or absenteeism costs). Research from a variety of social science and health disciplines finds several positive outcomes, particularly improvements in health and a lower likelihood of employee turnover (Badgett, Durso, Kastanis, & Mallory, 2013; Li & Nagar, 2013). One of the pathways that links inclusion and employer outcomes is through less workplace discrimination, which in turns leads to improved mental health and job satisfaction for LGBT workers (Button, 2001). In addition, supportive workplace climates appear to increase LGBT employees' disclosure of their sexual orientation or gender identity, which also improves mental health among LGBT employees (Ragins, Singh, & Cornwell, 2007). Supportive work climates are also associated with greater workplace engagement, contributions, and commitment from LGBT employees. Closely related, where LGBT-supportive policies and practices around diversity in the workplace are present, researchers see improved relationships between LGBT employees and their co-workers and supervisors (Brenner, Lyons, & Fassinger, 2010).

Through a body of related research that was not LGBT-specific, it is possible to connect those outcomes of LGBT inclusion to higher productivity and lower labor costs, potentially increasing employer profits (Badgett et al., 2013). Higher employer profits as a result of greater inclusion could lead to expansion of the business or new investments, thus increasing the level of economic development. Each of these pathways of rights and inclusion for LGBT people would either increase their own human capital or would allow them to fully exercise their productive capacity. Those individual effects are the inputs into other economic processes, which implies that increasing LGBT human capital and making people more productive will create gains at the larger economic level. Finally, several studies have found direct positive links between employer policies of inclusion of LGBT workers and financial measures like stock prices (Johnston & Malina, 2008; Wang & Schwarz, 2010; Shan, Fu, & Zheng, 2016; Li & Nagar, 2013), return on assets (Li & Nagar, 2013), output per worker (Shan et al., 2016) and employee innovation (Gao & Zhang, 2016). Overall, combining these various arguments into a single hypothesized relationship, LGBT inclusion contributes to economic development through the strengthening of human capital and economic potential as shown in Fig. 1.

2.2. Post-materialist values

A political science perspective reverses the causal direction, arguing that countries are more likely to value minority rights after they have developed economically and become more economically secure (Inglehart, 1981, 2008). A stronger economy allows a country's social and economic focus to shift from individuals' concerns about survival toward values of self-expression, individual autonomy, and minority rights. Inglehart and others have shown that attitudes toward homosexuality are more accepting in countries with higher per capita income (see also Stulhofer & Rimac, 2009). Thus a post-materialist shift in values and attitudes can enhance human rights for LGBT people through new political movements

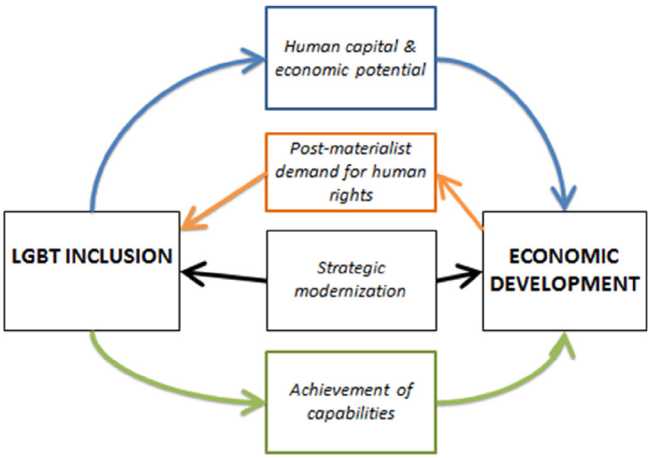

Fig. 1. Causal pathways linking LGBT inclusion and economic development.

and different political choices. Indeed, Reynolds (2013) and van den Akker, van der Ploeg, and Scheepers (2013) have found evidence of this link between positive attitudes toward homosexuality and establishing legal rights for LGBT people. These studies suggest that greater economic development will likely lead to changes in rights for LGBT people and in attitudes toward homosexuality, both aspects of inclusion.

However, other studies have found a much smaller role for GDP as a predictor of attitudes or rights than for other economic and political variables. For example, Andersen and Fetner (2008) found that more inequality in a country makes attitudes about homosexuality more negative. A country with high per capita GDP and a high level of income inequality could have just as many economically insecure people as a country with lower GDP per capita, which could contribute to less rather than more tolerance of LGBT individuals. Higher levels of GDP per capita only consistently make attitudes more positive for those people in higher status occupations, which is consistent with the idea that economic security is strongest for individuals who are at the higher end of the income distribution. Closely related, Kuntz, Davidov, Schwartz, and Schmidt (2015) used a sample of European countries to show that what matters more in determining individuals' tolerance to homosexuality is having overall openness to change, adopting universalist values, and living in countries with more progressive regulatory regimes. Overall, combining these points into a hypothesized relationship, economic development leads to LGBT inclusion through the post-materialist demand for human rights as depicted in Fig. 1.

2.3. Strategic modernization

A third perspective, which we call "strategic modernization," links LGBT inclusion and the economy through a country's interest in strategies that enhance both inclusion and economic development. Countries might use a development strategy of being more inclusive of LGBT citizens to demonstrate the country's modernization and openness (Weiss, 2007). The goal is to use that modern image plus other efforts to enhance the country's attractiveness to tourists, potential foreign investors, or other trading partners. In this strategic modernization model, development and inclusion are enhanced at the same time but are not necessarily directly causally related as with the human capital and post-materialist values perspectives. The most direct evidence of this effect is Noland's (2005) finding of a positive correlation between acceptance of homosexuality and foreign direct investment from 1997 to 2002, even after controlling for other FDI determinants.

In the same spirit, Richard Florida's creative class hypothesis argues that both tolerance of LGBT people and their visibility signal an open creative business environment to skilled and creative workers (who are not necessarily LGBT), thus encouraging immigration and innovation (Florida & Gates, 2001). Visibility of LGBT people does not directly lead to higher economic output but "is an indicator of an underlying culture that's open and conducive to creativity" (Florida & Tinagli, 2004, p. 25). As evidence, Florida (2014) points to a positive correlation between per capita GDP and public acceptance of gay and lesbian people in the Gallup World Poll, but that causal path is not direct either: tolerance leads to more inclusion of LGBT people, and tolerance improves economic development by signaling a climate conducive to creative people and new ideas. In closing this discussion of the third approach, we direct the reader to Fig. 1 and its visual representation of strategic modernization as an instigating force behind both LGBT inclusion and economic development.

2.4. Capabilities approach

The capabilities approach is a framework with which to evaluate well-being that is designed to go beyond the many limitations of more traditional measures of well-being such as per capita GDP. The capabilities approach conceptualizes development as an expansion of freedom for individuals to make choices about what they can do and be, with that expansion not dependent upon individuals' membership in certain identity groups (Nussbaum, 2001; Sen, 1999). In this approach, increased monetary income – the traditional measure of development at the individual level – is seen as just one input into a person's ability to convert goods and services into the actual achievement of what they want to do and be. This evaluative framework draws on the argument that social conditions and policies should be assessed according to the extent to which people have the capabilities to lead the kind of lives they want to lead and to be the person they want to be, such as the ability to be healthy and to seek education. Accordingly, development – what we refer to as broadly shared development – is synonymous with expansion of capabilities.

In the capabilities approach, exclusion of particular groups of people, such as LGBT people, limits development by definition. Discrimination in employment and education, violence and harassment, stigma and rejection, and criminalization and non-recognition in law all translate into a lack of freedom for LGBT individuals to make choices about what they can do and be (Waaldijk, 2013, p. 169–172). Hence inclusion is crucial for human well-being and economic development from this perspective. This capabilities approach differs from the human capital approach in that the capabilities approach encompasses a fuller concept of LGBT inclusion and freedom that reflects the lived experience of LGBT people and how this experience relates to economic development within and across countries. Thus the arrows for the capabilities approach in Fig. 1 draw a clear causal link from inclusion of LGBT people to economic development through the expansion of capabilities.

2.5. Summary of conceptual frameworks

In summary, each of the four conceptual frameworks posits a positive relationship between LGBT inclusion (rights for LGBT people or attitudes toward homosexuality) and economic development, either by definition (the capabilities approach) or via the political and economic links proposed by each framework. As shown in Fig. 1, the cause-and-effect direction varies across the four different perspectives, and these effects are not necessarily mutually exclusive. It is possible that all four forces shape any observed association between economic development and LGBT inclusion. It seems probable that LGBT inclusion and economic development are mutually reinforcing.

Note however that one study argues differently: Berggren and Elinder (2012) found a negative correlation between tolerance of homosexuality and the growth rate of GDP. By focusing on growth rates, they have a very different outcome measure than studies (including this one) that use the level of GDP per capita. Another reason their results are not strictly comparable to this paper is that they included a measure of racial tolerance in their model that is closely correlated with tolerance of homosexuality, a correlation that could reduce the effect of the homosexuality attitude variable. Given their findings, they hypothesize that tolerance of LGBT people might reduce productivity and that LGBT inclusion could generate costs. They argue that conservative groups in a country might be intolerant of homosexuality, and their discomfort could lead them to take less productive jobs to avoid working with LGBT people, or they might avoid moving to tolerant countries. The authors also suggest that homosexuals may themselves become less productive in more tolerant societies because they would have less incentive to invest in their human capital and would be more likely to take on less productive jobs. These arguments, however, draw more on stereotypes than actual evidence, and they ignore various forms of exclusion that prevent LGBT individuals from investing in more schooling or entering into certain occupations. The issue then becomes an empirical question as to whether or not these perceived costs of integrating LGBT people into certain kinds of settings, such as educational institutions and health services, are outweighed by the resulting benefits of inclusion.[2]

3. Existing evidence on economic development and LGBT inclusion

Interest in gender equality as a development strategy contributed to a number of empirical studies that took advantage of readily available sex-disaggregated data to measure the degree of gender equality in such areas as education and labor market participation (e.g. Klasen, 2002, Knowles et al., 2002). However, the actual enjoyment of human rights and freedoms by LGBT people is not easy to quantify, especially because these concepts are not measured in existing multi-country datasets or even in datasets within most countries.[3] Nevertheless, it is important that we acknowledge the ways that the limitation of these freedoms constrains the ability of LGBT people to contribute to the economy. This section presents a review of the literature on LGBT people's experiences around four types of freedoms or human rights: freedom from violence, freedom from workplace discrimination, freedom from disease, and freedom to be educated. To make this task more manageable, we employ two strategies. First, we look for evidence of exclusion in developing economies, using as our sources the academic literature as well as reports from international agencies, non-governmental human rights organizations, government reports, and other sources. Second, access to data and other resources has resulted in more conventional academic studies about exclusion in higher-income countries, so we also provide a brief review of that literature where possible. We also briefly discuss the connections

[2] Not only are we critical of the conceptual arguments made in this paper, we also have serious doubts about the robustness of their empirical results showing a negative correlation between tolerance and GDP growth. Our own attempts to replicate their results led to the conclusion that the results were highly sensitive to the country composition of the sample and there was no clear rationale for why particular countries were excluded from their final sample.

[3] Some countries have begun to add questions on sexual orientation – and very rarely on gender identity – to large population-based surveys in industrialized countries such as the USA, Canada, UK, and Australia, and in developing countries such as Brazil, China, Peru, and the Philippines.

of each freedom to major economic factors that influence economic output and growth.

3.1. Violence

A variety of sources document that LGBT people face physical, psychological, and structural violence in many countries, such as Indonesia (Arivia & Gina, 2016; Human Rights Watch, 2016; ILO, 2016) and India (CREA, 2012; Khan, Bondyopadhyay, & Mulji, 2005). Violence is a feature of LGBT life in both high-income and low-income countries. In the EU, a recent online survey of 93,000 LGBT people found that 26 percent reported physical or sexual violence in the preceding five years (FRA, 2013; see also McKay, Misra, & Lindquist, 2017 for data from the USA). Murders are strikingly common. For instance, the Inter-American Commission on Human Rights counted at least 594 murders of LGBT people in a recent 15-month period (IACHR, 2014).

Violence is linked to economic output, productivity, and individual economic well-being for many reasons. Physical injuries can restrict someone's ability to work. After experiencing violence, the resulting grief and trauma may make it difficult to concentrate at work. Fear of future assaults can make it harder for people to travel to and from work, and some may choose not to work. In cases where victims are admitted to health care facilities, violence exposes LGBT people to poor treatment in the health care system, and it also creates financial burdens for individuals or governments.

Lack of state monitoring of violence makes it impossible to identify the extent of violence against LGBT people. Also, many crimes can go unreported since LGBT people may hesitate to report hate crimes to police if they fear that the police will not believe them, or that reporting may expose their sexual or gender minority status, or that the police may be complicit in – or perpetrators of – the violence (Padilla, del Aguila, & Parker, 2007). Lind (2009) found that while gender non-conforming people and gay men in Ecuador were more likely to be assaulted in public spaces, lesbian and bisexual women were more likely to experience violence in private settings, such as a therapist's office or within their homes. Reporting family-based violence as hate crimes would be particularly challenging.

3.2. Workplace discrimination

LGBT people may not be as productive when they face discrimination in the workplace. LGBT people may be working in less productive positions than they are qualified for – such as jobs in the informal sector – because employers refuse to hire them or because (if transgender) they do not have the proper identification documents to be hired in more productive jobs. Additionally, LGBT people may lose their jobs if they are "outed" at work, which reduces the amount of labor being utilized in the economy and reduces output. Discrimination also reduces workers' incentives to invest in human capital through training and education, since the return on those investments is uncertain. That is, more training does not necessarily mean a promotion or higher wage.

Scholarly articles based on survey and field experimental data, as well as reports based on personal narratives and other forms of evidence, document the existence of employment discrimination that limits LGBT people's ability to both contribute to the economy and to maintain an adequate standard of living.[4] For example, in Bulgaria, Estonia, Lithuania, Poland, and Romania, approximately one in four LGBT people felt discriminated against when looking for a job or while working because of their gender identity or sexual orientation (FRA, 2013). Improvements in data on some high-income countries allows research that reveals significant wage gaps for gay and bisexual men in the USA, Netherlands, UK, Sweden, Greece, France, and Australia and other countries (Klawitter, 2015). A number of resume audit studies have also found evidence on workplace discrimination against LGBT individuals. For example, a wide-scale audit study for the United States found that in numerous states but not all, openly gay men faced lower likelihoods of being invited for a first-round interview after sending out their resumes compared to otherwise identical straight men (Tilcsik, 2011). A similar result was found for women in the U.S. identifying as lesbian, gay, bisexual, or transgender (Mishel, 2016), for gay men and lesbians in Sweden (Ahmed, Andersson, & Hammarstedt, 2013), and for gay men and lesbians in the U.K. (Drydakis, 2015).

As a secondary effect, discrimination and harassment can also lead to fear for LGBT people about disclosing their sexual orientation or gender identity in the workplace. Low rates of openness, in turn, might reduce the likelihood of discrimination but at the cost of authentic workplace relationships and the health of LGBT people. Moreover, LGBT people who experience discrimination are often reluctant to report it, even when discrimination is illegal. For example, LGBT people in South Africa reported barriers such as fear of retaliation, lack of information about the reporting process, and lack of confidence in the legal mechanisms (Human Rights Watch, 2011).

3.3. Health

A growing body of research finds that LGBT people experience health disparities, that is, elevated rates of depression, anxiety, suicidality, HIV/AIDS, and substance abuse when compared with heterosexual people. Such disparities are likely rooted in minority stress, the targeting of LGBT people by tobacco and alcohol companies, and the lack of prevention and health services that adequately meet the needs of LGBT people (Meyer, 1995, 2003; Hipple, Lando, Klein, & Winickoff, 2011; UNDP, 2013). Health disparities will tend to reduce LGBT people's productivity on the job, reduce participation in the labor force, and may require extra public health funding.

Some barriers to health for LGBT people are specific to emerging and developing countries. Individuals in developing countries might rely on family members to compensate for the lack of formal medical care. But if LGBT people have been rejected by their families, they do not have access to that resource. If LGBT people live with their families, they could still experience inappropriate care if they are not able to talk about their identity with their family members (Padilla et al., 2007).

The LGBT community has been disproportionately affected by the HIV epidemic, particularly gay and bisexual men and transgender women. A meta-analysis of the global literature found that 19.1 percent of transgender woman are HIV positive, compared with 0.4 percent of all reproductive-age adults (Baral et al., 2013). This finding also holds for wealthier countries, perhaps because discrimination contributes to the impoverishment of transgender women in all countries. Transgender women face discrimination in housing, employment, and access to services all over the world, all of which increase their likelihood of participating in risky sexual activity for economic reasons (Baral et al., 2013). Given the high fiscal expenditures on HIV/AIDS-related health care, reductions in HIV prevalence among LGBT people could help to reallocate funding to other development uses.

3.4. Education

Many LGBT students face discrimination in schools by teachers and other students (Khan et al., 2005; Kosciw, Palmer, Kull, & Greytak, 2013; UNESCO, 2012, 2015). Discrimination is likely to

[4] For a comprehensive review of this literature see Valfort (2017).

discourage LGBT students from continuing their education and could also reduce the educational value of their years in school. An economic impact results if discrimination and harassment in schools prevent LGBT students from investing in their human capital (that is, their knowledge and skills) and reduce their likelihood of getting employment in higher-skilled jobs.

Students may be pressured to drop out or they may be denied admission to schools because of their sexual orientation and gender identity. For example, half of all MSM (men who have sex with men) in a study for India and Bangladesh had been harassed or assaulted by teachers and classmates, reducing their ability to continue with their education (Khan et al., 2005). In Bulgaria, the Czech Republic, Estonia, Lithuania, Poland, and Romania, 83 to 95 percent of LGBT people had heard negative comments or seen negative conduct in school against a classmate perceived to be LGBT (FRA, 2013). In some countries, transgender people have been denied admission to school because their paperwork or identification documents did not match their current gender presentation (Asdown et al., 2013). In addition to losing out on human capital-enhancing years of education, LGBT students might experience tardiness, absences, and school drop outs, not to mention suicide in extreme cases, because of the depression, isolation, and stigma they experience (High Commissioner, 2011).

3.5. Summary of evidence of exclusion

Overall, a growing number of surveys and human rights reports from many countries document evidence of harmful experiences for LGBT people with violence, employment discrimination, health disparities, and educational exclusion. In summarizing this review of the literature on the experiences of LGBT individuals, we can say there is abundant evidence that the economic costs of these four examples of exclusionary treatment include lost labor time, lost productivity, underinvestment in human capital, and an inefficient allocation of human resources. This lower potential investment in human capital and the suboptimal use of human resources can have consequences at the macroeconomic level, creating a drag on economic output and growth. This macro-level argument is explored empirically in the remainder of the paper.

4. Empirical analysis: data and methodology

To evaluate the relationship between LGBT inclusion and economic development, we need a reliable measure of social inclusion of LGBT individuals across countries. Examples of potentially useful indicators would be the degree to which LGBT people are earning the same income as non-LGBT people, and the degree to which they have similar health or education outcomes. However, there are no readily available country-level data about the lived experiences of LGBT people that are consistent across economies. Hence we use a new cross-country indicator that is based on information about legal rights and protections afforded to LGB people in countries across the globe. This quantitative indicator, the "Global Index on Legal Recognition of Homosexual Orientation" (GILRHO), is being developed by one of the co-authors of this paper (on the basis of constantly improving versions of a legal dataset originally presented in Waaldijk, 2009).[5] It is still work in progress, but it covers all currently-independent countries of the world for every year since 1961. For purposes of merging with the other available data, in this analysis we used the 2014 version of the GILRHO covering 200 countries, which is subject to further corrections and updates (Waaldijk, 2014).

Our use of legal rights and protections as a measure of inclusion can be substantiated by ongoing political and scholarly discourse, including efforts by the United Nations Development Program (UNDP) to compile data for a new LGBTI inclusion index (UNDP, 2016). This new inclusion index, still under development by the UNDP, will resemble the UNDP's widely-used Human Development Index and Gender Inequality Index with a focus on measuring both access to opportunities (which are shaped by legal rights) and achievement of outcomes. In addition, two recent studies suggest that rights are also likely to be related to the achievement of good outcomes. A recent study of cross-national, cross-sectional data from an online social forum found that gay men experienced less discrimination, fewer threats, and fewer public insults when they lived in a country with legal rights for LGB people (Berggren, Bjørnskov, & Nilsson, 2017). Another cross-country comparison found that an index measuring more legal protections for LGB people and more accepting public opinion in a country was correlated with higher levels of life satisfaction and a lower share of death from AIDS among HIV positive men, as well as with a higher per capita GDP (Lamontagne et al., 2018).

Developing the GILRHO involved three steps: (1) deciding which types of laws would be included, (2) finding accurate information about the existence of such laws in different countries, and (3) assigning numerical values to the laws. For the first step, eight categories of legal rights were selected for inclusion in the GILRHO. These categories represent most of the important legal steps that various countries have taken to strengthen the rights of LGB people and that international bodies have begun to embrace. The eight categories encompass the decriminalization of homosexual acts, anti-discrimination legislation, and partnership rights and include the following: (1) Legality of consensual homosexual acts between adults; (2) Equal age limits for consensual homosexual and heterosexual acts; (3) Explicit legal prohibition of sexual orientation discrimination in employment; (4) Explicit legal prohibition of sexual orientation discrimination regarding goods and/or services; (5) Legal recognition of the non-registered cohabitation of same-sex couples; (6) Availability of registered partnership for same-sex couples; (7) Possibility of second-parent and/or joint adoption by same-sex partners; and (8) Legal option of marriage for same-sex couples.

Next, the second step entailed finding reliable sources for all countries that indicate whether and when such legal reforms were made (Waaldijk, 2009; Badgett et al., 2014). Finally, the third step involved converting the legal statutes into numerical values. For each country, one full point was given to that country for each of the eight categories if the country had such a law, beginning in the year that the relevant law entered into force. If the law in question only applied in part of the country (as is the case of same-sex marriage in Mexico, for example), a half point was given irrespective of the number of states, provinces, or regions where the law applied. A half point was also assigned to a country if the relevant penal or anti-discrimination law used broader terminology than key words such as "homosexual," "sodomy," "against nature," "same sex," or "sexual orientation." The few countries in which homosexual acts have never been explicitly criminalized (such as Vietnam) were assigned one full point for the first category. And if a country made marriage available to same-sex couples without also keeping or making a form of registered partnership available to them, that country was assigned two full points for category 8 and zero points for category 6, as in the case of Denmark for example.

[5] Over the coming years, Kees Waaldijk will publish a complete version of the GILRHO, plus the underlying dataset. For more information about the sources and construction of GILRHO, see the report in which GILRHO was first presented (Badgett et al., 2014, p. 28–31 and 57–64). Sources for the GILRHO include Waaldijk (2009) and the annual reports *State-Sponsored Homophobia – A World Survey of Laws*, published since 2006 by ILGA (the International Lesbian Gay Bisexual Trans and Intersex Association), http://ilga.org/what-we-do/state-sponsored-homophobia-report/.

Thus the GILRHO adds up the total points for each country in each year and it ranges from 0 to 8 points. The maximum score applies to countries where homosexual behavior is not criminalized, where an equal age of consent applies, where discrimination based on sexual orientation is prohibited in employment and in the provision of goods and/or services, and where same-sex couples are legally recognized as cohabitants and for the purposes of marriage and (second-parent) adoption. There are 12 countries globally that have scored a perfect 8 for at least one year up to 2014. Not surprisingly, these countries are mostly found in Western Europe, but they also include South Africa and Uruguay. Argentina, Brazil, and another cluster of Western economies are not far behind, each with GILRHO scores of 7 in 2014. In contrast, countries that offer no equality or protection in any of the eight categories have a score of 0. As of 2014 there were 71 countries with a GILRHO score of zero, mostly located in developing regions, but about half of them are not included in this analysis. Table 1 reports the average GILRHO scores for all 200 countries in the complete GILRHO dataset. As shown in the table, since 1966, the average GILRHO has risen from 0.5 in the late 1960s to 2.2 in 2010–14. It has also risen at least somewhat in every region, with some of the largest increases seen in Europe & Central Asia, Latin America & the Caribbean, and the European Union.[6] Over time, these regions saw their most substantial increases after 1990. In contrast, the average GILRHO scores have risen just slightly in South Asia, the Middle East & North Africa, and Sub-Saharan Africa.

In addition to the GILHRO (for the years 1966 to 2011), the empirical analysis uses the Penn World Table (version 8.0) for panel data from 1966 to 2011 on real GDP per capita and several key indicators of economic development that include investment as a share of GDP, the ratio of international trade to GDP, total population, the size of the labor force, and a human capital index based on years of schooling and the economic returns to additional years education (Feenstra et al., 2015). These indicators are commonly used as control variables in the large empirical literature on economic growth and have been identified by several seminal studies as being robustly associated with economic growth (Levine & Renelt, 1992; Sala-i-Martin, 1997; Sala-i-Martin, Doppelhofer, & Miller, 2004). After merging the Penn World Table data with the GILRHO data, we are left with a panel data set that spans a large cross section (132 countries) and a fairly long time period (1966–2011). The total sample size of this dataset (5295) is smaller than 132 countries times 46 years because the GDP per capita data are not available for all years for all countries. For example, there are no data for countries in the Commonwealth of Independent States (CIS) before 1990, because this confederation consisting of former Soviet Republics came into existence in 1991 after the end of the Soviet Union.

The study adopts a fixed-effects approach that conditions out country-level heterogeneity. Such an approach controls for time-invariant country-specific effects, thus eliminating a potential source of omitted-variable bias. For example, egalitarian countries may be more likely to promulgate rights for LGBT people and also have more favorable economic development outcomes. To control for unobserved factors that have changed over time and are common across countries, we include year fixed effects. In addition, standard errors are clustered by country to reduce potential bias that results from serial correlation in the dependent variables. We note here that it is not possible to distinguish the direction of causation from these regression models but discuss our attempts to assess the degree of endogeneity in the results section.

[6] Since it only includes two countries, North America is not included in Table 1, but the GILRHO score there jumped from 3.4 to 5.3 between the 1990s and the early 2000s.

5. LGB rights and economic outcomes: empirical results

The regression analysis reveals a clear positive relationship between the legal index and per capita GDP globally, as reported in the first column of Table 2 for the full sample of 132 countries. After controlling for other factors commonly used to predict per capita GDP (population, employment, investment, international trade, and human capital), and for country and year fixed effects, results point to a positive and statistically significant association between the GILRHO and the level of real GDP per capita. On average, a country has $2065 more in per capita GDP for each additional index point of the GILRHO. This finding does not mean that adding one right will necessarily cause the addition of $2065 to a country's per capita GDP, but simply that a strong association exists between legal rights for LGB individuals and national income. We include year dummies, but note also that because both the GILRHO and GDP per capita are trending upward for most countries, adding year dummies may absorb some of the statistical relationship between legal rights and national income, which could lower the coefficient estimate to some extent.

The $2065 result may seem high, but this could be because the full analytic sample includes all higher-income countries that are part of the Organization for Economic Cooperation and Development (OECD), and many of them showed a large increase in the GILRHO over time. For this reason we also estimated the model using sub-samples of countries categorized by region, as defined in Table 4. These results, reported in Table 2, indicate that the positive relationship between the GILRHO and GDP per capita remains, although it is smaller in magnitude for most regions. It is largest and estimated with the greatest precision in Europe & Central Asia and in East Asia & the Pacific, and also in the countries that are part of the European Union. In East Asia & the Pacific, an additional point on the 8-point GILRHO scale of legal rights for LGB people is associated with an average increase of $1823 in GDP per capita per year, while the corresponding figure for Europe & Central Asia is somewhat smaller ($641). The coefficient is not statistically significant for the other regions.

In addition to this basic analysis, we conducted a set of robustness checks given four possible concerns about the interpretation of the findings. The first concern is that the GILRHO assumes each component of the index has the same weight and value, hence the same relationship with GDP. Quantitatively, the index counts decriminalization in exactly the same way as allowing a same-sex couple to marry or passing an anti-discrimination law, even though these changes in laws could have different social and economic consequences. Therefore, we consider the three major types of laws in the index separately – one capturing the nationwide decriminalization of consensual homosexual acts between adults, another capturing the nationwide presence of any anti-discrimination legislation (with respect to employment and/or goods and/or services), and the third capturing the nationwide existence of any legal recognition of same-sex partners (as cohabitants, as registered partners, and/or as spouses). This separation of three specific indicators covered by the GILRHO allows us to see if some legal changes are more closely related to GDP per capita than others.

Coefficient estimates for these three indicators are found in Table 3, where results are taken from regressions that include the full set of control variables plus country and year fixed effects. Comparing these three separate categories of legal reforms with development reveals an interesting pattern. Partnership recognition has the largest positive relationship with GDP per capita, followed by anti-discrimination legislation. Both are associated with at least a $6000 increase in per capita GDP. The relationship between decriminalization and GDP per capita is not quite as strong ($3070), but it is still statistically significant. The apparent

Table 1
Global index on legal recognition of homosexual orientation (GILRHO), average scores by geographical region.

	Worldwide	Sub-Saharan Africa	South Asia	Middle East & N. Africa	Latin America & Caribbean
1966–69	0.49	0.38	0.00	0.17	0.79
1970–79	0.54	0.36	0.00	0.25	0.82
1980–89	0.65	0.35	0.00	0.32	0.94
1990–99	0.95	0.45	0.00	0.47	1.06
2000–09	1.69	0.60	0.09	0.72	1.57
2010–14	2.19	0.77	0.36	0.79	2.29
	Europe & Central Asia	East Asia & Pacific	OECD	European Union	CIS
1966–69	0.52	0.58	0.88	0.65	0.00
1970–79	0.64	0.60	1.09	0.83	0.00
1980–89	0.87	0.65	1.45	1.19	0.00
1990–99	1.57	0.85	2.49	1.98	0.42
2000–09	3.42	1.23	4.50	4.27	1.63
2010–14	4.33	1.59	5.60	5.48	1.75

Note: These average scores are constructed using the full 2014 version of the GILRHO dataset, which covers 200 currently-independent countries of the world over a 49 year period. See Table 4 for definitions of regions.

Table 2
Fixed effects estimation results for determinants of real GDP/Capita, 1966–2011.

Variable	Full Sample	Sub-Saharan Africa	South Asia	Middle East & N. Africa	Latin America & Caribbean
GILRHO	2065.2***	89.4	−203.8	11193.6	−27.3
	(410.1)	(81.4)	(169.7)	(6769.0)	(251.4)
Population	1.4	−58.4	−19.3	3442.0	35.2
	(25.8)	(82.5)	(9.4)	(3419.7)	(183.8)
Employment	32.1	109.4	44.9*	−5197.0	−5.4
	(27.5)	(211.5)	(20.2)	(10940.9)	(303.6)
Capital stock	−30720.2	1276.9	−4064.6*	−68839.5	11214.3
	(24758.7)	(1282.9)	(1854.6)	(89483.8)	(7373.7)
Internat'l trade	2689.3	−910.3*	541.4	31015.5	−560.0**
	(2332.9)	(532.8)	(1675.8)	(22758.4)	(246.9)
Human capital	−1751.8	1528.4	−1039.9	72681.8	−1607.7
	(3704.2)	(1721.3)	(1283.7)	(51757.7)	(4159.9)
R^2	0.056	0.136	0.775	0.285	0.243
Sample size	5295	1244	216	555	932
Variable	Europe & Central Asia	East Asia & Pacific	OECD	European Union	CIS
GILRHO	640.9***	1822.7*	83.8	479.9**	8.7
	(222.5)	(1016.4)	(285.6)	(223.7)	(365.0)
Population	−518.3***	−124.6	−505.4***	−873.7**	−590.1*
	(80.1)	(110.4)	(141.1)	(325.8)	(296.1)
Employment	1265.1***	124.9	742.5***	1443.9***	759.7***
	(206.7)	(127.0)	(173.4)	(317.2)	(106.4)
Capital stock	7378.8	−13176.8**	−544.1	9312.3	4608.6
	(6255.6)	(5432.0)	(8757.9)	(8021.8)	(2546.7)
Internat'l trade	−4708.9**	581.2	−5549.4**	−4356.2	−1279.4
	(2223.2)	(3310.1)	(2159.0)	(2902.9)	(2940.8)
Human capital	−3296.5	15027.7**	−2058.4	−3756.8	−1542.4
	(2964.2)	(6973.6)	(2774.1)	(3369.1)	(5683.9)
R^2	0.796	0.558	0.840	0.851	0.835
Sample size	1460	796	1456	1104	154

Note: Standard errors, clustered by country, in parentheses. The notation *** is $p < 0.01$, ** is $p < 0.05$, * is $p < 0.10$. All regressions include country and year fixed effects. GDP data for CIS are available only from 1990. The full sample comprises data for 132 countries over up to 46 years. Countries included in each region are listed in Table 4.

difference between the types of rights might reflect several possible dynamics. It is possible that criminal laws were repealed because in the preceding years they had not been strictly enforced, thus reducing the practical effect of the formal change in the law. Moreover, an important role of decriminalization could well be that it may pave the way for anti-discrimination laws and/or partnership recognition, as decriminalization is often a precursor to such legislation (Waaldijk, 1994, 2000). As before, some of the strongest effects across regions in Table 3 are seen in Europe & Central Asia, in the Middle East & North Africa, in East Asia & the Pacific, and in the European Union.

A second concern is that our analysis might not be picking up an LGB-specific effect, but instead a much broader positive connection between economic development and a country's general commitment to equity and inclusion. If countries with more legal rights for women and other disadvantaged groups also give more rights to LGB people, then what we consider an LGB-rights effect might be more properly interpreted as a broader equity and inclusion

Table 3
Fixed effects results for three specific indicators covered by GILRHO, 1966–2011.

Variable	Full Sample	Sub-Saharan Africa	South Asia	Middle East & N. Africa	Latin America & Caribbean
Nationwide Decriminalization	3070.0*	146.2	−1422.2	29540.7	794.6
	(1674.7)	(248.0)	(970.8)	(25131.8)	(987.2)
R^2	0.047	0.134	0.539	0.285	0.247
Any Nationwide Anti-Discrimination	6164.9***	209.9	..	35603.9*	−1887.3*
	(1318.8)	(393.1)	..	(18810.9)	(909.6)
R^2	0.052	0.135		0.283	0.270
Any Nationwide Partnership Recognition	7452.2***	111.6	..	43556.4*	−491.7
	(1414.1)	(512.2)	..	(20756.4)	(732.9)
R^2	0.053	0.134		0.282	0.244
Sample size	5316	1244	237	555	932
Variable	Europe & Central Asia	East Asia & Pacific	OECD	European Union	CIS
Nationwide Decriminalization	−2723.4*	5676.7**	−798.9	−584.1	290.6
	(1610.4)	(2171.0)	(1745.6)	(1915.9)	(548.0)
R^2	0.800	0.569	0.841	0.848	0.836
Any Nationwide Anti-Discrimination	2057.8**	4746.0	−243.4	775.4	..
	(985.2)	(3351.6)	(998.2)	(810.4)	..
R^2	0.795	0.541	0.840	0.848	
Any Nationwide Partnership Recognition	2965.9***	2545.7	814.2	1876.7*	..
	(1018.3)	(2475.5)	(857.6)	(1021.3)	..
R^2	0.803	0.525	0.841	0.853	
Sample size	1460	796	1456	1104	154

Note: Standard errors, clustered by country, in parentheses. The notation *** is $p < 0.01$, ** is $p < 0.05$, * is $p < 0.10$. All regressions include the full set of control variables plus country and year fixed effects. GDP data for CIS are available only from 1990. The notation ".." indicates that these variables were omitted from the regressions due to collinearity arising from small cell sizes. The full sample comprises data for 132 countries over up to 46 years. Countries included in each region are listed in Table 4.

effect For example, Brysk and Mehta (2014) find a positive relationship between gender equity and a country's support for international LGBT human rights initiatives. We can test this possibility in a simple way. If the association between the GILRHO and GDP per capita simply reflects the degree of a country's commitment to social equity, then adding another equity measure to the statistical model should reduce the size of the association. It is difficult to find a consistent measure of group inclusion or equity that extends across many years and countries, but a reasonable amount of data points are available (from 1997 to 2011) for the percentage of a country's parliament members who are women.[7] Results from this robustness check (not reported in a table but available upon request) indicate that the GILRHO is positively correlated with the percentage of parliament that is female, and that the relationship between the GILRHO and real GDP per capita remains statistically significant even after including the parliament measure in the model. The coefficient for the years 1997–2011 is smaller than for the full sample, with a GILRHO coefficient of $510 without the women in parliament variable, and $514 with the women in parliament variable. In other words, the relationship between the GILRHO and GDP per capita does not change with the addition of a measure of gender equality, but the relationship is smaller for this subsample which includes 126 countries from 1997 to 2011. The magnitudes of the coefficients on the GILRHO with the addition of the variable for women in parliament are also similar in the regional regressions. This finding suggests that the strong association between rights of LGB people and economic development is picking up something more than a connection to gender equity.[8]

A third concern relates to the observation from in Table 1 that the GILRHO scores increased more rapidly in many regions in the later part of the period. This conclusion is in itself not surprising since decriminalization of homosexual acts came to be seen as required by international human rights law in the 1980s and especially the 1990s (Helfer & Voeten, 2014; Waaldijk, 2000), while simultaneously a growing number of countries started to provide some legal protection against sexual orientation discrimination and/or some legal recognition for same-sex partners (Waaldijk, 1994, 2000, 2009). It is possible that this acceleration has changed the relationship between LGB inclusion and economic development, making that relationship stronger than it would likely be in the earlier years when there was less global variation in rights for LGB people. Therefore, in a final set of robustness checks (not shown but available upon request), we split the sample into three periods using two different endpoint classifications, and ran the same basic model for the full sample. Splitting the years into 1966–1979, 1980–1999, and 2000–2011, the coefficient showing the association between the GILRHO and GDP per capita was positive in each period, but statistically significant only in the middle period (with a coefficient of $1402). Using a different set of years (1966–1985, 1986–2005, and 2006–2011), the impact was again positive in all three periods but statistically significant in 1986–2005 (a coefficient of $1095) and 2006–2011 (a coefficient of $353). Seeing the statistically significant coefficients in the later periods adds to the evidence that increases in LGB legal rights and stronger inclusiveness matter economically.

The final concern is that we cannot distinguish the direction of causation from these regression models. More rights for LGB people might lead to higher levels of economic development, or economic development might increase the likelihood that a country will recognize the rights of LGB people. Given this endogeneity issue, it is possible that the coefficient estimates on the GILRHO are biased upward as a measure of the actual causal impact of rights of LGB people on economic development. To address this

[7] These data come from "Women's Share of Parliament", World Bank World Development Indicators, 1997–2011.

[8] To further test for robustness of the results, we tested different sample endpoints, including an earlier version of the Penn data (7.1) for 1993–2010, and the results were quite similar in magnitude and size. These results are not shown but are available upon request.

Table 4
Countries included in regional categories.

Sub-Saharan Africa	Middle East & North Africa	Europe & Central Asia	East Asia & Pacific
Benin	Bahrain	Albania	Australia
Botswana	Egypt	Armenia	Brunei
Burundi	Iraq	Austria	Cambodia
Cameroon	Israel	Belgium	China
Central Afr. Rep.	Jordan	Bulgaria	Fiji
Congo, Dem. Rep.	Kuwait	Croatia	Hong Kong, SAR
Congo, Rep.	Malta	Cyprus	Indonesia
Cote d'Ivoire	Morocco	Czech Republic	Japan
Gabon	Qatar	Denmark	Korea, Rep.
Gambia	Saudi Arabia	Estonia	Lao PDR
Ghana	Syria	Finland	Macao, SAR
Kenya	Tunisia	France	Malaysia
Lesotho	Yemen	Germany	Mongolia
Liberia		Greece	New Zealand
Malawi	**Latin America &**	Hungary	Philippines
Mali	**the Caribbean**	Iceland	Singapore
Mauritania	Argentina	Ireland	Taiwan
Mauritius	Barbados	Italy	Thailand
Mozambique	Belize	Kazakhstan	Vietnam
Namibia	Bolivia	Kyrgyz Republic	
Niger	Brazil	Latvia	
Rwanda	Chile	Lithuania	
Senegal	Colombia	Luxembourg	
Sierra Leone	Costa Rica	Moldova	
South Africa	Dominican Republic	Netherlands	
Sudan	Ecuador	Norway	
Swaziland	El Salvador	Poland	
Tanzania	Guatemala	Portugal	
Togo	Honduras	Romania	
Uganda	Jamaica	Russian Federation	
Zambia	Mexico	Serbia	
Zimbabwe	Panama	Slovak Republic	
	Paraguay	Slovenia	
South Asia	Peru	Spain	
Bangladesh	Trinidad and Tobago	Sweden	
India	Uruguay	Switzerland	
Nepal	Venezuela	Tajikistan	
Pakistan		Turkey	
Sri Lanka		Ukraine	
		United Kingdom	

OECD	European Union	Commonwealth of Independent States
Australia	Austria	Armenia
Austria	Belgium	Kazakhstan
Belgium	Bulgaria	Kyrgyz Republic
Canada	Croatia	Moldova
Chile	Cyprus	Russian Federation
Czech Republic	Czech Republic	Tajikistan
Denmark	Denmark	Ukraine
Estonia	Estonia	
Finland	Finland	
France	France	
Germany	Germany	
Greece	Greece	
Hungary	Hungary	
Iceland	Ireland	
Ireland	Italy	
Israel	Latvia	
Italy	Lithuania	
Japan	Luxembourg	
Korea, Rep.	Malta	
Luxembourg	Netherlands	
Mexico	Poland	
Netherlands	Portugal	
New Zealand	Romania	
Norway	Slovak Republic	

Table 4 (*continued*)

OECD	European Union	Commonwealth of Independent States
Poland	Slovenia	
Portugal	Spain	
Slovak Republic	Sweden	
Slovenia	United Kingdom	
Spain		
Sweden		
Switzerland		
Turkey		
United Kingdom		
United States		

Note: The full sample includes 132 countries, i.e. all countries in the first six regional categories above, plus two countries in North America (Canada and USA). For the whole period 1966–2014, "OECD" here refers to all 34 countries that had joined the Organization for Economic Co-operation and Development by 2014, "European Union" here refers to all 28 countries that had joined the EU by 2014, and "Commonwealth of Independent States" here refers to 7 of the former Soviet Republics that founded the CIS in 1991 or had joined it by 1994 and are in the Penn World Tables dataset.

issue, we attempted an instrumental variables (IV) approach, one of the most common techniques in the literature. The share of government in aggregate consumption, the labor share of GDP, and the household share of aggregate consumption were used as instruments to approximate rights of LGB people, with the rationale that greater consumption and labor income correspond with greater demand for rights and freedoms. We also tried several indicators of the percentage of the population identifying as Muslim or Catholic, with the rationale that these religions have strong norms or rules against homosexuality. In a first stage procedure, we tested the predictive power of these variables in explaining rights of LGB people, but these tests did not support the validity of the instruments. Lack of sufficient panel data for other indicators prevented us from testing the predictive power of other instruments.[9] We therefore do not report any IV estimation results and must interpret the coefficients from the fixed-effects models as associations rather than as causal effects.

However, one way to get a potential upper bound on the exclusion effect on GDP per capita is to build up from an estimate of the population of lesbian, gay, and bisexual people and the degree of economic harms they experience. Measures of the percentage of the population of high-income countries identifying as LGB suggest prevalence rates of 3–4% (Carpenter, 2013; Gates, 2012).[10] Studies of same-sex sexual activity, an alternative measure of sexual orientation, among men in low- and middle-income countries suggest the prevalence rates could be 3–20%, or double the LGB identity rates (Caceres, Konda, Pecheny, Chatterjee, & Lyerla, 2006).

Here we choose 4% as a low to mid-level prevalence estimate for the adult population and potential labor force, since either sexual behavior or identity could be sources of stigma, violence, and discrimination. To choose an extreme example for a strict upper bound, if all LGB people were equally productive but all were prevented from contributing to the economy because of unemployment or the inability to work for health or other stigma-related reasons, the negative impact of LGB exclusion would cost a country approximately 4% of its GDP.

More realistically, we can derive an estimate from Klawitter's (2015) meta-analysis that LGB people are 10% less productive because of exclusion. She found that gay and bisexual men in high-income countries earned 11% less than similarly qualified heterosexual men. That wage difference could be a proxy for lost productivity if discrimination keeps gay and bisexual men out of more productive jobs that they are qualified for. For women, Klawitter finds that lesbian and bisexual women earn on average 9% more than heterosexuals, but that difference appears to be related to freedom from the gender constraints associated with living with men. In countries where women face major barriers to living with other women, that 9% gain would be lost. Thus an average effect of exclusion on LGB wages – including the 11% lost wages for gay/bisexual men from apparent discrimination and the lost 9% wage advantage for lesbians in settings that exclude living with a female partner – would be at least 10%, and likely more if discrimination against gay or bisexual men is greater in some countries than in the relatively tolerant countries included in Klawitter's study. If 4% of the labor force loses 10% of its potential productive ability, the effective labor input into the economy falls by 0.4%.[11]

The health effects of exclusion would further add to the loss of output from LGB people. One study for the World Bank attempted to estimate the economic cost of sexual orientation health disparities in India from comparisons of suicide attempts, HIV, and major depression for LGB people and the general Indian population, using disability-adjusted life years to quantify the economic impact of those disparities. Findings suggested that those three health disparities alone could generate a loss of 0.04% to 1.3% of GDP if they have independent impacts.[12] Adding the midpoint of that range to the labor force productivity loss of 0.4% suggests the costs of exclusion could easily reach 1% of GDP. Additional sources of economic loss for which there are no good estimates include reduced quantity and quality of education due to stigma against LGB people.

Over the 1966–2011 period, our sample's mean adjusted GDP per capita is $11,579. Applying the 1% to 4% cost of exclusion estimates to that mean results in GDP losses of $116-$463. Using these rough estimates of the cost of exclusion suggests that 6% to 22% of the GILRHO coefficient of $2065 could plausibly reflect the GDP costs of excluding LGB individuals from a full range of legal rights.

6. Conclusion

This study's review of surveys and human rights reports from numerous countries has uncovered resounding evidence of harmful experiences for LGBT people across multiple aspects of their daily lives. In particular, LGBT people face disproportionate rates of physical, psychological, and structural violence; workplace dis-

[9] We also tried the Hausman-Taylor IV estimation technique, but the over-identifying restriction test (Hansen J test) could not confirm the validity of our instruments.

[10] Carpenter (2013) analyzes several probability samples in the U.S. and finds that rates of adults identifying as gay or lesbian range from 1% to 2.3%, and those identifying as bisexual add 0.7% to 2.9%. These ranges are similar in probability samples in Canada, United Kingdom, Australia, and Norway (Carpenter, 2013; Gates, 2012).

[11] Also, since the country's capital stock will be underutilized, this 10% loss of labor input likely implies an even greater loss to GDP.

[12] For methods used to arrive at this estimate, see Badgett (2014a); for the actual estimates, see Badgett (2014b).

crimination reduces employment and wages for LGBT people; LGBT people face multiple barriers to physical and mental health; and LGBT students face discrimination in schools by teachers and other students. Not only are these violations and forms of exclusionary treatment harmful to the individuals involved, they also carry costs that impact the broader economy. These economic costs include lost labor time, lost productivity, underinvestment in human capital, and the inefficient allocation of human resources through discrimination in education and hiring practices. The decreased investment in human capital and suboptimal use of human resources in turn have the potential to reduce overall economic output and growth in a direct way.

The cross-country regression results reinforce this argument, showing that GDP per capita is higher in countries that have more legal rights for LGB people (as measured by the newly created Global Index on Legal Recognition of Homosexual Orientation). Coefficient estimates from a fixed effects regression model indicate that after holding constant other factors that influence development, an additional point on the 8-point GILRHO scale of legal rights for LGB people is associated with just over $2000 in GDP per capita. The positive association is robust to many other specifications. For example, we tried a specification that includes a proxy for gender equity (the percent of parliament that is female) for the 1997–2011 sub-sample; the positive association between the GILRHO and GDP per capita does not change with this addition of a measure of gender equality, but the estimate is smaller for this subsample. Although we cannot draw a firm conclusion about the direction of the causal link – that is, whether more rights cause higher levels of economic development or whether economically more developed countries tend to introduce more rights – we can say that economic development happens alongside and appears to be compatible with expansions of human rights for LGB people.

Putting together the qualitative data from the research on the lived experiences of LGB people with the cross-country regression analysis of LGB rights in relation to GDP suggests the following conclusion: LGBT inclusion and economic development are mutually reinforcing to each other. Exclusion of LGBT people causes harms to the economy (as well as to LGBT individuals). Legal rights for LGB people are associated with higher levels of economic development, and the same correlation was found for legal rights for transgender people in an earlier study. The earlier research on LGB people and a back-of-the-envelope estimate of the economic impact of exclusion of LGB people suggest that at least some of the correlation we find reflects the GDP costs of excluding LGB individuals from fully enjoying their economic and social rights. As such, these findings suggest that development programs and policies can and should incorporate the links between legal inclusion of LGBT people and economic development. Results from this study can help development agencies and other stakeholders to better understand how the fuller inclusion of LGBT people can improve economic outcomes across countries, or in other words: how the fuller enjoyment of human rights by LGBT people can contribute to a country's economic development.

Conflict of interest statement

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Appendix A. Supplementary data

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