

RESEARCH THAT MATTERS

SOCIAL ACCEPTANCE OF LGBT PEOPLE IN 174 COUNTRIES 1981 TO 2017

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EXECUTIVE SUMMARY

This report describes updates to the LGBT (lesbian, gay, bisexual and transgender) Global Acceptance Index (GAI), which seeks to measure the relative level of acceptance of LGBT people and issues in each country during a specific time period.

Understanding acceptance and rejection of LGBT people lies at the heart of understanding violence, discrimination, and a multitude of negative consequences arising from exclusion and unfair treatment. Sexual and gender minorities all over the world are heavily impacted by the attitudes and beliefs of those around them. Low levels of acceptance are tied to bullying and violence, physical and mental health problems, discrimination in employment, and underrepresentation in positions of civic leadership. Additionally, exclusion can result in lower levels of workforce productivity and decreased business profits.

UPDATES TO THE GLOBAL ACCEPTANCE INDEX

We updated the Global Acceptance Index to measure acceptance in 174 countries through 2017. We initially assessed 176 geographic locations (including countries and territories), but present results from 174 countries in this report. Acceptance is the extent to which LGBT people are seen in ways that are positive and inclusive, both with respect to an individual's opinions about LGBT people and with regards to an individual's position on LGBT policy. Updates included an expanded database of social surveys measuring acceptance of LGBT people in a larger number of countries (174 versus 123) and over additional years (through 2017 versus through 2014), as well as modifications to the estimation process to increase estimation accuracy.

FINDINGS: CONTINUED POLARIZATION

Globally, the average level of acceptance has increased from 1981.

- 131 of 174 countries experienced increases in acceptance from 1981.
- 16 countries experienced a decline.
- 27 countries experienced no change.

In the past decade, the range of levels of acceptance has increased. Levels of acceptance have become more polarized:

- The most accepting countries have experienced increased levels of acceptance; Iceland, the Netherlands, Norway, Canada, and Spain are estimated to have the highest levels of acceptance between 2014-2017 and all have increased in their levels of acceptance.
- The least accepting countries have experienced decreased levels of acceptance; Ethiopia, Azerbaijan, Senegal, Tajikistan, and Somaliland are estimated to have the lowest level of acceptance between 2014-2017 and all have decreased in their levels of acceptance.

- Levels of acceptance in countries near the global average have stayed relatively stable.

Our previous report concluded that there was “polarized progress” in the trajectory of acceptance of LGBT people across the globe. The present report updates this by showing that the degree of polarization has lessened. Substantially more countries increased on acceptance than countries that have decreased. While some polarization remains, the updated estimates suggest increases in LGBT acceptance are far more common than decreases.

INTRODUCTION

UNDERSTANDING ACCEPTANCE AND EXCLUSION

Social attitudes about LGBT people can heavily influence whether LGBT people are accepted or rejected by employers, family members, teachers, clergy, and society in general.¹ Negative beliefs about LGBT people can serve as the basis for the impulse to reject and exclude LGBT people,² all too often leading to violence and discrimination against LGBT people.³ These shared beliefs are stigmas, which can be generally understood as a belief about a person based on a characteristic, or mark, of a person.⁴ Powerful forces in society, such as tradition, religion, law, medicine, and the media can contribute to the existence of beliefs about LGBT people.⁵ In some cultural settings, being LGBT carries with it the stigma that underlies a belief that the LGBT person is sick, immature, unskilled, sinful, or generally undesirable.⁶ Anti-LGBT stigma can lead to the exclusion of LGBT people from full participation in society. Not only can societal stigma affect how individuals view LGBT people, but it can also influence how people view laws and policies relevant to LGBT populations.⁷ LGBT people may face rejection from others at an interpersonal level, as well as exclusion, because of stigmatizing and discriminatory laws and policies.⁸ Acceptance, on the other hand, is the extent to which LGBT people are seen in ways that are positive and inclusive, both with respect to an individual's opinions about LGBT people and with regards to an individual's attitudes about LGBT rights. As defined here, acceptance is a broad concept which encompasses social beliefs about LGBT people, as well as prevailing opinion about laws and policies relevant to protecting LGBT people from violence and discrimination and promoting their equality and well-being.

The Global LGBT Acceptance Index (GAI) incorporates survey data about public beliefs regarding LGBT people and policies in order to come up with a single country-level score for acceptance. Acceptance, as

¹ Gregory M. Herek, "Confronting Sexual Stigma and Prejudice: Theory and Practice." *Journal of Social Issues* 63, no. 4 (2007): 905-925.

² Gregory M. Herek, "Sexual Stigma and Sexual Prejudice in the United States: A Conceptual Framework," in *Contemporary Perspectives on Lesbian, Gay, and Bisexual Identities*, D. A. Hope (ed.), 54, p. 65-111 (New York, NY: Springer, 2009); Judit Takács, *Social Exclusion of Young Lesbian, Gay, Bisexual, and Transgender (LGBT) People in Europe* (Brussels, BE and Amsterdam, NL: ILGA-EUROPE and IGLYO, 2006).

³ A. Theron, "Anti-Gay Violence and Discrimination: The Need for Legislation Against Anti-Gay Hate Crimes in the Sociopolitically Changing South Africa." *ACTA Criminologica* 7, no. 3 (1994): 107-114.

⁴ Gregory M. Herek, "Confronting Sexual Stigma and Prejudice: Theory and Practice;" Gregory M. Herek, "Sexual Stigma and Sexual Prejudice in the United States."

⁵ Amy Adamczyk, *Cross-National Public Opinion about Homosexuality: Examining Attitudes across the Globe* (Berkeley and Los Angeles, CA: University of California Press, 2017).

⁶ Erving Goffman, *Stigma: Notes on the Management of Spoiled Identity*, (New York, NY: Penguin, 1963).

⁷ Gregory M. Herek. "Beyond 'Homophobia': Thinking about Sexual Prejudice and Stigma in the Twenty-First Century." *Sexuality Research & Social Policy* 1, no. 2 (2004): 6-24.

⁸ Mark L. Haztenbuehler, K. M. Keyes, and D. S. Hayes. "State-level Politics and Psychiatric Morbidity in Lesbian, Gay, and Bisexual Populations." *American Journal of Public Health* 99, no. 12 (2009): 2275-2281.

measured in the GAI, is a country's average societal attitude toward LGBT people that is expressed in public attitudes and beliefs about LGBT people and rights.

Understanding the Consequences of a Lack of Acceptance and Exclusion

The stigma faced by LGBT people has been linked to violence and discrimination against LGBT people^{9,10} and decreases in economic growth and productivity.^{11,12} In order to understand these linkages more deeply, development practitioners need data that is comparable across different time points and different countries. As explained below, current survey data do not provide us with such an opportunity because of the variability in the ways that surveys assess public attitudes about LGBT people. The following kinds of inquiries are made more possible if there are data that can be consistently compared both across time and place.

Physical and mental health

The connection between stigma, prejudice, and health has been well-documented throughout the world. According to the minority stress model, articulated by psychologist Ilan Meyer¹³, PhD., Williams Senior Distinguished Scholar, the stigma and prejudice experienced by sexual and gender minorities produces stress and anxiety that is different than the types of stress faced by most people in their everyday life.¹⁴ In response to events of prejudice in their life, sexual and gender minorities frequently develop a fear and expectation that such events will happen again. This expectation leads to hypervigilance in one's surroundings, relationships, and interactions with others, even when stigma and prejudice may not be in operation.¹⁵ The individual begins to develop additional coping mechanisms, such as identity concealment or other strategies to mitigate the negative consequences of stigma and prejudice. These processes can lead to internalization of social stigma, in the form of internalized homophobia or transphobia, where individuals begin to devalue themselves in a manner consistent with the prejudice being directed at them by others.¹⁶

⁹ Gregory M. Herek, "Confronting Sexual Stigma and Prejudice: Theory and Practice;" Gregory M. Herek, "Sexual Stigma and Sexual Prejudice in the United States."

¹⁰ The World Bank Group, *Discrimination against Sexual Minorities in Education and Housing: Evidence from Two Field Experiments in Serbia* (Washington, DC: The World Bank Group, 2017).

¹¹ M.V. Lee Badgett, Sheila Nezhad, Kees Waaldijk, and Yana van der Meulen Rodgers, *The Relationship between LGBT Inclusion and Economic Development: An Analysis of Emerging Economies* (Los Angeles, CA: The Williams Institute, 2014).

¹² The World Bank Group, *Life on the Margins: Survey Results of the Experiences of LGBTI People in Southeastern Europe* (Washington, DC: The World Bank Group, 2018).

¹³ Ilan H. Meyer, Williams Distinguished Senior Scholar for Public Policy, Williams Institute, UCLA School of Law.

¹⁴ David M. Frost and Meyer, I.H., "Internationalized Homophobia and Relationship Quality Among Lesbians, Gay Men, and Bisexuals," *Journal of Counseling Psychology* 56, no. 1(2009): 97-109.

¹⁵ Jennifer Crocker. "Social Stigma and Self-Esteem: Situational Construction of Self-Worth." *Journal of Experimental Social Psychology* 35, no. 1 (1999): 89-107 cited in Ilan Meyer, "Prejudice, Social Stress, and Mental Health in Lesbian, Gay and Bisexual Populations: Conceptual Issues and Research Evidence," *Psychological Bulletin* 129, no. 5 (2003): 674-697.

¹⁶ One of the first studies on this issue can be found at Gilbert H. Herdt. *Children of Horizons: How Gay and Lesbian Teens Are Leading a New Way Out of the Closet* (Boston: Beacon Press, 1996), 205.

The impact of minority stress on LGBT people is reflected in poor health outcomes. A systematic review of 199 studies in the Global North and South showed that sexual minorities were at increased risk for depression, anxiety, suicide attempts, or suicides.¹⁷ However, such global reviews are rare. Though the connection between stigma and health outcomes is well established, there is still a great need to understand how stigma impacts specific populations at the national level. Establishing an acceptance index enhances the ability of researchers to examine the stigma/health connection on a country-by-country basis, as well as across countries.

Bullying and violence

Exclusion of LGBT people can also manifest in the form of bullying, violence, and harassment.^{18,19} In a major study in Thailand, half of self-identified LGBT students report having been bullied, leading to absenteeism rates twice as high as other students, increased dropout rates, and mental and physical problems.²⁰ According to the Inter-American Commission, LGBT people face “high levels of cruelty and heightened levels of violence.”²¹ The UN Independent Expert on the protection against violence and discrimination based on sexual orientation and gender identity reports that such violence occurs in all parts of the world.²²

Though it is clear that violence against LGBT people exists, there is currently no method to track violence on a country-by-country basis. We currently lack a uniform definition of violence and a mechanism to collect statistics about violence worldwide and, thus, are unable to examine its relationship with LGBT social acceptance. To the extent that violence is related to levels of acceptance of LGBT people, the creation of an LGBT acceptance index can help inform discussions about violence.

¹⁷ The study included 199 studies which had a heterosexual comparison group. 26 studies had nationally representative studies using clinical interviews. Martin Ploderl and Pierre Tremblay, "Mental Health of Sexual Minorities. A Systematic Review," *International Review of Psychiatry* 27, no. 5 (2015): 367-85.

¹⁸ Gregory M. Herek, "Confronting Sexual Stigma and Prejudice: Theory and Practice;" Gregory M. Herek, "Sexual Stigma and Sexual Prejudice in the United States."

¹⁹ Exclusion and stigma have been used interchangeably, see M.V. Lee Badgett, *The Economic Cost of Stigma and the Exclusion of LGBT People: A Case Study of India*. World Bank Group Working Paper, no. 94040 (Washington, DC: The World Bank Group, 2014).

²⁰ Pimpawun Boonmongkon et al., *Bullying Targeting Secondary School Students Who Are or Are Perceived to Be Transgender or Same-Sex Attracted: Types, Prevalence, Impact, Motivation and Preventive Measures in 5 Provinces of Thailand* (Salaya: Mahidol University, Plan International Thailand, United Nations Educational, Scientific and Cultural Organization (UNESCO) Bangkok Office, 2014), 81.

²¹ Inter-American Commission on Human Rights, "Press Release 153114: IACHR Expresses Concern over Pervasiveness of Violence against LGBTI Persons and Lack of Data Collection by OAS Member States," December 17, 2014, http://www.oas.org/en/iachr/media_center/PReleases/2014/153.asp; Idem, "Press Release 153114, Annex: An Overview of Violence Against LGBTI Persons," December 17, 2014, <http://www.oas.org/en/iachr/lgtbi/docs/Annex-Registry-Violence-LGBTI.pdf>.

²² Human Rights Council, United Nations General Assembly, Report of the Independent Expert on Protection Against Violence and Discrimination Based on Sexual Orientation and Gender Identity, 2017, A/HRC/35/36, Geneva, CH: Office of the High Commissioner for Human Rights, <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G17/095/53/PDF/G1709553.pdf?OpenElement>.

Employment discrimination

The economic potential of LGBT people is also limited by exclusion from the workplace, educational opportunities, and economic advantages which can be accessed by others.²³ An international review of studies reveals that sexual minorities face two kinds of discrimination. Firstly, they face exclusion when seeking to enter the workplace. Secondly, once on the job, LGBT people face harassment and few opportunities for advancement.²⁴ According to a cross-national meta-analysis, gay men make 11 percent less than their heterosexual counterparts.²⁵ Although there is growing attention to the impact of employment discrimination, there has never been a study of the relationship between societal acceptance and employment discrimination experienced by LGBT people. An acceptance index makes such an inquiry possible.

Civic Participation

Finally, exclusion can limit the ability of LGBT people to participate in civic institutions and political leadership roles. For example, throughout the world, sexual and gender minorities are drastically underrepresented in elected positions. In one study, LGBT people occupied, at most, only six percent of all seats in the upper legislative houses globally.²⁶ Socio-cultural factors including acceptance and dominant religious orientation of a country, and institutional factors such as representation systems, were major determinants of whether LGBT people were elected into legislative bodies.²⁷

²³ Badgett, Nezhad, Waaldijk, and Rodgers, *The Relationship between LGBT Inclusion and Economic Development*.

²⁴ Ozeren Emir, "Sexual Orientation Discrimination in the Workplace: A Systematic Review of Literature." *Procedia, Sexual and Behavioral Sciences*, *Procedia-Sexual and Behavioral Sciences* 109 (2014): 1203-1215, 1208-10.

²⁵ Marieka Klawitter, "Meta-Analysis of the Effects of Sexual Orientation on Earnings," *Industrial Relations* 54, no. 1 (2014): 4-32, 21.

²⁶ Andrew Reynolds. "Representation and Rights: The Impact of LGBT Legislators in Comparative Perspective." *American Political Science Review* 107, no. 2 (2013): 259-274.

²⁷ *Ibid.*

DISCUSSION

CURRENT PUBLIC OPINION DATA AND ITS SHORTCOMINGS

Global and regional social surveys have documented public attitudes toward various segments of LGBT people and policies. These surveys provide a wealth of information, though with some limitations. A single survey can provide snapshots of acceptance, and repeated surveys can convey whether public attitudes in certain countries have changed over time. Public opinion polls and social surveys offer an opportunity for the public to speak for themselves instead of having advocates, celebrities, or politicians speak on their behalf. In this way, polls can be a more accurate predictor of public sentiment and the levels of acceptance experienced by LGBT people as they interact with those around them. Indeed, cultural norms regarding sexual orientation and gender identity are critical drivers of structural stigma.^{28,29}

Surveys can inform an analysis of legal reform efforts as well. Some studies suggest that public attitudes, and changes in public attitudes, precede inclusion of LGBT people in public policy³⁰ and in political representation.³¹ Understanding attitudes and attitude change may provide a foundation to support further inclusion of LGBT people in many areas of social, economic, and political life.

Unfortunately, very few of the surveys conducted about LGBT people or LGBT-related issues provide sufficient data for global, cross-national comparisons of public sentiment, especially for longitudinal comparisons. Such efforts are confounded by three challenges. Firstly, current public opinion surveys use a variety of questions. In total, we identified 67 different questions that have been used in surveys.³² These surveys ascertain a range of responses, including the acceptability of homosexuals as elected leaders, the perceived prevalence of discrimination against LGBT people in the workplace, having gay or transgender friends, the perceived origin of diverse sexual orientations and gender identities, whether couples should have the right to marry, whether homosexuals are desirable as neighbors, and others.

Secondly, these inconsistencies are compounded by the nature of the issues involved in the survey. As an example, the Pew Global Survey asks questions about specific favorability for *policies* such as same-sex marriage, as well as questions about whether homosexual conduct should be *accepted*.³³ The Gallup World Poll asks the respondents whether homosexual *acts* are *morally acceptable* or *morally wrong* as

²⁸ Mark L. Hatzenbuehler, Andrew R. Flores, Gary J. Gates, "Social Attitudes Regarding Same-Sex Marriage and LGBT Health Disparities: Results from a National Probability Sample." *Journal of Social Issues* 73, no. 3 (2017): 508-528.

²⁹ Mark L. Hatzenbuehler and B. G. Link, "

³⁰ Jeffrey R. Lax and Justin H. Phillips, "Gay Rights in the States: Public Opinion and Policy Responsiveness." *American Political Science Review* 103, no. 3 (2009): 367-386.

³¹ Andrew Reynolds. "Representation and Rights."

³² In 2017 publication, we identified 55 different questions.

³³ Andrew Kohut, *The Global Divide on Homosexuality: Greater Acceptance in More Secular and Affluent Countries* (Washington, DC: Pew Research Center, 2013).

well, as whether people view their surrounding neighborhood is *accepting or unaccepting* of lesbians and gay men. Some questions focus on policy, some on acts, and some on characteristics of homosexuals themselves.

In addition, some questions, such as the Gallup World Poll, ask the respondent to use morality as a criterion to arrive at an answer. However, moral opposition does not necessarily equate to lack of support for an individual or a policy, particularly in liberal democracies where questions of private morality may be distinct from policy discussions.³⁴ The World Values Survey has asked whether or not homosexuality is ever *justified*: “Please tell me as to each of the following actions whether you think it can always be justified, never be justified or something in between: homosexuality.” The notion of justification is odd because homosexuality is rarely seen in a framework of having to be proven. For some, justification may have a theological meaning of being declared righteous or guiltless.³⁵

Thirdly, different questions have been used in different countries during different years. None of the surveys identified have ever asked the same question in the same year in every country in the world. The most extensive of the global survey programs, the World Values Survey, is deployed in roughly 50 countries each year. Most other surveys were either regional, deployed in a small number of countries, or were one-time efforts in a single country, except for the Pew Global Attitudes Project and the Gallup World Poll.

As with all surveys, variability in content across surveys, and among surveys, over time is to be expected; studies based on more than one survey are typically constrained by such variability. Given these limitations and inconsistencies in survey data, a potential strategy might be to limit any analysis of stigma and acceptance to those countries where the same questions have been asked regularly. This type of criterion would seriously limit the scope of a study, both in the number of years studied and in the number of countries included. Imposing such a limitation would significantly restrict options for engaging in global, cross-country comparisons and the only remedy would entail new, costly and time-consuming data collection. Even such a remedy would be imperfect as it would be unable to understand longitudinal attitude change prior to the 2010s, when the variety of countries included in global surveys was far less than after 2010.

³⁴ Carlos A. Ball, *The Morality of Gay Rights: An Exploration in Political Philosophy* (New York, NY: Routledge, 2003).

³⁵ Oxford Dictionaries, s.v. “justify,” accessed January 25, 2018, <https://en.oxforddictionaries.com/definition/justification>

METHODOLOGY

DESCRIPTION OF DATA. UPDATES TO AN APPROACH TO MEASURE OPINION

By utilizing advanced statistical methods and computer modeling, we were able to analyze survey data from 174 different countries³⁶ to produce a single score that we call the Global Acceptance Index score, for each country, for each year. The Williams Institute created a data archive, where we consolidated cross-national global and regional survey data on attitudes toward LGBT people and rights. These surveys include: the AfroBarometer (2014-2018), the America's Barometer (2004-2017), the Eurobarometer (1993-2015), the European Social Survey (2002-2016), the European Values Survey (1981-2018), the Gallup World Poll (2006-2017), the International Social Survey Programme (1988-2012), Ipsos International (2013-2017), the Latinobarómetro (2002-2015), the Pew Global surveys (2002-2017), and the World Values Surveys (1981-2014). Most of the questions contained in these surveys are subject-matter specific to homosexuality, but more recent surveys collected information pertaining specific to transgender people and rights. No surveys collected questions about attitudes explicitly towards bisexuality or about bisexual people and their rights.

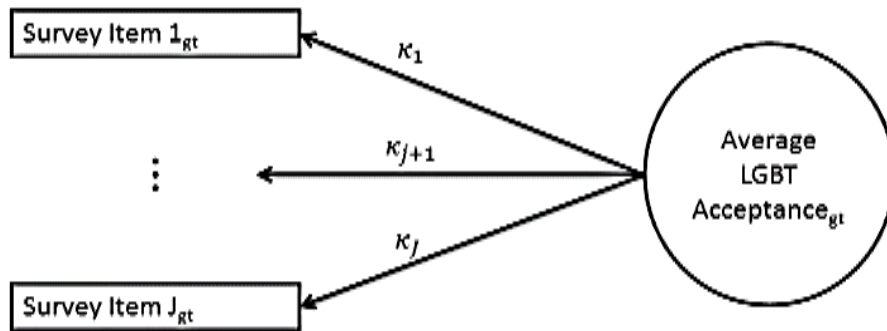
The resulting dataset included 4,530 country-question-years (meaning results for particular countries in a particular year for a particular question) under analysis with 67 different question wordings, 174 different countries, and 35 years. The combined individual-level sample includes 5,236,837 responses to questions relating to LGBT people and rights. Though the questions varied in form and time period, they are all related to a respondent's core acceptance of LGBT people. An individual might have different answers to questions about the morality of homosexuality, the desirability of an LGBT person as a coworker, and the acceptability of discrimination against LGBT people; however, collectively, all of the answers point to a respondent's underlying degree of acceptance of LGBT people. According to this approach, a person's acceptance of LGBT people is considered a latent, unobserved variable which is related to survey responses that have been observed by these questions. *(Those readers who are less interested in methodological considerations might want to skip to the beginning of the next section).*

Figure 1 provides a conceptual schematic reflecting how social acceptance of LGBT people may be a latent, unobserved variable that accounts for a portion of the variation in responses to multiple survey items (j) about LGBT people and rights, with country (g) begin asked a survey item at time (t). Since not every survey item may measure acceptance equally well, each item is allowed to have a unique relationship (κ) with Average LGBT Acceptance. This may mean that questions that may poorly operationalize the concept of the GAI will have a relatively small contribution to Average LGBT

³⁶ There are 176 unique "countries," which includes Puerto Rico and some countries that no longer exist due to changing political circumstances (e.g., the Federation of Bosnia and Bosnia Srpska). We do not report results for these geographic regions, but we include them in the measurement model because more information about question responses across contexts helps condition how much covariance certain questions have with LGBT Acceptance.

Acceptance. This also means that longitudinal changes in responses to some questions that do not share the covariance of the other questions may matter less than changes in other questions that share a greater amount of covariance, such that when there is fluctuation in a question that strongly covaries with the other items, it has a greater influence on the GAI score than items that vary for other reasons (i.e., unique variation attributable to the question, the time period, or the survey vendor). Additionally, the model discounts respondents who are asked multiple questions about LGBT people and rights, such that a single survey that, for example, may ask twenty questions on this subject, adequately takes into account that it is the same people answering those twenty questions.³⁷

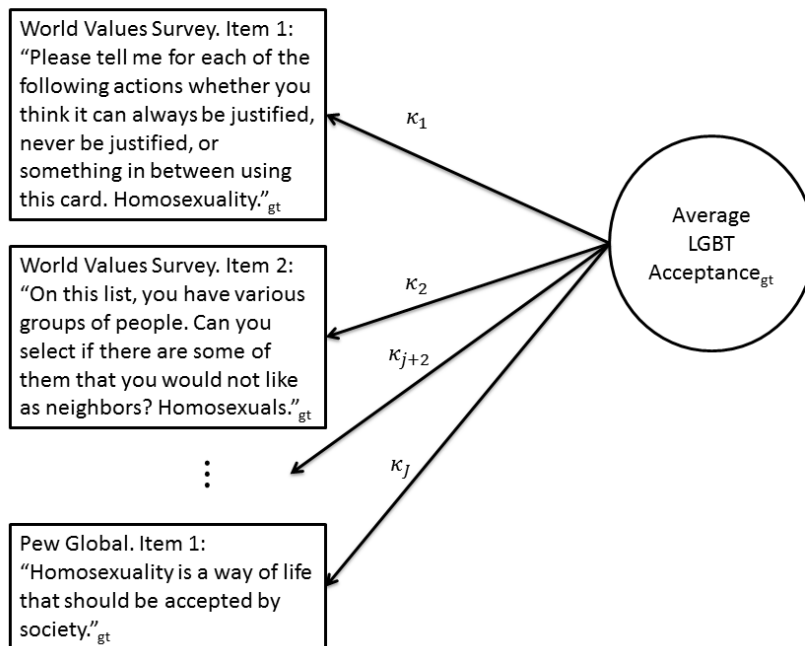
Figure 1. Conceptualizing LGBT acceptance in a country given specific survey items asked a certain time.



NOTE: κ_j is the relationship between Average LGBT Acceptance and the j th Survey Item, κ_j is the relationship for last Survey Item.

³⁷ This is done by transforming the sample size n to $n^* = \left\lceil \sum_{i=1}^{n_{gt}} 1 / (r_{i[gt]} d_{gt}) \right\rceil$, where $r_{i[gt]}$ is the number of questions answered by respondent i and d_{gt} is within-group variation in survey weights, and $\lceil \cdot \rceil$ represents a ceiling function. Since all of the weighting strategies for these surveys are designed to generalize at the country-level, $d_{gt} = 1$ in this context. If only one question is asked ($r_{i[gt]} = 1$) and there is no within-group variation in the survey weights ($d_{gt} = 1$), then $n^* = n$. Since the estimation process is an aggregation of multiple survey measures, the full sample size for a country in a survey is recovered in aggregation. For further details, see: Devin Caughey and Christopher Warshaw, “Dynamic Estimation of Latent Opinion using a Hierarchical Group-level IRT Model.” *Political Analysis* 23, no. 2 (2015): 197-211.

Figure 2. Conceptualizing LGBT acceptance in a given country given specific survey items asked a certain time



Building on this conceptualization, our approach relies on the method of the Group-level Item Response Theory (G-IRT) model.³⁸ Readers interested in the full derivation of the G-IRT model should consult “Dynamic Estimation of Latent Opinion using a Hierarchical Group-level IRT Model” in the peer-reviewed journal, *Political Analysis*. The model uses item-response theory (IRT), which examines the relationship between a characteristic of a test subject (i.e., survey respondent) and the answers they give to questions. IRT originated in educational psychology where the inquiry was on the relationship between an individual’s academic ability and responses to a test. IRT provides a family of analytical methods for modeling the individual probability that a person will answer a question correctly, and they can be used to index or scale individuals based upon their ability (e.g., standardized test scores).³⁹

A central concept of IRT is that each question is associated with a particular level of academic skill required to answer a question. If a test subject is given a collection of questions, each associated with different levels of academic skill, then the subject can be given a single score, or ideal point, that approximates academic ability. A dynamic ideal point estimation process estimates academic ability and its change over time based on the subject’s responses over time. In social and political contexts, ideal

³⁸ Devin Caughey and Christopher Warshaw, “Dynamic Estimation of Latent Opinion using a Hierarchical Group-level IRT Model.”

³⁹ F.M. Lord. *Applications of Item Response Theory to Practical Testing Problems*. Hillsdale, NJ: Earlbaum (1980).

point estimation processes can measure the liberalness or conservativeness of representatives,⁴⁰ Supreme Court justices,⁴¹ and social attitudes.⁴² The IRT model has been extended to understand abilities for a grouping of subjects, aggregating responses to understand average abilities of groups.⁴³ In the domain of social attitudes, G-IRT can estimate the policy liberalism of geographic regions over time.⁴⁴ In the current study, the country serves as the grouping of subjects and country-level results in each survey serve as the responses, each response associated with a different level of acceptance. Through dynamic ideal point estimation, the executed model can identify the dynamic relationship between the country level responses in each survey and, based on this relationship, gives a value to each country's level of LGBT acceptance for each year.

The first step in the G-IRT is to transform the individual-level survey data into a summary file for each country-question-year, which aggregates the individual-level survey data. The aggregation process identifies the number of weighted respondents who took a position supportive of LGBT people and/or rights and the total number of weighted respondents in the sample. The weighted sample size of every survey affects how reliable a survey estimate is,⁴⁵ and conditions how influential a single poll result is to the overall model. Thus, the sample size is taken into account explicitly. While surveys may vary in their sampling strategy: face-to-face, telephone, or online panel, each survey attempts to adjust their data through weighting procedures. These procedures for probabilistic samples includes the probability of selection. For empaneled online samples, the weighting process is a further effort to adjust the demographics of the sample to reach target demographics. If done appropriately, empaneled samples collected from samples that are not recruited in probabilistic ways can be adjusted to be as accurate at probabilistic samples.^{46,47} Additionally, estimates are only reported up to 2017 out of concern for estimation accuracy after that year.⁴⁸ G-IRT does not assume that each question perfectly operationalizes the concept of acceptance. Each question shares a common portion of variation with the latent concept

⁴⁰ Royce Carroll, Jeffrey B. Lewis, James Lo, Keith T. Poole, and Howard Rosenthal, "Measuring Bias and Uncertainty in DW-NOMINATE Ideal Point Estimates via the Parametric Bootstrap." *Political Analysis* 17, no. 3 (2009): 261-275.

⁴¹ Andrew D. Martin and Kevin M. Quinn, "Dynamic Ideal Point Estimation via Markov Chain Monte Carlo for the U.S. Supreme Court, 1953-1999," *Political Analysis* 10, no. 2 (2002): 134-153.

⁴² Devin Caughey and Christopher Warshaw, "Dynamic Estimation of Latent Opinion using a Hierarchical Group-level IRT Model.," Devin Caughey and Christopher Warshaw, "Policy Preferences and Policy Change: Dynamic Responsiveness in the American States, 1936-2014," *American Political Science Review* (2017) doi: 10.1017/S0003055417000533; Devin Caughey and Christopher Warshaw, "The Dynamics of State Policy Liberalism, 1936-2014," *American Journal of Political Science* 60, no. 4 (2016): 899-913.

⁴³ Robert J. Mislevy, "Item Response Models for Grouped Data." *Journal of Educational Statistics* 8, no. 4 (1983): 271-288.

⁴⁴ Devin Caughey and Christopher Warshaw, "The Dynamics of State Policy Liberalism."

⁴⁵ Steven G. Heeringa, Brady T. West, and Patricia A. Berglund, *Applied Survey Data Analysis*, 2nd ed. (New York: Chapman and Hall/CRC, 2017).

⁴⁶ Courtney Kennedy, Andrew Mercer, Scott Keeter, Nick Hatley, Kyle McGeeney, and Alejandra Gimenez. *Evaluating Online Nonprobability Surveys*. Washington, DC: Pew Research Center, 2016.

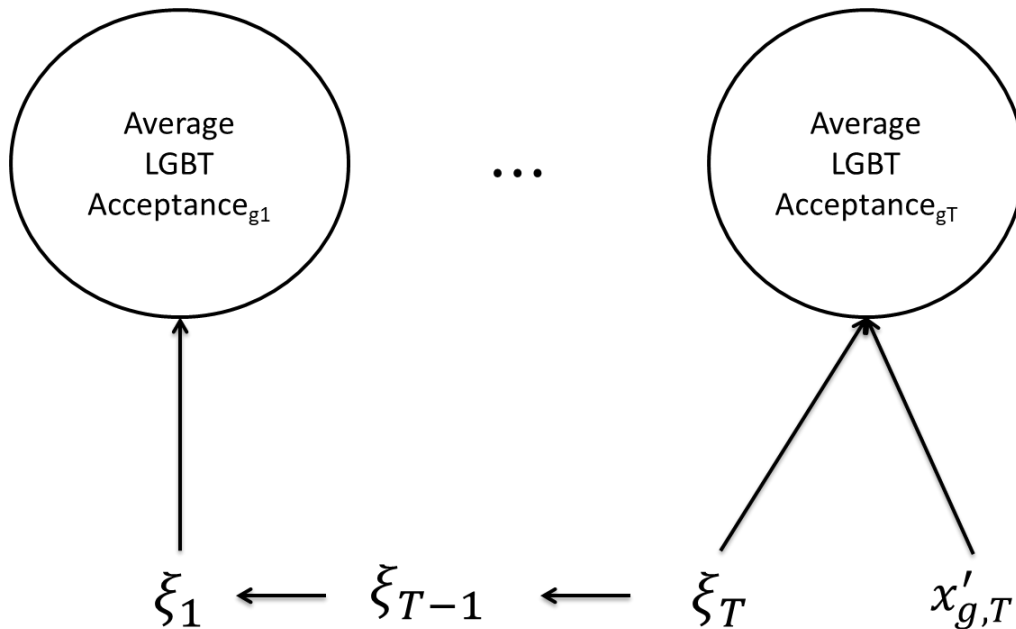
⁴⁷ In the first edition of these estimates, data from the ILGA-RIWI surveys were included; however, it is not entirely clear whether the data are appropriately adjusted via weighting to representative of countries, so these data are excluded from the estimation. In addition, any online survey that was fielded in a country that does not have high internet penetration are also excluded for those countries due to a similar concern for representativeness.

⁴⁸ We do have some data from 2018, but the estimates for that year are also conditioned by an initial covariate.

of acceptance while still having its own unique portion. This unique portion takes into account varying countries, varying survey vendors who may utilize different survey methodologies, and varying time points.

The model is made dynamic by allowing a country's acceptance to be estimated for each year. **An update to the estimation of the present GAI score is that a country's score in one year directly informs the estimate for a country in a previous year.**⁴⁹ This means that for years when there is no survey data for a country, a country's current estimate is the source for the country's previous estimate. This is represented in the schematic in Figure 2. The benefit of this approach is that it smooths the annual estimates over time and also fills in gaps when a country may not have been surveyed. This provides a more complete time series, where $x'_{g,T}$ represents information about each country at the last time point in the estimation process and the average level of support at a time period is ξ_t . The advantage of starting with more recent years is that the quality and quantity of data is far greater than distant years, such that the estimates should be more reliable and stable.

Figure 3. Conceptualizing the dynamic portion of the model estimation



Countries are given a reverse random-walking prior, such that their estimate in a current year is determinative of their previous estimate: $\xi_{t-1} \sim N(\xi_t, \sigma_\gamma^2)$, which assumes that a country's estimate is normally distributed about a country's estimate in the prior time period. The variance determines the influence of the data in period t relative to t-1, and if there are no new data in period t-1, then ξ_t acts predictively. It imputes the estimated value for ξ_{t-1} ,⁵⁰ and the imputation follows a normal distribution. In

⁴⁹ In the original estimation, a country's estimate in one year directly informed the estimate for country in a subsequent year.

⁵⁰ Simon Jackman. *Bayesian Analysis for the Social Sciences*. Hoboken, NJ: Wiley and Sons, 2009.

instances where no data exist at ξ_T , then a country's level of globalization, based on the KOF Index of Globalisation that measures economic, social and political globalization,⁵¹ provides some indication of an ending location.^{52,53} However, in the absence of data, the model is conservative and will tend to report a country's acceptance as the average (i.e., grand mean) of the acceptance index with a wide credible interval. This interval will narrow when new data are present to inform the estimate.

Estimates of the Global LGBT Acceptance Index score range from 0 to 10 with a mean of 4.3 and standard deviation of 1.3.⁵⁴ The model diagnostics suggest the estimation procedure was successful by examining \hat{R} to evaluate how well the Markov chains mixed ($\hat{R} \approx 1$), which means that the model estimates are reliable.⁵⁵

We performed validity tests to ensure that out-of-sample comparisons reflected a country's GAI score. We did this, for example, by comparing the GAI in the United States to national survey data covering attitudes about lesbian and gay people not included in the dataset used for estimation. We found a strong relationship between the GAI and the national survey data. We were able to make trend comparisons with the United States as well as Great Britain, which both had within-country trends data. In each, the GAI was strongly correlated with LGB attitudes ($r > 0.80$, in each comparison).⁵⁶ In addition, Table 1 reports the correlation between measures that should relate to the current (2019) GAI scores including: the GAI 2017 estimates,⁵⁷ the Global Index on Legal Recognition of Homosexual Orientation (GILRHO),⁵⁸ the Franklin and Marshall Global Barometer of Gay Rights™ (F&M GBGR),^{59,60} a score

⁵¹ Savina Gygli, Florian Haelg, Niklas Potrafke, and Jan-Egbert Sturm, "The KOF Globalisation Index – Revisited," Review of International Organizations, doi: 10.1007/s11558-019-09344-2.

⁵² A. Dreher, N. Gaston, W. Martens, *Measuring Globalisation: Gauging Its Consequences* (New York: Springer, 2008).

⁵³ Phillip M. Ayoub and Jeremiah Garretson, "Getting the Message Out: Media Context and Global Changes in Attitudes toward Homosexuality." *Comparative Political Studies* 50, no. 8 (2017): 1055-1085.

⁵⁴ The original estimation had a mean of zero and standard deviation of one for model identification, though this was rescaled to fall within the interval of zero and ten.

⁵⁵ Andrew Gelman, John B. Carlin, Hal S. Stern, David B. Dunson, Aki Vehtari, and Donald B. Rubin, *Bayesian Data Analysis*, 3rd Ed. (New York, NY: Chapman and Hall/CRC, 2013).

⁵⁶ There is an obvious limitation that these three countries are all western and developed countries. However, the presence within-country repeated cross-sectional surveys over time is necessary for comparison.

⁵⁷ Andrew Flores and Andrew Park, *Polarized Progress: Social Acceptance of LGBT People in 141 Countries, 1981 to 2014* (Los Angeles, CA: The Williams Institute, 2017).

⁵⁸ M. V. Lee Badgett, Sheila, Nezhad, Kees Waaldijk, Yana van der Meulen Rodgers, *The Relationship between LGBT Inclusion and Economic Development: An Analysis of Emerging Economies* (Los Angeles, CA: The Williams Institute, 2014).

⁵⁹ Susan Dicklitch-Nelson, Scottie Thompson Buckland, Berwood Yost, and Danel Dragulijć, "From Persecutors to Protectors: Human Rights and the F&M Global Barometer of Gay Rights™ (GBGR)." *Journal of Human Rights* 18, no. 1: 1-18.

⁶⁰ The GBGR scores countries in a letter grade fashion and in a continuous score from 0-100. Letter grades range from low (F) to high (A), which we scored as 1-5.

measuring restrictions on freedom of the press,⁶¹ and norms on the rule of law.⁶² Some of these indicators were also shown to relate to the GAI estimates reported in the 2017 report.⁶³

Table 1. Correlations of key indicators with the GAI 2019 updated estimates

	GAI 2019
GAI 2017	0.77
Global Index on Legal Recognition of Homosexual Orientation (GILRHO)	0.51
Franklin and Marshall Global Barometer of Gay Rights™ (F&M GBGR) Letter Grade	0.77
Franklin and Marshall Global Barometer of Gay Rights™ (F&M GBGR) Score	0.77
Freedom of the Press	-0.54
Rule of Law	0.63

NOTE: All correlations are statistically significant at $p < 0.05$.

As a point of reference, a GAI estimate of 5 corresponds to about 19 percent of American adults agreeing that homosexuality is “not wrong at all.”⁶⁴ A GAI estimate of 5 also corresponds to about 15 percent of British adults agreeing that homosexuality is “not at all wrong.”^{65,66}

⁶¹ Freedom House. *Freedom of the Press (FOTP) Data: Editions 1980-2017*. Washington, DC: Freedom House. <<http://info.worldbank.org/governance/wgi/#home>>.

⁶² The World Bank Group. “Worldwide Governance Indicators.” *The World Bank Group*, 2017.

⁶³ Andrew Flores and Andrew Park, *Examining the Relationship between Social Acceptance of Sexual Minorities and Legal Inclusion of Sexual Minorities*. (Los Angeles, CA: The Williams Institute, 2017).

⁶⁴ Comparison made with the General Social Survey.

⁶⁵ Data compiled from Table 3 of Ben Clements and Clive D. Field, “Public Opinion Toward Homosexuality and Gay Rights in Great Britain.” *Public Opinion Quarterly* 78, no. 2 (2014): 523-547.

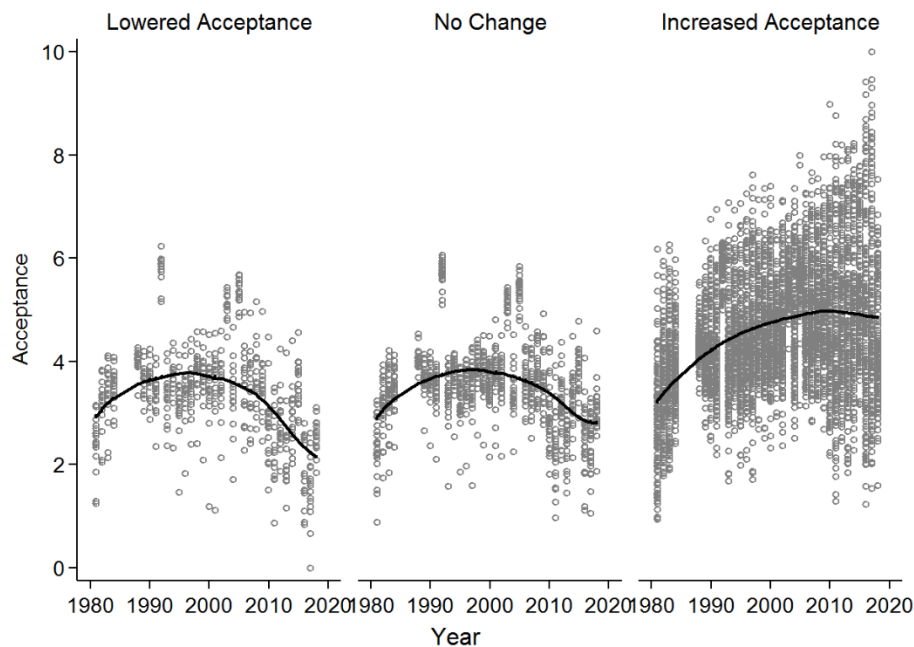
⁶⁶ In total about 74% of the variation in GAI scores in Great Britain and the United States can be explained by the repeated cross-sectional survey data referenced.

FINDINGS

OVERALL IMPROVEMENT: PATTERNS IN ACCEPTANCE

Figure 4 shows GAI estimates (scores) for countries comparing their initial position in 1981 to their final position in 2017 separated by whether their acceptance levels increased, decreased, or reflected little change. Each point in Figure 4 represents an estimate from the GAI for a certain country in a given year. A majority of 75 percent of the countries experienced an increase in acceptance in this timeframe, 16 percent experienced no change, and 9 percent of the countries had a decrease in acceptance.

Figure 4. Trends in acceptance with a rolling average



MOST COUNTRIES EXPERIENCED SOME INCREASE IN ACCEPTANCE

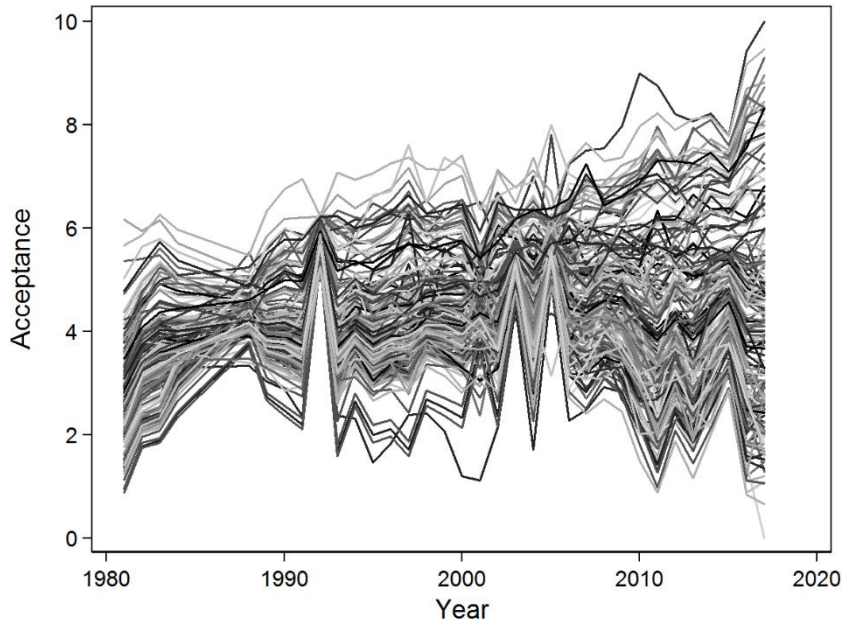
Of the 174 countries examined, 75 percent experienced an increase in acceptance. This translates to

- 131 of 174 countries experienced increases in acceptance from 1981.
- 16 countries experienced a decline.
- 27 countries experienced no change.

Combined, as also shown in Figure 5, there is great diversity in trends regarding LGBT acceptance. The estimates also do not appear to be overly smoothed over time because there still appear to be significant bumps across the time series. An overly smoothed estimation process would downweight the presence

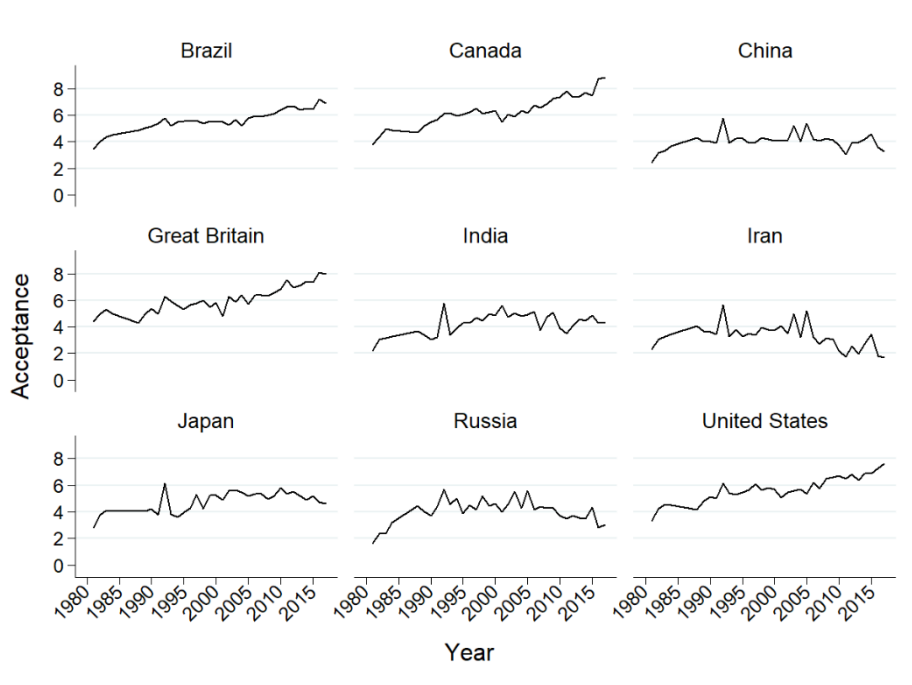
of new data in favor a smooth time series. The current approach balances smoothness while upweighting the presence of new data to inform a country's GAI score.

Figure 5. Acceptance trends. Each line represents a single country estimate from 1981-2017



These trends can be further unpacked by highlighting particular countries. Figure 6 plots nine countries and their trends in LGBT acceptance. Brazil, Canada, Great Britain, Japan, and the United States have all increased their acceptance of LGBT people and rights. Brazil and the United States have had a steady increase in acceptance; whereas, Canada and Great Britain appear to have punctuated equilibriums (i.e., static change over a period time followed by a sudden shift). Japan, while still having an increase in acceptance, has had a markedly slower rate of change, and it seems that, in 2017, acceptance levels were slightly lower than in 2016 and 2015. China, Iran, and Russia appear to have had little change in acceptance over time, and there appears to be a decline in acceptance around 2010. In 2017, acceptance in China and Russia, while higher than 1981, remains on the lower end, and acceptance in Iran looks about the same as in 1981—if not slightly less accepting. India appears to have increased on acceptance until the mid-2000s followed by a slight decline, and then an increase after 2010. As these trends show, countries have not had a uniform change in acceptance of LGBT people and rights over time, prompting questions about why countries have had different trajectories (see Appendix 3 for trends for each country).

Figure 6. Trends in acceptance for nine specific countries



THE MOST ACCEPTING COUNTRIES ARE BECOMING MORE ACCEPTING

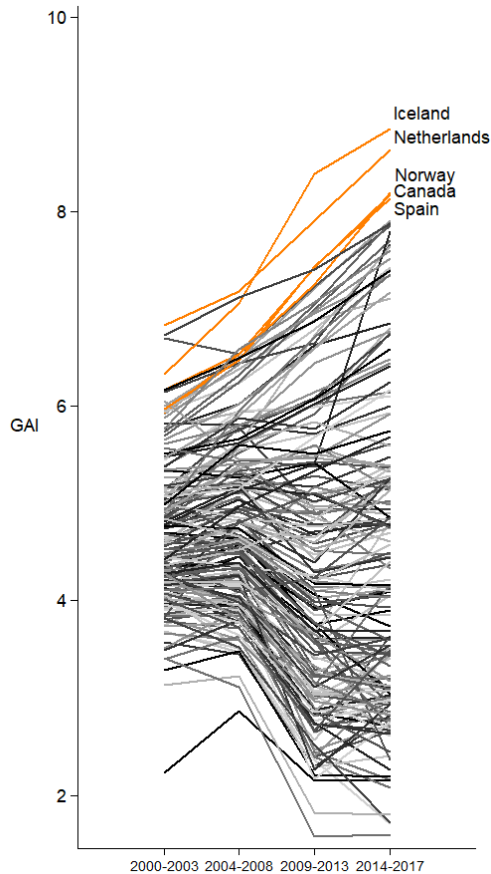
In general, the most accepting countries are becoming more accepting, the least accepting countries are becoming less accepting, and those in the middle remain in the middle. By comparing five-year averages between 2000 and 2017,⁶⁷ Table 1 shows the results for all countries for these two time periods. These results are plotted in Appendix 3.

Iceland, the Netherlands, Norway, Canada, and Spain were the most accepting in the 2014-2017 time period. These countries had a statistically significant increase in their level of acceptance since 2000 (see Appendix 3). A common pattern among these countries is that they are some of the most accepting countries in the time series, and their trajectories continued upwards. These countries are also clustered in Western Europe, except for Iceland, which is a close neighbor in the Nordic region. As studies show that a country's economy and religious orientation may affect how accepting people are within that country,⁶⁸ these trends might further suggest that growth in acceptance is potentially related to regional, economic, and religious characteristics. Cross-sectional studies have found that these characteristics explain a country's acceptance toward LGBT people.

⁶⁷ We note that 2000-2003 and 2014-2017 are four-year averages.

⁶⁸ Robert Andersen and Tina Fetner, "Economic Inequality and Intolerance: Attitudes toward Homosexuality in 35 Democracies." *American Journal of Political Science* 52, no. 4 (2008): 942-958.

Figure 7. Five countries with the highest GAI 2014-2017



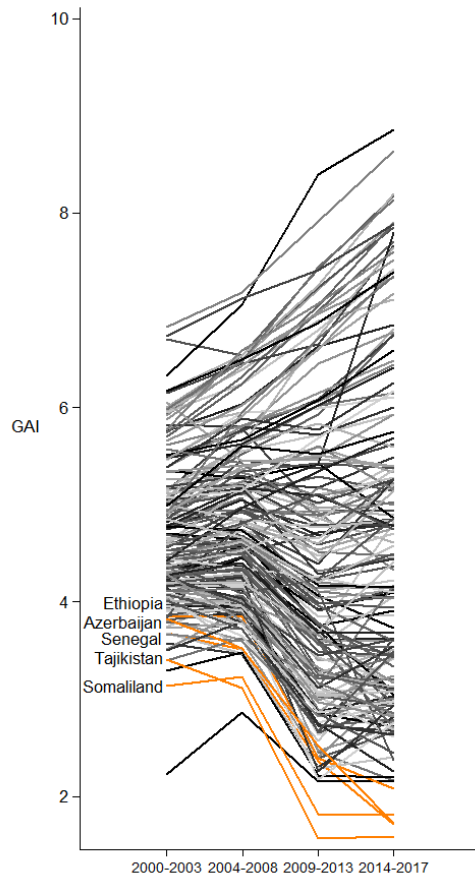
THE LEAST ACCEPTING COUNTRIES ARE BECOMING LESS ACCEPTING

The countries that were the least accepting in 2014-2017 were Ethiopia, Azerbaijan, Senegal, Tajikistan, and Somaliland, and they each became less accepting since 2000. These decreases were similar in magnitude to increases among the top five most accepting countries. These decreases were statistically significant for Ethiopia, Azerbaijan, Senegal, and Tajikistan, but were not significantly different for Somaliland (see Appendix 3)

While theories may exist that explain the stratification of countries on levels of acceptance of LGBT people, there are fewer explanations for why countries would decrease in their support of LGBT people. The most prominent theory, the one of backlash, would suggest that there would have to be some form of advancement of LGBT rights in order for a negative downturn in public acceptance. The GAI could be used to test the hypothesis of backlash and increase understanding of these unique trajectories.

Additionally, studies could investigate how trends in nationalism or religious fundamentalism may reduce LGBT acceptance, as such factors are associated with prejudicial attitudes toward societal out-groups.⁶⁹

Figure 8. Five countries with the lowest GAI 2014-2017

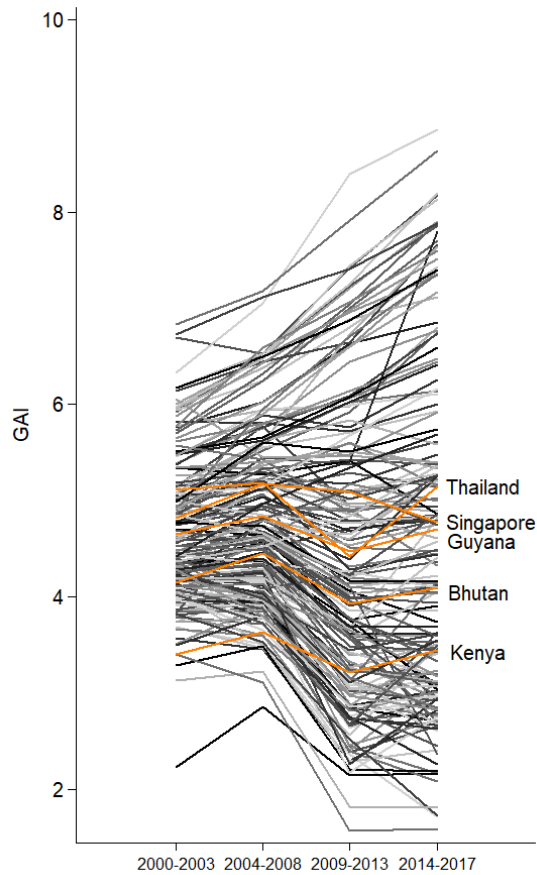


COUNTRIES NEAR THE AVERAGE HAVE STAYED THE SAME

Some countries experienced little change between 2000 and 2017. The five countries that had the least change in acceptance are highlighted in Figure 8. Thailand, Singapore, Guyana, Bhutan, and Kenya each had very little change in acceptance between 2000 and 2017. These countries are not the most accepting or unaccepting countries in the scale. They are, except for Kenya, near the average location for all countries between 2000-2003 and 2014-2017. Kenya, on the other hand, remains less accepting than the average for all countries and does not change much from 2000-2003 (GAI = 3.40) to 2014-2017 (GAI = 3.44).

⁶⁹ Amy Adamczyk, *Cross-National Public Opinion about Homosexuality: Examining Attitudes across the Globe* (Berkeley and Los Angeles, CA: University of California Press, 2017).

Figure 9. Five countries that had the least amount of change from 2000-2003 to 2014-2017



In the 2014-2017 time-period, as compared to previous time periods, countries became more polarized. That is, a large group of countries grew more accepting and a small group of countries grew more unaccepting. The gap between the most and least accepting widened. The countries that experienced little change did not follow either of those trends. While it is more difficult to explain why countries did not experience any substantial changes in acceptance in the GAI, these countries may provide useful comparisons for countries that did experience change and inform the development (and future testing) of hypotheses related to observed patterns.

FUTURE RESEARCH

The GAI utilizes the most comprehensive collection of social attitudes data about LGBT people and rights. As such, numerous studies could utilize GAI scores and its underlying methods to examine the global position of LGBT people in societies on:

- Contours, characteristics, and dynamics that explain country-, regional-, and/or global-level changes in LGBT acceptance, which may involve political, economic, sociological, and/or regional dynamics, among others
- The relationship between LGBT acceptance and
 - violence faced by LGBT people
 - discrimination faced by LGBT people
 - LGBT physical and mental health issues
 - economic outcomes for LGBT people
 - LGBT policy inclusiveness
 - psychiatric morbidity in LGBT populations
 - the probability that LGBT people have a higher level of representation in a country's policymaking institutions

Further development on the estimation approach should also consider the addition of time-varying covariates (i.e., using a time-series variable known to be associated with social attitudes about LGBT people).

APPENDICES

APPENDIX 1: QUESTION WORDINGS FROM GLOBAL AND REGIONAL SURVEY DATA

Table A.1 provides the survey sources and question wordings for all of the questions used in the construction of the GAI. While some questions may not necessarily seem to be related to LGBT acceptance, some of them may serve as a proxy for LGBT acceptance. All of these questions which are based on prior scholarly studies have been shown to be related to a person's level of acceptance of LGBT people and rights. For example, people who are more accepting of LGBT people and rights tend to acknowledge the presence of discrimination against LGBT people in society, whereas, those who are less accepting are less likely to acknowledge such discrimination. Our coding categorized responses that inferred a favorable attitude toward LGBT people as a one and all other attitudes (neutral or antagonistic) as a zero.

In the first edition of this report, we also examined estimation sensitivity by removing a number of questions that may lack face validity. These were items from the Eurobarometer, including: "Do you think that diversity is sufficiently reflected in the media in terms of Sexual orientation (being gay, lesbian, or bisexual)?", "Do you think that in COUNTRY, measures to fight the economic crisis and policies to promote recovery are excluding people from each of the following groups? People with a different sexual orientation than the majority of the population.", "Do you think that in COUNTRY, measures to fight the economic crisis and policies to promote recovery are excluding people from each of the following groups? Transgender or transsexual people.", and "There are differing views about whether people inherit particular characteristics or whether they acquire them mainly from their upbringing or conditions in which they lived. Please tell me whether you think each of the following characteristics is mainly inherited or mainly the result of upbringing and living condition. Homosexual tendencies." We removed these items from the database and re-estimated the GAI. These new estimates had a correlation of X with the GAI as presented.

Table A.1. Question wordings from the global and regional survey data

SURVEY SOURCE	QUESTION WORDING
Afrobarometer	For each of the following types of people, please tell me whether you would like having people from this group as neighbors, dislike it, or not care. Homosexuals?
Afrobarometer	I would not mind having someone in a same-sex relationship as a coworker.
Afrobarometer	I would not mind having someone in a same-sex relationship as a supervisor.

SURVEY SOURCE	QUESTION WORDING
Afrobarometer	I would not mind having someone in a same-sex relationship who is a religious community member.
Afrobarometer	Would you report to the police if a friend is in a same-sex relationship?
Afrobarometer	Would you report to the police if a son/daughter is in a same-sex relationship?
Afrobarometer	Would you report to the police if a brother/sister is in a same-sex relationship?
Afrobarometer	Would you report to the police if a relative is in a same-sex relationship?
Afrobarometer	Would you report to the police if a coworker is in a same-sex relationship?
Afrobarometer	Would you report to the police if other people are in a same-sex relationship?
America's Barometer	For each of the following types of people, please tell me whether you would like having people from this group as neighbors, dislike it, or not care. Homosexuals?
America's Barometer	And now changing the topic and thinking of homosexuals, how strongly do you approve or disapprove of such people being permitted to run for public office?
America's Barometer	How strongly do you approve or disapprove that same-sex couples can have the right to marry?
Eurobarometer	Adoption of children should be authorized for homosexual couples throughout Europe.
Eurobarometer	And to what extent do you agree or disagree with each of the following statements? School lessons and material should include information about diversity in terms of gender identity (transgender or transsexual people).
Eurobarometer	And to what extent do you agree or disagree with each of the following statements? School lessons and material should include information about diversity in terms of sexual orientation (gay, lesbian, or bisexual people).
Eurobarometer	And using a scale from 1 to 10, please tell me how you would feel about having a person from each of the following groups in the highest elected political position in OUR COUNTRY. A homosexual.
Eurobarometer	And using a scale from 1 to 10, please tell me how you would feel about having someone from each of the following categories in the highest elected political position in OUR COUNTRY. A homosexual.
Eurobarometer	And using a scale from 1 to 10, please tell me how you would feel about having someone from each of the following groups in the highest elected political position in OUR COUNTRY? A homosexual.
Eurobarometer	Discrimination can happen outside working life. For example, in education, when people go shopping, visit restaurants/bars, try to rent an

SURVEY SOURCE	QUESTION WORDING
	accommodation or buy a property, go to a doctor or to a hospital. Could you please tell me whether, in your opinion, discrimination outside working life is very widespread, fairly rare, or very rare in COUNTRY? Discrimination on the basis of Sexual orientation.
Eurobarometer	Do you have friends or acquaintances who are [Gay, lesbian, or bisexual]?
Eurobarometer	Do you think that homosexual couples should, or should not, have the right to adopt children?
Eurobarometer	Do you think that homosexual couples should, or should not, have the right to inherit from one another, in the same way as married couples?
Eurobarometer	Do you think that homosexual couples should, or should not, have the right to live together, without being married, but with the same advantages as married couples?
Eurobarometer	Do you think that homosexual couples should, or should not, have the right to marry each other?
Eurobarometer	Do you think that transgender or transsexual persons should be able to change their civil documents to match their inner gender identity?
Eurobarometer	For each of the following propositions, tell me if you Totally agree/Tend to agree/Tend to disagree/ Totally disagree/Don't know. Homosexual marriages should be allowed throughout Europe.
Eurobarometer	For each of the following situations, please tell me using the scale from 1 to 10 how you would personally feel about it. On this scale, "1" means that you would be "very uncomfortable" and "10" means that you would be "totally comfortable" with the situation. Having a homosexual as a neighbor
Eurobarometer	For each of the following types of discrimination, could you please tell me whether, in your opinion, it is very widespread, fairly widespread, fairly rare, or very rare in (OUR COUNTRY)? Discrimination on the basis of sexual orientation.
Eurobarometer	If you compare the situation with 5 years ago, would you say that the following types of discrimination are more common or less common in COUNTRY? Discrimination on the basis of sexual orientation (for example being gay or lesbian).
Eurobarometer	In COUNTRY when a company wants to hire someone and has the choice between two candidates with equal skills and qualifications, which of the following criteria may, in your opinion, put one candidate at a disadvantage? The Candidate's gender identity.
Eurobarometer	In COUNTRY when a company wants to hire someone and has the choice between two candidates with equal skills and qualifications, which of the following criteria may, in your opinion, put one candidate at a disadvantage? The Candidate's sexual orientation.

SURVEY SOURCE	QUESTION WORDING
Eurobarometer	In the past 12 months, have you personally felt discriminated against or harassed on one or more of the following grounds? Gender identity (being transgender or transsexual).
Eurobarometer	In the past 12 months, have you personally felt discriminated against or harassed on one or more of the following grounds? Sexual orientation (being gay, lesbian, or bisexual).
Eurobarometer	In the past 12 months, have you witnessed someone being discriminated against or harassed on the basis of one or more of the following grounds? Was it discrimination on the basis of [Sexual orientation (being gay, lesbian, or bisexual)]?
Eurobarometer	Regardless of whether you have children or not, please tell me, using a scale from 1 to 10, how comfortable you would feel if one of your children was in a love relationship with a person from each of the following groups. A homosexual.
Eurobarometer	Regardless of whether you have children or not, please tell me, using a scale from 1 to 10, how comfortable you would feel if one of your children was in a love relationship with a person from each of the following groups. A transgender or transsexual person.
Eurobarometer	To what extent do you agree or disagree with each of the following statements? Gay, lesbian, and bisexual people should have the same rights as heterosexual people.
Eurobarometer	To what extent do you agree or disagree with each of the following statements? Same sex marriages should be allowed throughout Europe.
Eurobarometer	To what extent do you agree or disagree with each of the following statements? There is nothing wrong in a sexual relationship between two persons of the same sex.
Eurobarometer	Using a scale from 1 to 10, please tell me how comfortable you would feel with people in each of the following groups showing affection in public (e.g. kissing or holding hands). Homosexuals.
European Social Survey	Gay men and lesbians should be free to live their own life as they wish.
European Social Survey	Ashamed if a close family member is gay or lesbian.
European Social Survey	How would you feel about the following statements? Do you agree or disagree with them? Homosexual couples should be able to adopt children.
European Values Survey	Could you please mention any that you would not like to have as neighbors? Homosexuals.
European Values Survey	How would you feel about the following statements? Do you agree or disagree with them? Homosexual couples should be able to adopt children.

SURVEY SOURCE	QUESTION WORDING
European Values Survey	How would you feel about the following statements? Homosexual couples are as good parents as other couples.
European Values Survey	Please tell me for each of the following actions whether you think it can always be justified, never be justified, or something in between using this card. Homosexuality.
Gallup World Poll	Next, I'm going to read you a list, for each item on the list, please tell me whether you personally believe that it is morally acceptable or morally wrong. How about homosexual acts?
Gallup World Poll	Is the city or areas where you live a good place or not a good place to live for gay or lesbian people?
International Social Survey Programme	And what about sexual relations between two adults of the same sex, is it always wrong, almost always wrong, wrong only sometimes, or not wrong at all?
International Social Survey Programme	Homosexual couples should have the right to marry one another.
International Social Survey Programme	Same-sex female couples can raise a child as well as opposite sex couples.
International Social Survey Programme	Same-sex male couples can raise a child as well as opposite sex couples.
Ipsos	Same-sex couples are just as likely as other parents to successfully raise children.
Ipsos	Same-sex couples should have the rights to adopt children as heterosexual couples do.
Ipsos	Same-sex marriage is or could be harmful to society.
Ipsos	When you think about the rights of same-sex couples, which of the following comes closest to your personal opinion?
Ipsos	Please indicate whether you agree or disagree with each statement below about people who dress and live as one sex though they were born another. They should be protected from discrimination by the Government.
Ipsos	Please indicate whether you agree or disagree with each statement below about people who dress and live as one sex though they were born another. They should be allowed to marry a person of their birth sex.
Ipsos	Please indicate whether you agree or disagree with each statement below about people who dress and live as one sex though they were born another. They should be allowed to adopt children.
Latinobárometro	Do you strongly agree, agree, disagree, or strongly disagree with the following statements I am going to read. Homosexual Marriage.

SURVEY SOURCE	QUESTION WORDING
Latinobárometro	On this list, you have various groups of people. Can you select if there are some of them that you would not like as neighbors? Homosexuals.
Latinobárometro	Please tell me for the following statement whether you think it can always be justified, never be justified, or something in between. Homosexuality.
Pew	Homosexuality is a way of life that should be accepted by society.
Pew	Do you personally believe that homosexuality is morally acceptable, morally unacceptable, or is not a moral issue?
Pew	Please tell me how much of a priority you think gays and lesbians should be for human rights organizations.
World Values Survey	Could you please mention any that you would not like to have as neighbors? Homosexuals.
World Values Survey	I'd like to ask you about some groups that some people feel are threatening to the social and political order in this society. Would you please select from the following list the one group or organization that you like least? Homosexuals.
World Values Survey	On this list, you have various groups of people. Can you select if there are some of them that you would not like as neighbors? Homosexuals.
World Values Survey	Please tell me for each of the following actions whether you think it can always be justified, never be justified, or something in between using this card. Homosexuality.

APPENDIX 2: TRENDS IN ACCEPTANCE FOR EACH COUNTRY

Table A.2. Ranking countries by their LGBT Global Acceptance Index (GAI) score

RANK	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI
		2000-2003		2004-2008		2009-2013		2014-2017
1	Netherlands	6.8	Netherlands	7.2	Iceland	8.4	Iceland	8.9
2	Sweden	6.7	Sweden	7.1	Netherlands	7.9	Netherlands	8.6
3	Denmark	6.7	Iceland	7.1	Spain	7.4	Norway	8.2
4	Iceland	6.3	Uruguay	6.6	Canada	7.4	Canada	8.2
5	Switzerland	6.2	Canada	6.5	Sweden	7.4	Spain	8.1
6	Norway	6.2	Denmark	6.5	Norway	7.3	Belgium	7.9
7	Luxembourg	6.1	Norway	6.5	Denmark	7.2	Ireland	7.9
8	Israel	6.1	Australia	6.5	Belgium	7.2	Sweden	7.9
9	Belgium	6.0	Switzerland	6.5	Uruguay	7.1	Denmark	7.9
10	Spain	6.0	Belgium	6.5	Ireland	7.0	Nepal	7.8
11	France	6.0	Spain	6.5	Great Britain	7.0	Great Britain	7.7
12	Germany	5.9	Luxembourg	6.4	New Zealand	7.0	Luxembourg	7.7
13	Canada	5.9	New Zealand	6.4	Australia	7.0	Malta	7.6
14	Australia	5.9	France	6.4	France	6.9	Uruguay	7.6
15	New Zealand	5.9	Ireland	6.3	Switzerland	6.9	New Zealand	7.5
16	Czech Republic	5.8	Great Britain	6.2	Germany	6.8	Germany	7.4
17	Austria	5.8	Germany	6.2	Malta	6.7	Finland	7.4
18	Uruguay	5.8	Argentina	6.0	Puerto Rico	6.7	Switzerland	7.4
19	Argentina	5.8	Finland	6.0	Luxembourg	6.6	Puerto Rico	7.4
20	Ireland	5.7	Cuba	6.0	Argentina	6.6	Australia	7.3
21	Great Britain	5.7	Puerto Rico	5.9	United States	6.6	United States	7.2
22	Finland	5.7	Austria	5.9	Finland	6.6	France	7.1
23	Italy	5.6	United States	5.9	Brazil	6.4	Argentina	6.9
24	Slovakia	5.6	Mexico	5.9	Hong Kong	6.1	Austria	6.8
25	Philippines	5.5	Italy	5.8	Chile	6.1	Brazil	6.8

RANK	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI
		2000-2003		2004-2008		2009-2013		2014-2017
26	Chile	5.5	Czech Republic	5.8	Philippines	6.1	Cape Verde	6.8
27	Portugal	5.5	Hong Kong	5.8	Italy	6.1	Chile	6.7
28	Brazil	5.5	Andorra	5.8	Portugal	6.0	Philippines	6.6
29	United States	5.5	Chile	5.8	Costa Rica	6.0	Hong Kong	6.5
30	Cuba	5.5	Brazil	5.8	Cuba	6.0	Italy	6.4
31	Hong Kong	5.4	Philippines	5.7	Austria	6.0	Portugal	6.4
32	Mexico	5.4	Nicaragua	5.6	Cape Verde	5.9	Mexico	6.3
33	Japan	5.3	Portugal	5.6	Nicaragua	5.8	South Africa	6.2
34	Slovenia	5.3	Venezuela	5.6	Mexico	5.8	Costa Rica	6.1
35	Dominican Republic	5.3	Malta	5.6	Czech Republic	5.7	Cuba	6.1
36	Greece	5.3	Costa Rica	5.6	Colombia	5.7	Czech Republic	6.0
37	Peru	5.2	Colombia	5.5	South Africa	5.7	Colombia	5.9
38	Malta	5.2	Cape Verde	5.5	Paraguay	5.6	Slovenia	5.9
39	Guatemala	5.2	Ecuador	5.5	Panama	5.6	Venezuela	5.7
40	Bolivia	5.2	Israel	5.4	Venezuela	5.5	Taiwan	5.7
41	Andorra	5.1	Slovakia	5.4	Suriname	5.5	Ecuador	5.6
42	Colombia	5.1	Slovenia	5.4	Slovenia	5.5	Nicaragua	5.6
45	Thailand	5.1	Suriname	5.4	Israel	5.5	Bahrain	5.5
44	Nicaragua	5.1	Panama	5.4	Laos	5.4	Bolivia	5.4
45	South Africa	5.1	Laos	5.3	Japan	5.4	Israel	5.4
46	India	5.1	Dominican Republic	5.3	Nepal	5.4	Suriname	5.4
47	Cape Verde	5.1	Peru	5.3	Ecuador	5.4	Laos	5.4
48	Latvia	5.0	Greece	5.3	Taiwan	5.3	Syria	5.4
49	Bulgaria	5.0	Japan	5.3	Cyprus	5.3	Panama	5.3
50	Panama	5.0	Paraguay	5.2	Bahrain	5.2	El Salvador	5.3
51	Bahrain	5.0	Bahrain	5.2	Mozambique	5.2	Mauritius	5.3
52	Poland	5.0	Bolivia	5.2	Trinidad and Tobago	5.1	Northern Cyprus	5.3

RANK	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI
		2000-2003		2004-2008		2009-2013		2014-2017
53	Cyprus	5.0	Guatemala	5.2	El Salvador	5.1	Peru	5.3
54	Venezuela	5.0	Thailand	5.2	Singapore	5.1	Croatia	5.2
55	Paraguay	4.9	Hungary	5.2	Dominican Republic	5.1	Dominican Republic	5.2
56	Honduras	4.9	Latvia	5.2	Peru	5.0	Namibia	5.2
57	Croatia	4.9	Singapore	5.2	Bolivia	5.0	Honduras	5.2
58	Suriname	4.9	El Salvador	5.2	Greece	5.0	Paraguay	5.2
59	Puerto Rico	4.9	South Africa	5.1	Hungary	4.9	Cyprus	5.1
60	Costa Rica	4.9	Nepal	5.1	Andorra	4.9	Thailand	5.1
61	Ecuador	4.9	Cyprus	5.1	Belize	4.9	Slovakia	5.0
62	Laos	4.8	Bulgaria	5.1	Honduras	4.9	Greece	5.0
63	Vietnam	4.8	Afghanistan	5.1	Slovakia	4.9	Mozambique	5.0
64	Botswana	4.8	Botswana	5.1	Bulgaria	4.9	Andorra	4.9
65	Singapore	4.8	Estonia	5.0	Syria	4.8	Hungary	4.9
66	Mauritius	4.8	Myanmar	5.0	Guatemala	4.8	Japan	4.9
67	Nepal	4.8	Taiwan	5.0	Myanmar	4.8	South Korea	4.9
68	Serbia	4.8	Belize	4.9	Poland	4.8	Estonia	4.9
69	Afghanistan	4.8	Mauritius	4.9	Cambodia	4.7	Myanmar	4.8
70	Estonia	4.7	Honduras	4.9	Estonia	4.7	Poland	4.8
71	Barbados	4.7	Barbados	4.9	Namibia	4.6	Bangladesh	4.8
72	Macedonia	4.7	Poland	4.9	Mauritius	4.6	Barbados	4.8
73	Russia	4.7	Pakistan	4.8	Croatia	4.6	Cambodia	4.8
74	Lebanon	4.7	Guyana	4.8	Barbados	4.6	Guatemala	4.8
75	Guyana	4.7	Croatia	4.8	Sao Tome and Principe	4.5	Singapore	4.8
76	Belarus	4.6	Trinidad and Tobago	4.8	Botswana	4.5	Sao Tome and Principe	4.8
77	Belize	4.6	Northern Cyprus	4.8	Guyana	4.5	Trinidad and Tobago	4.7

RANK	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI
		2000-2003		2004-2008		2009-2013		2014-2017
78	El Salvador	4.6	Sao Tome and Principe	4.8	Thailand	4.4	Guyana	4.7
79	Grenada	4.6	Grenada	4.7	Northern Cyprus	4.4	Bulgaria	4.6
80	Jamaica	4.6	Serbia	4.7	Grenada	4.3	Vietnam	4.6
81	Hungary	4.6	Namibia	4.7	Latvia	4.3	India	4.5
82	Namibia	4.6	Bahamas	4.7	Romania	4.3	Botswana	4.5
83	Trinidad and Tobago	4.6	India	4.7	South Korea	4.2	Grenada	4.5
84	Myanmar	4.6	Vietnam	4.7	India	4.2	Latvia	4.4
85	Ukraine	4.5	Macedonia	4.6	Bahamas	4.2	Turkey	4.4
86	Bahamas	4.5	Swaziland	4.6	Vietnam	4.2	Bahamas	4.4
87	Dominica	4.5	Lithuania	4.6	Lithuania	4.2	Belize	4.3
88	Swaziland	4.5	Saint Kitts and Nevis	4.6	Serbia	4.2	Saint Kitts and Nevis	4.2
89	Sao Tome and Principe	4.5	Lesotho	4.6	Algeria	4.1	Malaysia	4.2
90	Saint Lucia	4.5	Dominica	4.6	Swaziland	4.1	Serbia	4.2
91	Romania	4.4	Lebanon	4.6	Pakistan	4.1	Algeria	4.1
92	Lesotho	4.4	Jamaica	4.6	Saint Kitts and Nevis	4.1	Lithuania	4.1
93	Antigua and Barbuda	4.4	Saint Lucia	4.6	Angola	4.1	Jamaica	4.1
94	Saint Kitts and Nevis	4.4	Angola	4.6	Dominica	4.0	Dominica	4.1
95	Taiwan	4.4	Mozambique	4.6	Lesotho	4.0	Romania	4.1
96	Mongolia	4.4	Russia	4.5	Saint Lucia	4.0	Bhutan	4.1
97	Cambodia	4.4	Syria	4.5	Montenegro	4.0	Lebanon	4.1
98	Montenegro	4.4	Antigua and Barbuda	4.5	Bhutan	3.9	Saint Lucia	4.1
99	South Korea	4.4	Iraq	4.5	Jamaica	3.9	Swaziland	4.0

RANK	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI
		2000-2003		2004-2008		2009-2013		2014-2017
100	Lithuania	4.4	Mongolia	4.5	Antigua and Barbuda	3.9	Lesotho	3.9
101	Benin	4.4	Belarus	4.5	Ukraine	3.8	China	3.9
102	Malaysia	4.4	Cambodia	4.5	Russia	3.8	Antigua and Barbuda	3.9
103	China	4.4	Montenegro	4.5	Macedonia	3.8	Angola	3.7
104	Syria	4.4	Ukraine	4.5	China	3.8	Yemen	3.7
105	Bosnia Herzegovina	4.4	Haiti	4.5	Bosnia Herzegovina	3.7	Benin	3.6
106	Angola	4.3	Bhutan	4.5	Turkey	3.7	Haiti	3.6
107	Iraq	4.3	Benin	4.4	Yemen	3.7	Uzbekistan	3.6
108	Libya	4.3	Sudan	4.4	Bangladesh	3.7	Libya	3.6
109	Mali	4.3	Yemen	4.4	Tanzania	3.7	Montenegro	3.6
110	Zimbabwe	4.3	Libya	4.4	Haiti	3.6	Tunisia	3.5
111	Yemen	4.3	China	4.4	Belarus	3.6	Saint Vincent and the Grenadines	3.5
112	Uzbekistan	4.3	Bosnia Herzegovina	4.4	Mongolia	3.6	Kuwait	3.5
113	Gambia	4.3	Romania	4.4	Afghanistan	3.6	Uganda	3.5
114	Saint Vincent and the Grenadines	4.2	Saint Vincent and the Grenadines	4.3	Libya	3.6	Jordan	3.5
115	Sudan	4.2	Algeria	4.3	Liberia	3.6	Albania	3.5
116	Haiti	4.2	Gambia	4.3	Saint Vincent and the Grenadines	3.6	Belarus	3.5
117	Tunisia	4.2	Sierra Leone	4.3	Lebanon	3.6	Gambia	3.4
118	Kazakhstan	4.2	Albania	4.3	Gambia	3.5	Morocco	3.4
119	Sierra Leone	4.2	Nigeria	4.3	Uzbekistan	3.4	Kenya	3.4
120	Mozambique	4.2	Rwanda	4.3	Madagascar	3.4	Russia	3.4

RANK	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI
		2000-2003		2004-2008		2009-2013		2014-2017
121	Turkey	4.2	Armenia	4.2	Albania	3.4	Democratic Republic of the Congo	3.4
122	Qatar	4.2	Mali	4.2	Kosovo	3.3	Ukraine	3.3
123	Nigeria	4.2	Turkey	4.2	Iraq	3.3	Qatar	3.2
124	Kuwait	4.2	Liberia	4.2	Kuwait	3.3	Palestine	3.2
125	Chad	4.2	Mauritania	4.2	Kazakhstan	3.3	Madagascar	3.2
126	Gabon	4.2	Chad	4.2	Republic of the Congo	3.3	Tanzania	3.2
127	Rwanda	4.2	Gabon	4.1	Sudan	3.2	Cote d'Ivoire	3.1
128	Northern Cyprus	4.2	Zambia	4.1	Palestine	3.2	Republic of the Congo	3.1
129	Mauritania	4.2	Kazakhstan	4.1	Kenya	3.2	Iraq	3.1
130	Bhutan	4.1	Bangladesh	4.1	Zambia	3.2	Gabon	3.1
131	Liberia	4.1	South Korea	4.1	Moldova	3.1	Kazakhstan	3.1
132	Georgia	4.1	Palestine	4.1	Central African Republic	3.1	Sudan	3.1
133	Tanzania	4.1	Madagascar	4.0	Malaysia	3.1	Bosnia Herzegovina	3.1
134	Armenia	4.1	Tunisia	4.0	Tunisia	3.1	Sierra Leone	3.1
135	Zambia	4.1	Qatar	4.0	Gabon	3.1	Macedonia	3.0
136	Moldova	4.1	Tanzania	4.0	Cameroon	3.1	Comoros	3.0
137	Sri Lanka	4.1	Republic of the Congo	4.0	Sierra Leone	3.0	Saudi Arabia	3.0
138	Iran	4.1	Ghana	4.0	Mauritania	3.0	Burkina Faso	3.0
139	Albania	4.0	Kuwait	4.0	Nigeria	3.0	Togo	3.0
140	Uganda	4.0	Uzbekistan	4.0	Democratic Republic of the Congo	3.0	Kyrgyzstan	3.0
141	Algeria	4.0	Burkina Faso	4.0	Qatar	3.0	Ghana	3.0
142	Republic of the Congo	4.0	Moldova	4.0	Zimbabwe	3.0	Mongolia	3.0

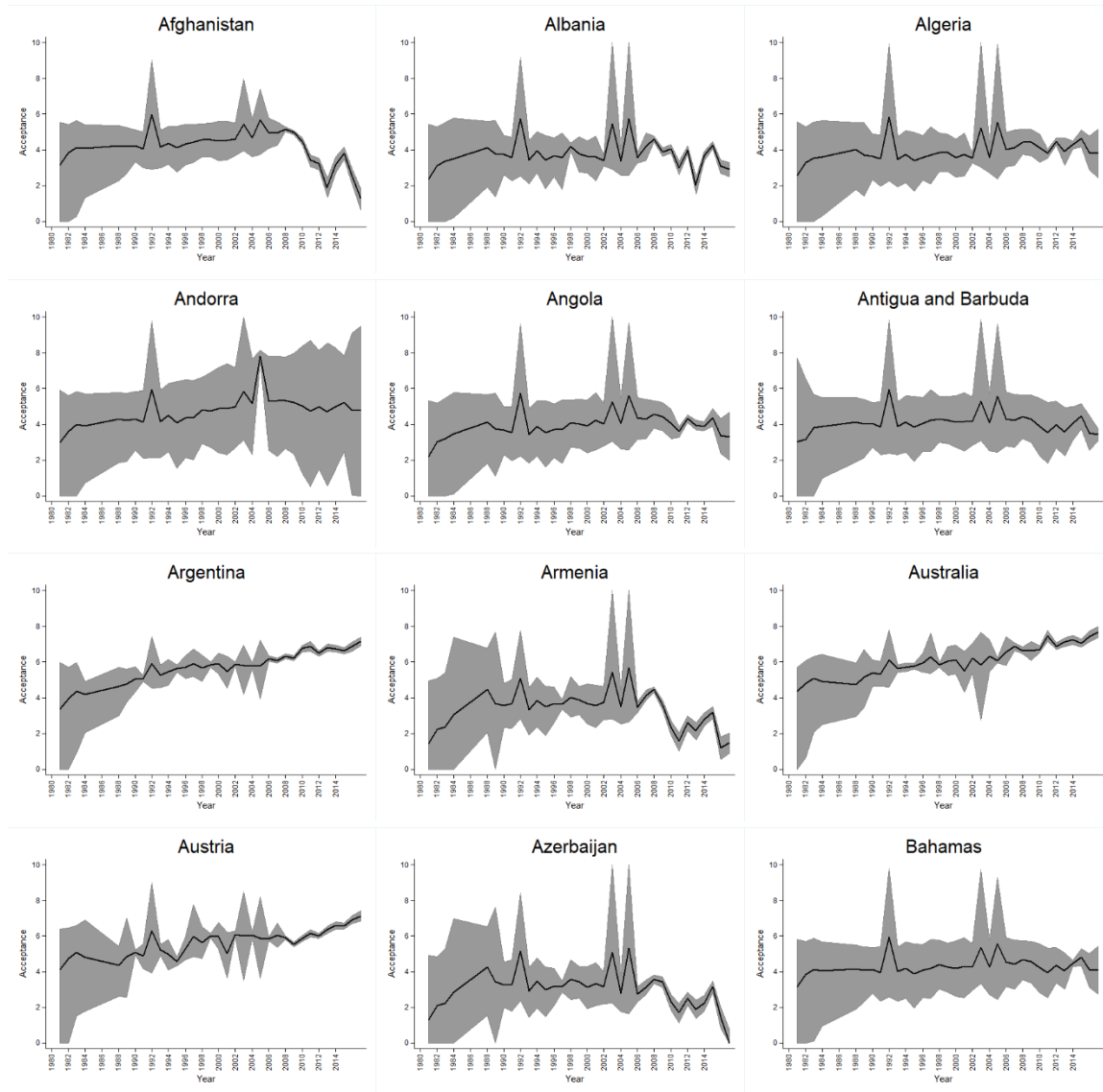
RANK	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI
		2000-2003		2004-2008		2009-2013		2014-2017
143	Burkina Faso	4.0	Guinea	4.0	Chad	2.9	Rwanda	2.9
144	Kyrgyzstan	4.0	Malawi	3.9	Comoros	2.9	Kosovo	2.9
145	Malawi	4.0	Central African Republic	3.9	Morocco	2.9	Cameroon	2.9
146	Togo	4.0	Kosovo	3.9	Togo	2.9	Nigeria	2.9
147	Guinea	4.0	Niger	3.9	Sri Lanka	2.9	Zambia	2.9
148	Palestine	3.9	Malaysia	3.9	Guinea	2.8	Central African Republic	2.8
149	Madagascar	3.9	Burundi	3.9	Saudi Arabia	2.8	Zimbabwe	2.8
150	Cameroon	3.9	Sri Lanka	3.9	Kyrgyzstan	2.8	Indonesia	2.8
151	Niger	3.9	Comoros	3.9	Malawi	2.7	Djibouti	2.8
152	Ghana	3.9	Democratic Republic of the Congo	3.9	South Sudan	2.7	Chad	2.8
153	Central African Republic	3.9	Ethiopia	3.8	Georgia	2.7	Niger	2.8
154	Democratic Republic of the Congo	3.9	Zimbabwe	3.8	Djibouti	2.7	Mali	2.7
155	Comoros	3.8	South Sudan	3.8	Uganda	2.7	Guinea	2.7
156	Ethiopia	3.8	Cameroon	3.8	Ghana	2.7	Afghanistan	2.7
157	Pakistan	3.8	Morocco	3.8	Benin	2.7	Liberia	2.7
158	Senegal	3.8	Georgia	3.8	Burkina Faso	2.6	Moldova	2.7
159	Cote d'Ivoire	3.8	Togo	3.8	Jordan	2.6	Georgia	2.7
160	Burundi	3.8	Uganda	3.7	Senegal	2.5	Burundi	2.7
161	Djibouti	3.8	Djibouti	3.7	Mali	2.5	South Sudan	2.6
162	Bangladesh	3.7	Kyrgyzstan	3.7	Armenia	2.5	Mauritania	2.6
163	Morocco	3.7	Kenya	3.6	Cote d'Ivoire	2.4	Sri Lanka	2.4
164	Jordan	3.7	Cote d'Ivoire	3.6	Ethiopia	2.4	Iran	2.4
165	Azerbaijan	3.7	Saudi Arabia	3.6	Burundi	2.4	Pakistan	2.4
166	Saudi Arabia	3.7	Senegal	3.5	Azerbaijan	2.4	Malawi	2.3

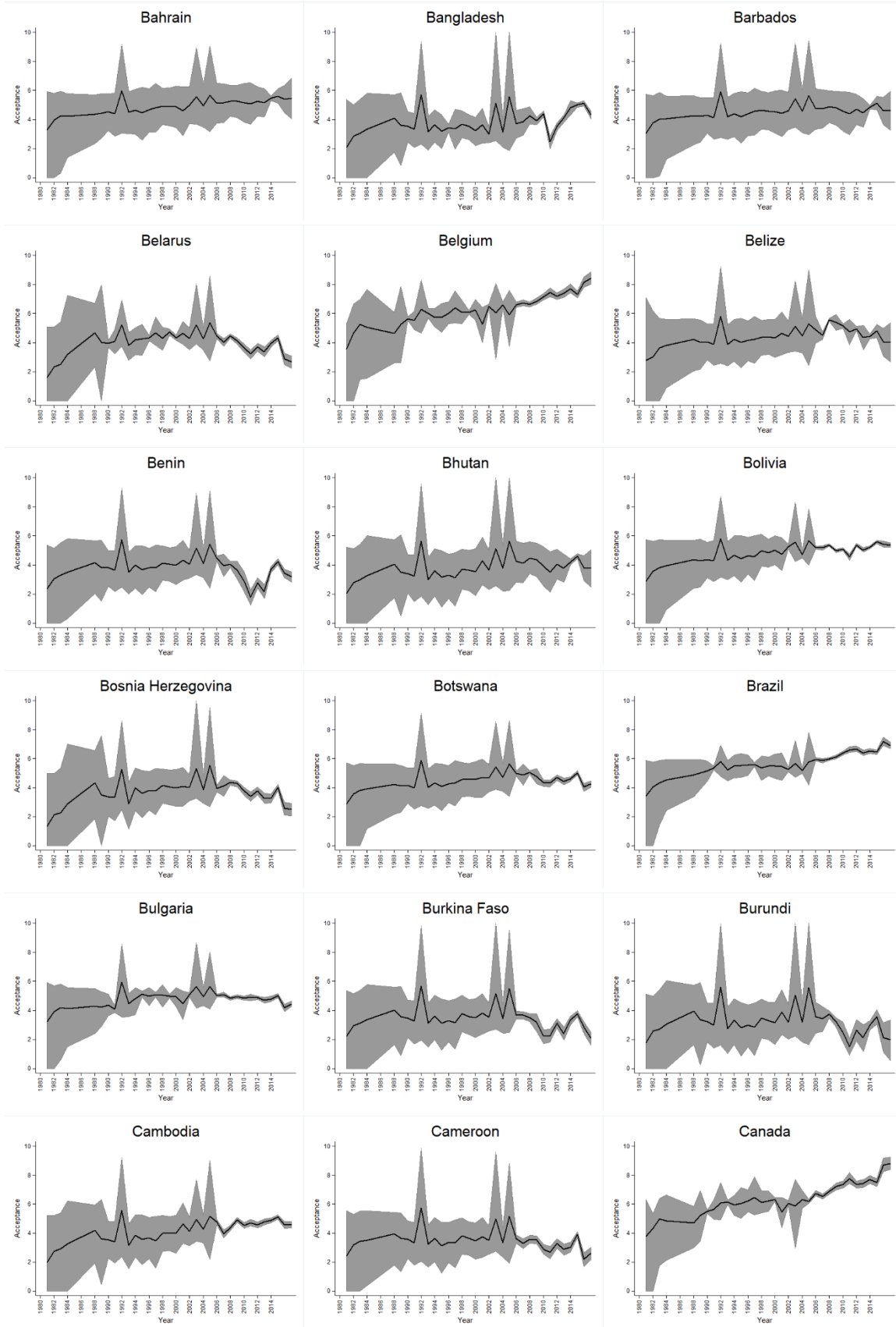
RANK	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI	COUNTRY	GAI
		2000-2003		2004-2008		2009-2013		2014-2017
167	Indonesia	3.6	Azerbaijan	3.5	Indonesia	2.3	Nagorno-Karabakh	2.2
168	Kosovo	3.5	Iran	3.5	Iran	2.3	Armenia	2.2
169	South Sudan	3.5	Nagorno-Karabakh	3.5	Rwanda	2.3	Egypt	2.2
170	Tajikistan	3.4	Jordan	3.5	Nagorno-Karabakh	2.2	Ethiopia	2.1
171	Kenya	3.4	Indonesia	3.5	Niger	2.2	Somaliland	1.8
172	Nagorno-Karabakh	3.3	Somaliland	3.2	Egypt	2.1	Senegal	1.7
173	Somaliland	3.1	Tajikistan	3.1	Somaliland	1.8	Azerbaijan	1.7
174	Egypt	2.2	Egypt	2.9	Tajikistan	1.6	Tajikistan	1.6

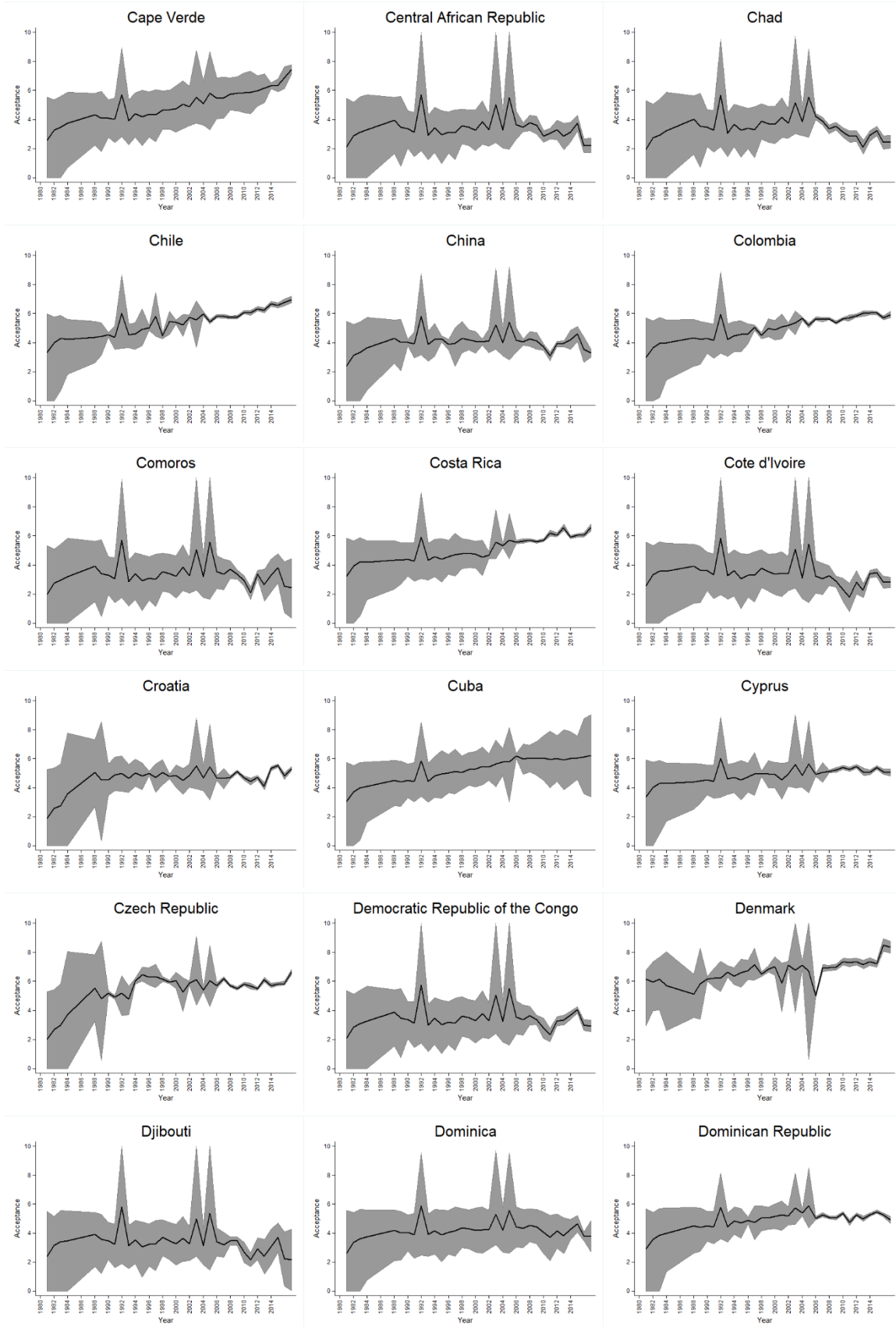
APPENDIX 3: TRENDS IN ACCEPTANCE FOR EACH COUNTRY

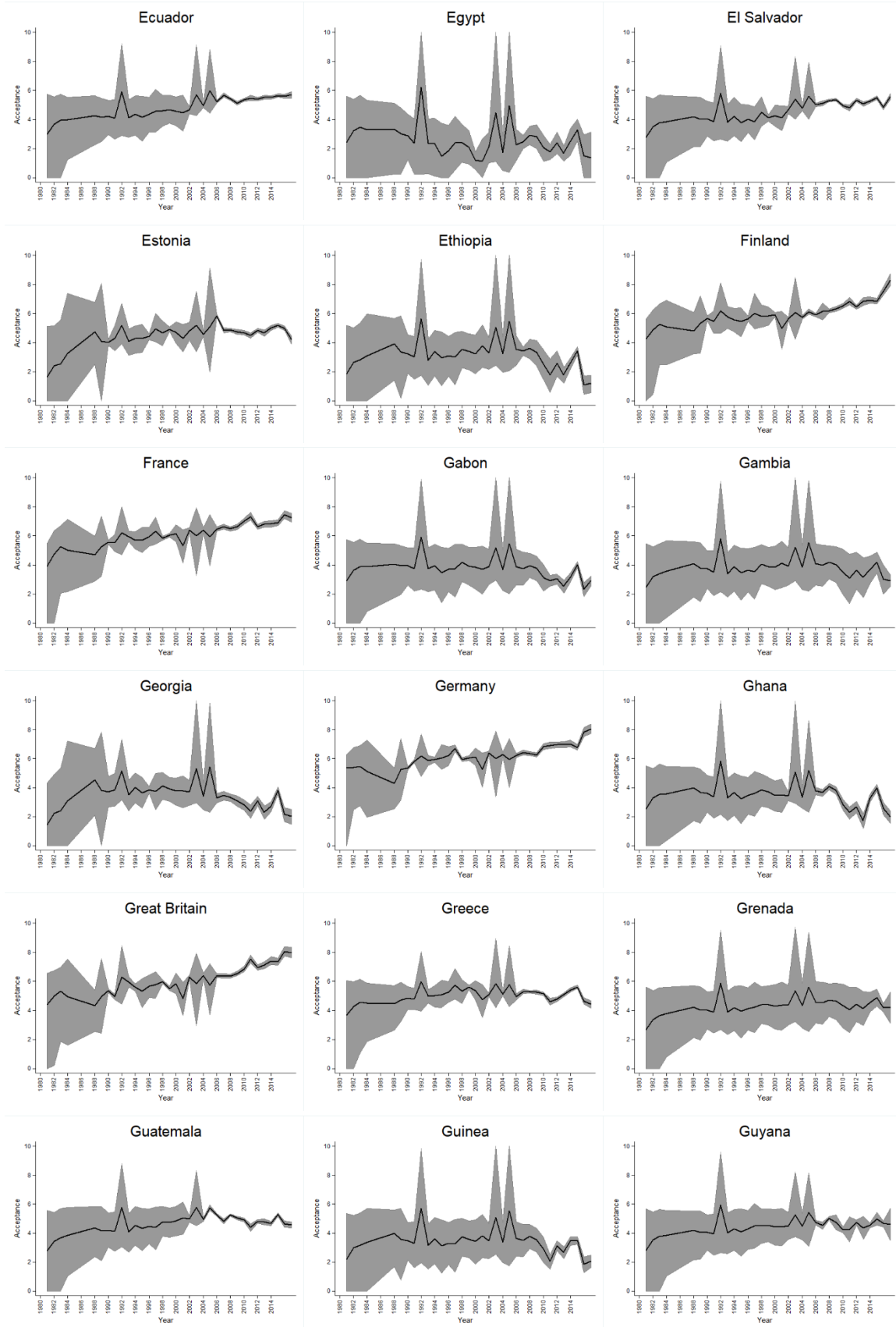
Plots are provided for each country's estimated GAI between 1981-2017. An 95% confidence interval is plotted about the trends to represent estimation error. As can be seen, estimates are far more stable after 2000 due to the presence of more data to more precisely estimate a country's level of acceptance.

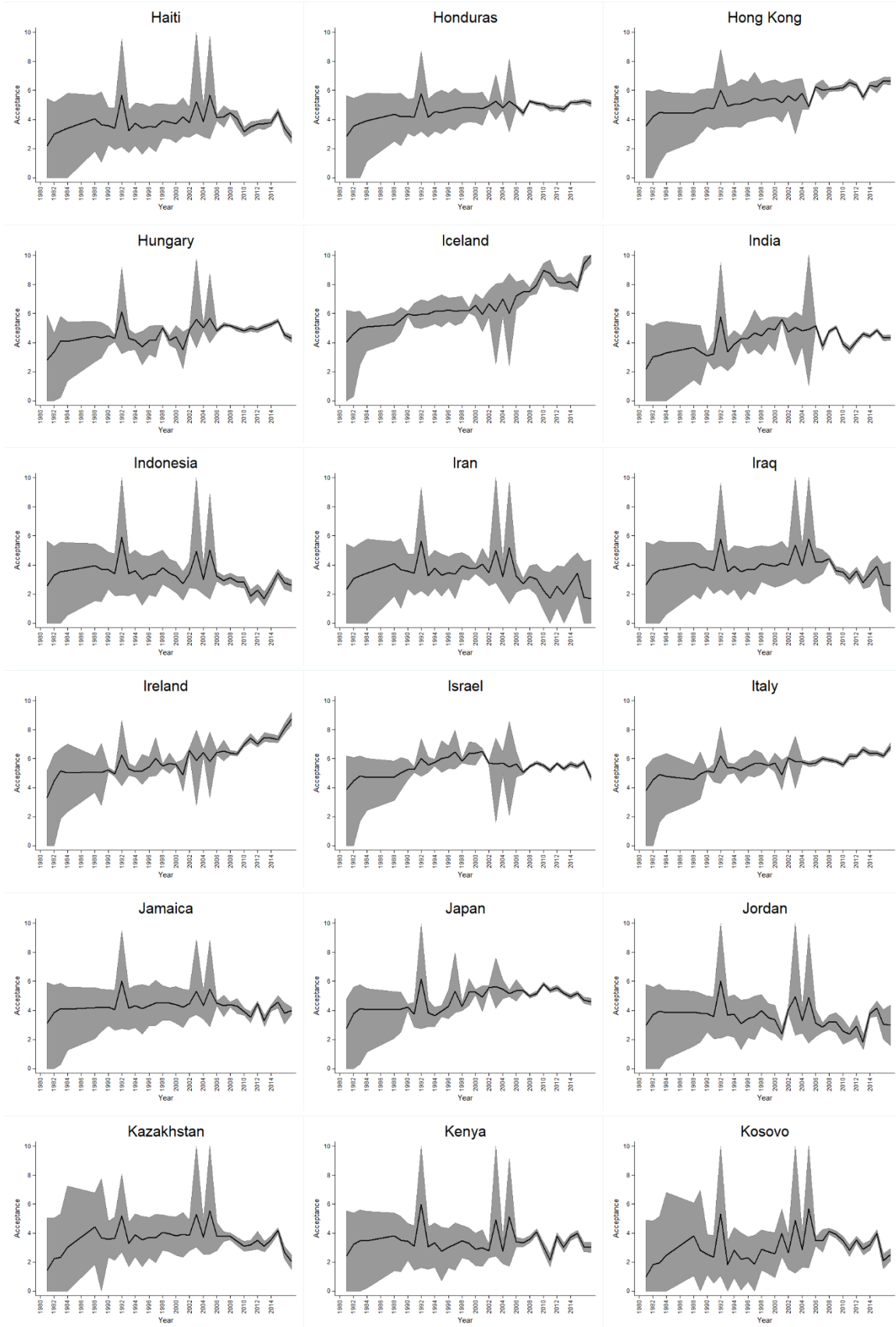
Figure A.1. Trends in acceptance

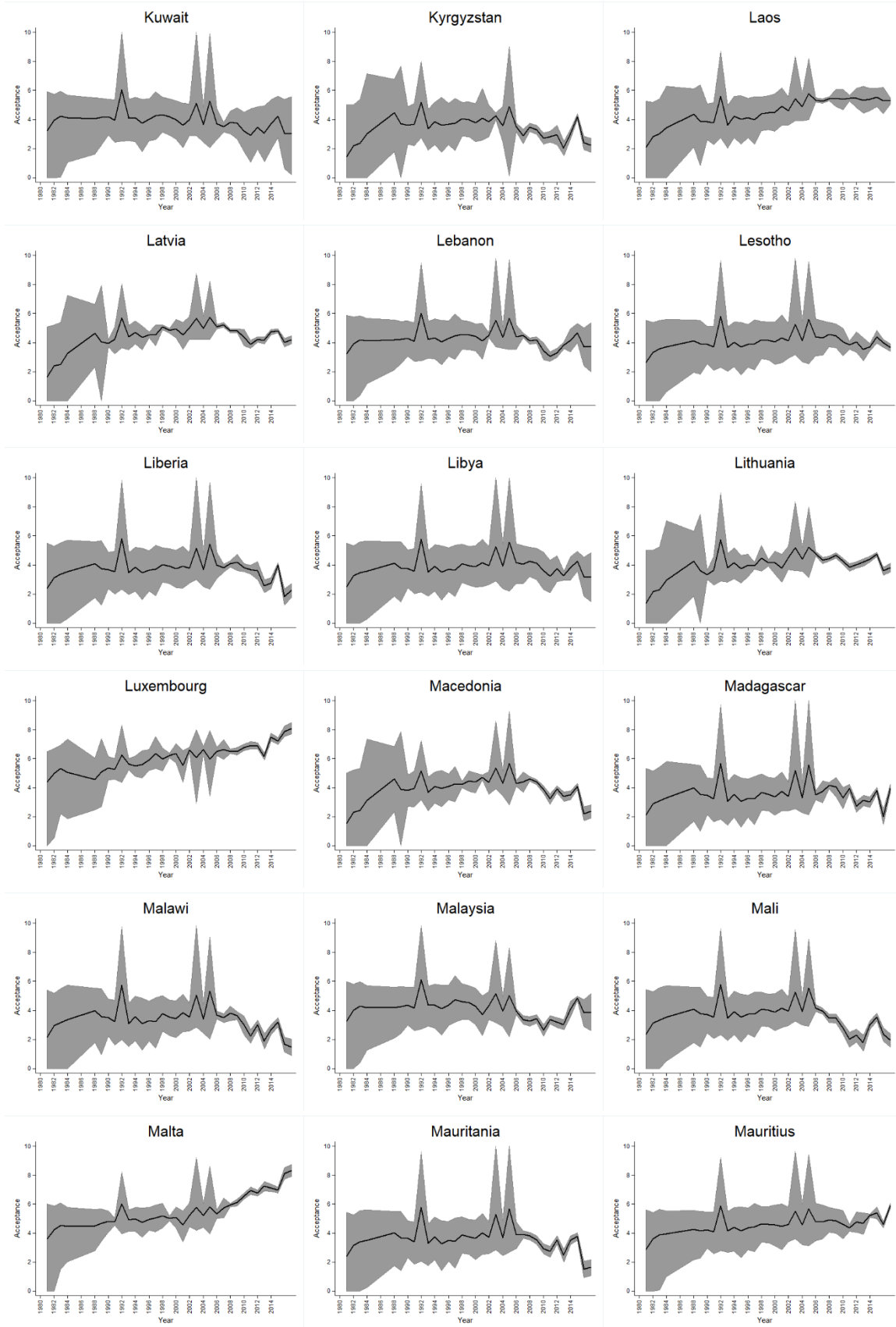


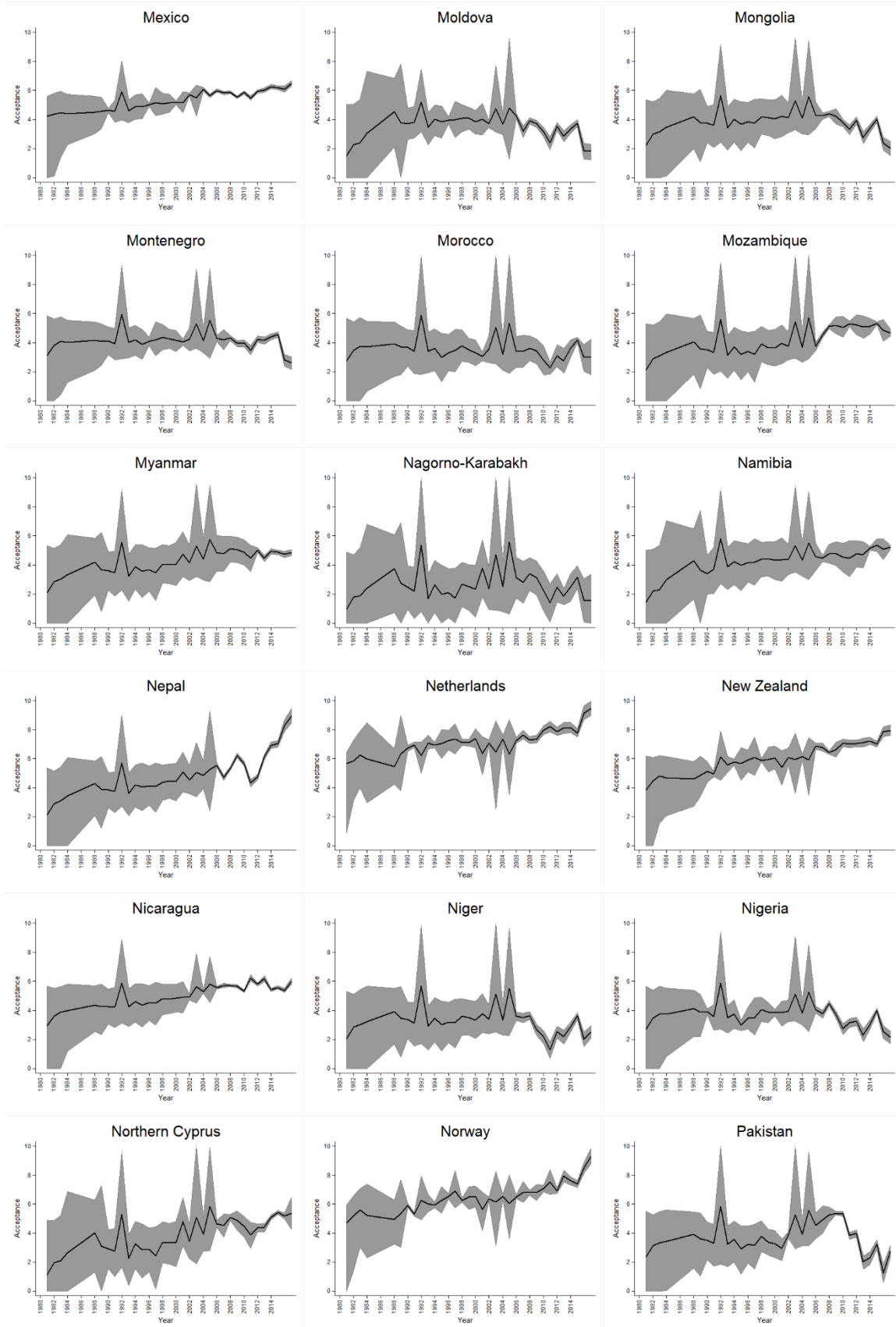


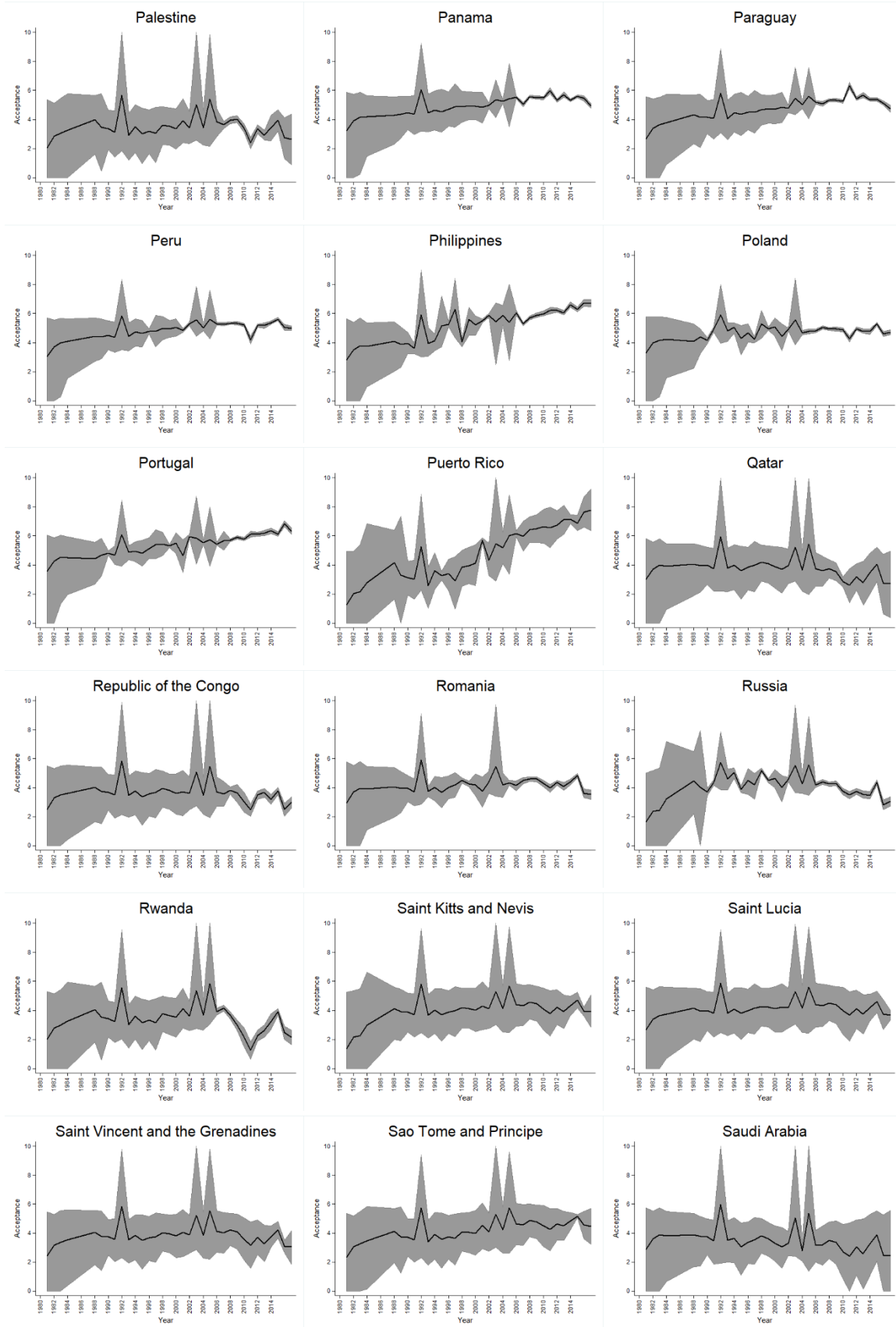


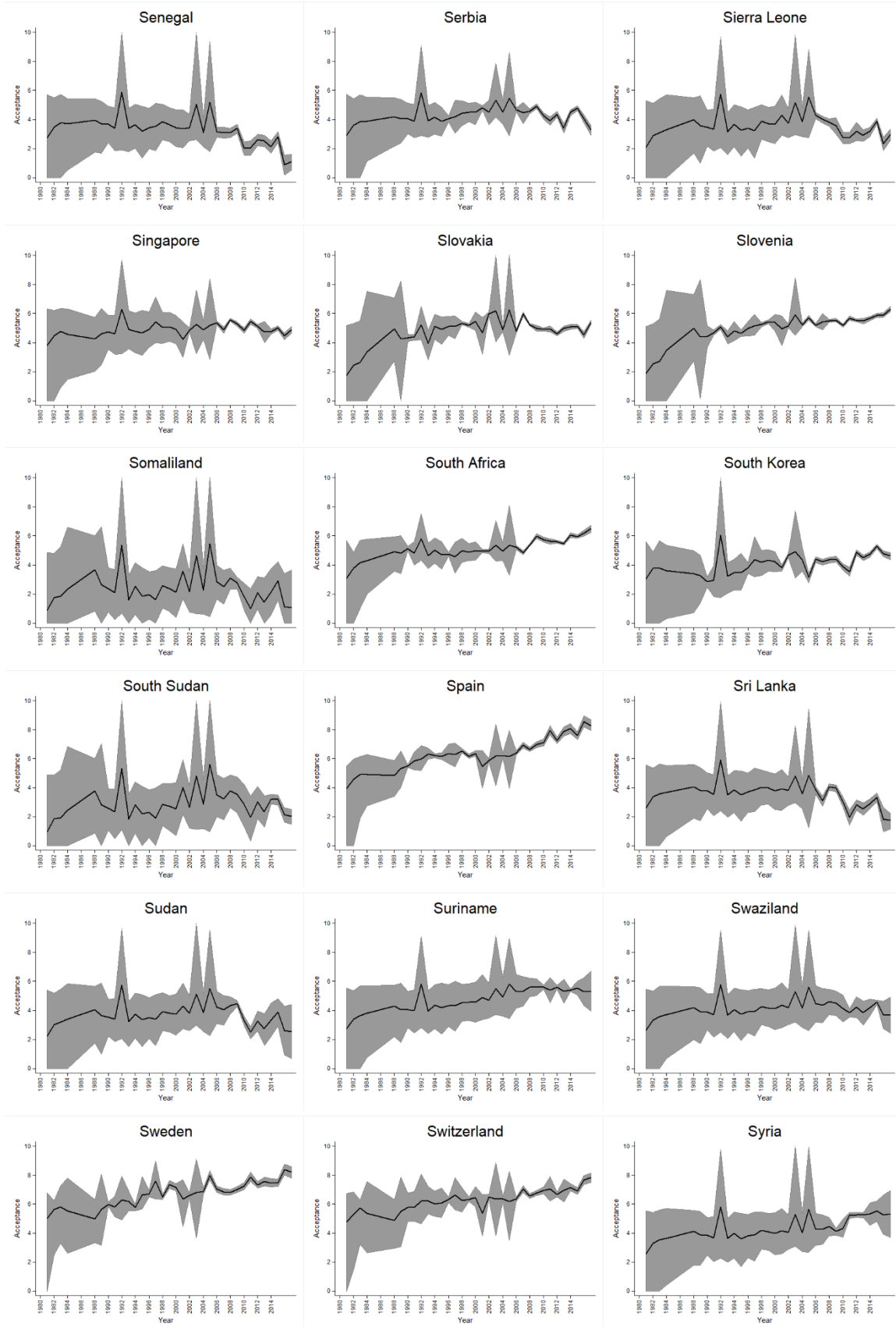


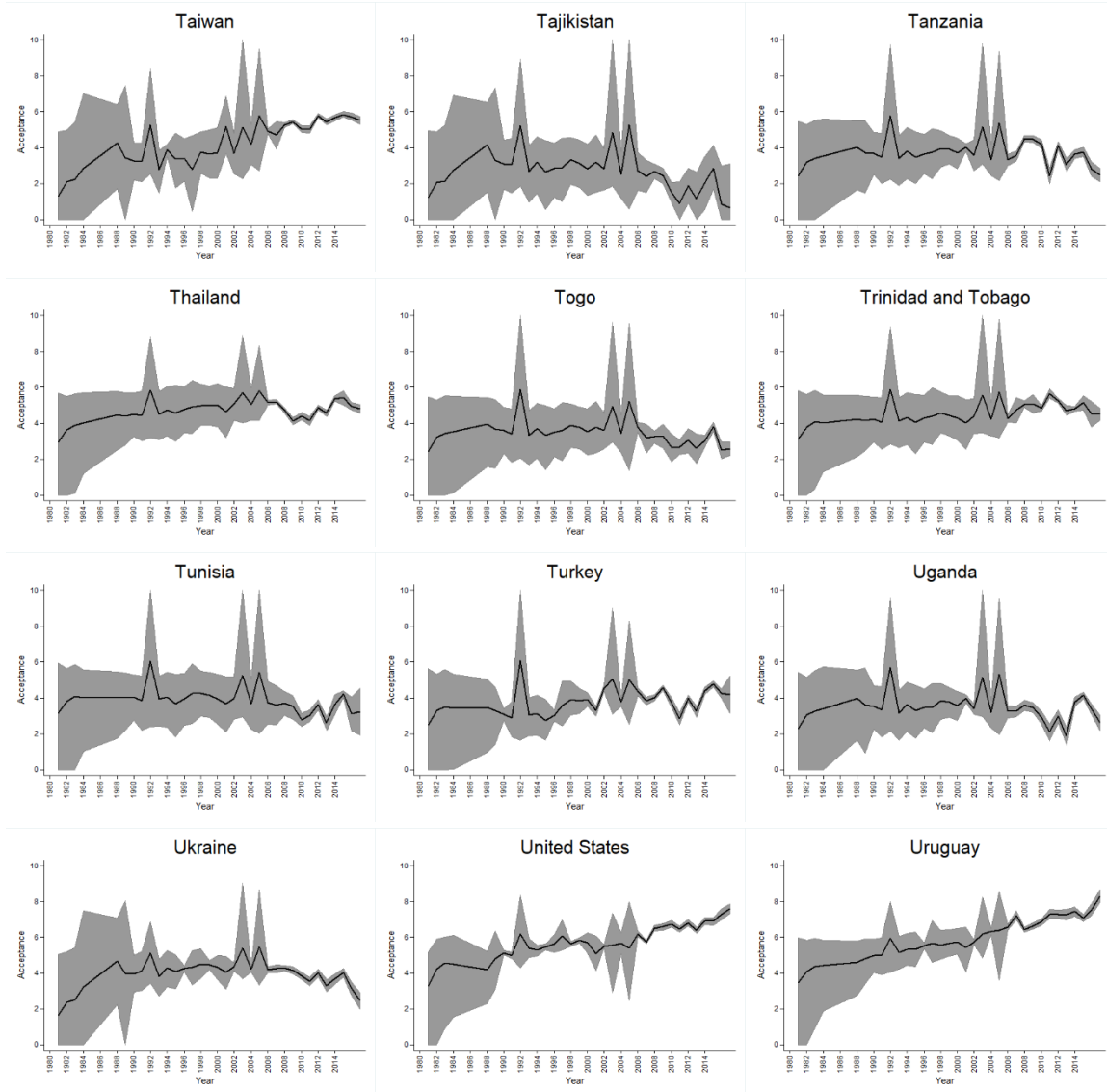


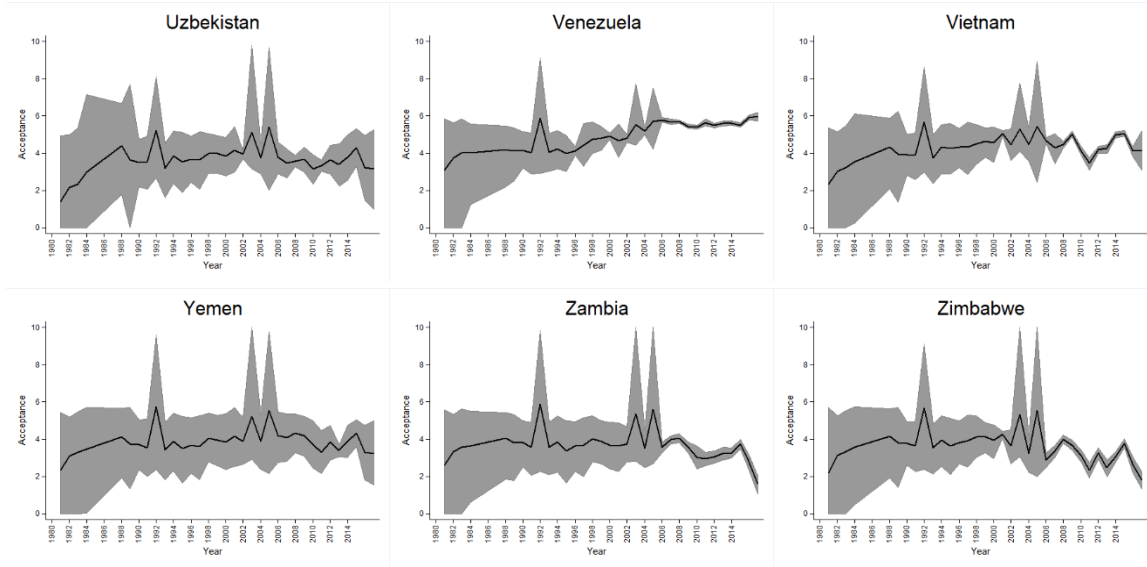












APPENDIX 4: SIGNIFICANCE TEST OF FOUR-YEAR AVERAGES

To evaluate the statistical significance of the difference between average acceptance scores, mean difference tests were conducted based on the mean and standard deviation of the four-year averages. A t-test from the difference of these averages is reported in Table A.3, as well as, the corresponding p-value. Since each t-test is evaluated as the difference between an average score of four years, the p-value for the average t-test uses 6 degrees of freedom. We only report the significance tests that were referenced in explaining the results, which highlights the countries with highest and lowest GAI estimates between 2000 and 2017.

Table A.3. Difference in four-year averages (2000-2003 and 2014-2017)

COUNTRY	DIFFERENCE	P-VALUE (ONE-TAILED)
Iceland	4.65	0.002
The Netherlands	3.85	0.004
Norway	4.27	0.002
Canada	5.92	0.001
Spain	7.52	0.0001
Ethiopia	-2.50	0.023
Azerbaijan	-2.39	0.027
Senegal	-3.19	0.009
Tajikistan	-2.57	0.021
Somaliland	-1.77	0.064

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