Sexual Identity and Wellbeing: A Distributional Analysis

Samuel Mann
Swansea University and WISERD
School of Management, Swansea University
Swansea SA1 8EN
UK
E-mail: s.mann@swansea.ac.uk

David Blackaby
Swansea University, SERC and WISERD
School of Management, Swansea University
Swansea SA1 8EN
UK
E-mail: d.h.blackaby@swansea.ac.uk

Nigel O'Leary
Swansea University, SERC and WISERD
School of Management, Swansea University
Swansea SA1 8EN
UK
E-mail: n.c.oleary@swansea.ac.uk

Abstract

The relationship between sexual identity and wellbeing is analysed in an unconditional panel quantile setting. There is heterogeneity across sexual identity and gender for homosexuals and, for all but lesbians, sexual minorities are less satisfied than heterosexuals below the median of the wellbeing distribution. Meanwhile, bisexuals of any gender are the least satisfied of any sexual group, and this is apparent across the entire wellbeing distribution. In contrast, the happiest individuals who report an 'other' sexual orientation are happier than the happiest heterosexuals.

Keywords: subjective wellbeing; sexual orientation; jittering; recentred influence function; quantile regression; correlated random effects

JEL codes: I10, I31

1. Introduction

Compared to research into areas such as gender and ethnicity, sexual orientation in economics is relatively new. However, there is a recent literature that shows non-heterosexuals face differential economic outcomes. Klawitter (2014) provides a meta-analysis of studies published between 1995-2012 examining pay differentials for homosexuals and Aksoy et al. (2018) also explores the position of bisexuals. With regard employment gay and bisexual men, and bisexual females, are less likely to be in fulltime work (Aksoy et al., 2018), although the experimental literature suggests that lesbians still face hiring discrimination (Weichselbaumer, 2003).

In spite of this extensive body of research, much less is known about the impact that being a sexual minority has upon *wellbeing*. Meyer's (2003) application of the minority stress model to lesbians/gays/bisexuals highlights how cultural and societal heteronormativity leads to sexual minority stigmatization, which can have adverse effects upon wellbeing. Previous analysis has offered empirical evidence of the above (see *inter alia* Powdthavee and Wooden, 2015) whereby minorities have lower wellbeing than their heterosexual counterparts. In a similar vein, Carpenter et al. (2018) demonstrate that those in same-sex rather than different-sex households report lower self-rated health and are more likely to report at least 14 bad mental health days in the past 30 days.

This current work adds to this debate within the context of the impact of sexual identity *across* the wellbeing distribution. The literature already cited has exclusively dealt with `average' effects but Binder and Coad (2011) has motivated research which emphasises the whole of the wellbeing distribution to assess the true impact upon wellbeing. In this way, regression methodologies that focus upon means might seriously misrepresent wellbeing effects and a clear result that emerges in our analysis is that the relationship between sexual identity and wellbeing differs measurably across the wellbeing distribution.

2. Data

The data are of individuals taken from waves 1-5 of *Understanding Society*, the UK Household Longitudinal Study. A nationally representative panel started in 2009, it interviews approximately 50,000 UK individuals annually. The variable used to identify wellbeing is derived from the question: "How satisfied or dissatisfied are you with your life overall?" with responses given on a scale of 1 (completely dissatisfied) to 7 (completely satisfied), although as noted in the following section responses are transformed to provide continuity between each reported response point. In wave 3, a sexual identity question is asked. Individuals can identify as heterosexual, gay or lesbian, bisexual, or

an "other" sexual identity, as well as being given the option to not disclose their identity.[1] As has become common in the literature (see for example, Powdthavee and Wooden, 2015), this response in wave 3 is assigned across all waves.

With subjective wellbeing as the dependent variable, a number of control variables commonly-used in the existing literature are introduced – age, real household income, number of children, society memberships, ill health (0/1 dummy), marriage (0/1 dummy), qualifications (6 categories)[2], personality type (5)[3], employment status (4)[4] and standard region of residence (12) – in addition to sexual orientation. Restricting the sample to only those who are aged 16+ and for whom there was no missing information leaves 148,685 heterosexuals, 1,859 homosexuals, 1,463 bisexuals, 1,523 others and 4,759 who did not disclose their identity.

3. Methodology

To investigate the distributional relationship between sexual identity and wellbeing we use unconditional quantile regression within a correlated random effects framework.[5] Applying the Machado and Santos Silva (2005) data smoothing technique, a continuous variable is constructed for individual i at time t whose quantiles have a known relationship with the quantiles of reported wellbeing (which we proxy with life satisfaction - LS_{it}). This is achieved by creating an auxiliary variable Z_{it} such that:

$$Z_{it}=LS_{it} + u_{it} \quad [1]$$

where u_{it} is a uniform random variable (sampled over 200 repetitions) and Z_{it} is continuous, allowing quantile regression techniques to be applied to a monotonically transformed function of Z_{it}. This transformed function is then applied to the recentered influence function framework of Firpo et al. (2009) where the disturbance statistic of interest v, rather than Z_{it}, is used as the dependent variable. This recentering involves adding back the distributional statistic to the influence function, $\mathrm{IF}(Z_{it}; v)$, or:

[1] The "other" group includes, but is not limited to, those who identify as asexual, pansexual, queer or polysexual.
[2] Highest equivalent qualification in the UK educational system: degree; other higher education; A-levels (typically taken at age 18); GCSE (typically taken at age 16); qualification below GCSE; none.
[3] Indices constructed via propensity score matching over openness, conscientiousness, extraversion, agreeableness and neuroticism.
[4] Employed; unemployed; retired; other.
[5] In practice, it makes little difference whether wellbeing is measured ordinally or cardinally (Ferrer-i-Carbonell and Frijters, 2004) and we adopt the more easily interpretable linear regression model. Of importance is unobserved heterogeneity, though, which is accounted for via the correlated random effects estimation.

$$\text{RIF}\ (Z_{it};\ v) = v + \text{IF}(Z_{it};\ v) \quad [2]$$

For the θ quantile the influence function therefore takes the form:

$$\text{IF}(Z_{it}; Q_\theta\ ) = \frac{\theta - \mathbb{1}\{Zit \leq Q_\theta\}}{f_z(Q_\theta)} \quad [3]$$

where Q_θ is the unconditional quantile of Z_{it} and $f_Z(Q_\theta)$ is the marginal distribution of Z_{it} at Q_θ. The RIF for the θth quantile is therefore:

$$\text{RIF}(Z_{it}; Q_\theta) = Q_\theta + \text{IF}(Z_{it}; Q_\theta) \quad [4]$$

This is equivalent to an *unconditional* quantile regression (Firpo et al., 2009) which we estimate with the extension of the correlated random effects model that controls for unobserved heterogeneity via a fixed effect such that:

$$RIF\ (Z_{it};\ Q_\theta) = \alpha_i + x_{it}\beta + SO_i\gamma_1 + y_i\gamma_2 + \bar{x}_i\xi + \varepsilon_{it} \quad [5]$$

where x is a vector of time-varying observables, $\bar{x}$ proxies the individual fixed effect and is the average value of the time-varying observables over time, y is a vector of time-invariant observable characteristics, SO is a mutually exclusive set of dummy variables denoting reported sexual orientation (where the excluded category is heterosexual) and the framework is estimated for any desired quantile θ.

4. Results

The underlying estimates of the determinants of wellbeing (available on request) conform with the existing literature. The unconditional quantile results for sexual orientation are presented in Figure 1. For homosexual males (panel a), results indicate that they are less satisfied than heterosexuals in the lower half of the wellbeing distribution, with the largest differential being at the 10th percentile (-0.488). To put this into context, being a homosexual rather than heterosexual is estimated to be greater or equal to the effect of having ill-health across the entire distribution. For females (panel b), homosexuals have greater wellbeing than their heterosexual counterparts across all but the lowest decile, peaking at the 90th percentile (0.273).

Results for bisexuals (panels c and d for males and females respectively) exhibit a similar pattern for both genders. As such, bisexuals exhibit lower wellbeing than their heterosexual counterparts, with estimates decreasing in magnitude as wellbeing increases. This relationship is most pronounced at the 10th and 25th percentiles and the magnitudes at these points (-0.698/-0.580 for males and -0.785/-0.735 for females at the 10th and 25th percentiles respectively) are greater than comparable estimates for any of the other sexual identities. Across the distribution the loss to wellbeing associated with being bisexual (rather than heterosexual) is at least comparable to the effect of being unemployed or having ill-health.

Estimates for males and females with an "other" sexual identity (panels e and f respectively) again exhibit the same distinctive pattern of increasing in magnitude as wellbeing increases, with a negative association over the lower half of the distribution and a positive one above the median. For males, the range of these estimates is from -0.189 at the 10th percentile to 0.124 at the 90th. For females the range is from -0.404 (at the 25th percentile) to 0.209 (90th). An identical pattern, with near-matching magnitudes is also exhibited for the "not disclosed" group (panels g and h), running from -0.151/-0.304 at the 10th percentile to 0.256/0.155 at the 90th percentile for males and females respectively.[6,7]

5. Conclusions

Sexual identity is significantly correlated with wellbeing, with the relative position of non-heterosexuals improving as we move along the wellbeing distribution. This can be reconciled with Meyer's (2003) application of minority stress theory to sexual minorities. As such, one might expect to find a negative wellbeing differential between heterosexuals and sexual minorities, and one might also expect the size of this differential to be greater at the bottom of the distribution as the sources of minority stress are likely to have a disproportionately greater impact on individuals that have lower wellbeing. However, there is clear heterogeneity across sexual identity. Some of the happiest individuals with an "other" sexual identity are in fact happier than the happiest heterosexuals and for

[6] It is likely that those who do not disclose are not a random group, but it is not possible to classify them as heterosexual or non-heterosexual. While on average they are very similar to heterosexuals, at more extreme wellbeing levels they are not. For completeness we have included them in the results, but we do not really know who these people are and as such it is impossible to draw any policy implications for them. Uncovering who this group is and the reasons for their non-response would be illuminating, but this is outside the scope of the current investigation.

[7] Consistent with Carpenter et al (2018), there are differences in the magnitudes of the estimates discussed along the lines of marital status, but the general patterns described above emerge for both single and married individuals. The negative estimates for "others" in particular are far greater for married individuals than for singles. Future research could further develop such interesting patterns.

all but the least happy, lesbians report significantly higher wellbeing than comparable heterosexuals. This stands in contrast to the existing (mean-based) evidence that points to sexual minorities being less satisfied than their heterosexual counterparts (Perales, 2016).

Our findings also shed new light on the importance of gender, showing that it plays a significant role only for homosexuals. This suggests differential stigmatization and societal reaction to homosexuals which is not the case for other sexual minorities, with societal attitudes towards lesbians being more preferential than to male homosexuals (Herek, 2002). In a similar vein, the significant shift in the number of identities (e.g. demisexual, graysexual, sapiosexual etc.) within the past decade has led to more acceptance and public discussion, reducing the need of individuals to 'explain' their identity to others and reaffirming the validity of their sexuality to themselves. Couple this with increasing self-awareness of an identity that truly reflects feelings and gives meaning to attractions (or lack thereof) and it may be conjectured that this lies behind the positive associations identified for the "other" category.

While it could be argued that the same should be true of bisexuals, there is a significant difference between bisexuality and "other" identities. Bisexuality is an identity that has existed significantly longer and was part of the original LGBT movement, and yet the greater minority stress experienced by bisexuals is likely a reflection of experiencing stigmatization from both heterosexual and homosexual communities due to the existence of bi-erasure and the lack of acceptance of bisexuality from larger society (Dodge et al. 2012). Policies aimed at addressing the lack of belonging within this community, and community-level interventions to develop ways of working with bisexuals, as a group distinct from homosexuals, would have greatest traction in helping this group experiencing some of the very lowest levels of wellbeing.

Acknowledgements

The Understanding Society survey was sponsored by the ESRC and made available for use by the UK Data Archive but responsibility for the analysis and interpretation of the data lies solely with the authors. They also thank an anonymous referee for helpful comments on a previous draft which have been incorporated into this version, and Stafano Nembrini for his assistance and advice.
Funding: Financial support from the ESRC (grant no: ES/L009099/1 and RES-591-28-0001) is acknowledged.

References

Aksoy C., Carpenter C. & Frank J. (2018) "Sexual Orientation and Earnings: New Evidence from the United Kingdom", *Industrial and Labor Relations Review*, 71: 242-272.

Binder M. and Coad A. (2011) "From Average Joe's Happiness to Miserable Jane and Cheerful John: Using Quantile Regressions to Analyze the Full Subjective Well-being Distribution", *Journal of Economic Behavior & Organization*, 79: 275-290.

Carpenter C., Eppink S., Gonzales G. and McKay T. (2018) "Effects of Access to Legal Same-Sex Marriage on Marriage and Health: Evidence from BRFSS", NBER WP 24651.

Dodge, B., Schnarrs P., Reece M., Martinez O., Goncalves G., Malebranche D., Van der Pol B., Nix R. & Fortenberry J. (2012) "Individual and Social Factors Related to Mental Health Concerns among Bisexual Men in the Midwestern United States", *Journal of Bisexuality*, 12: 223-245.

Ferrer-i-Carbonell A. & Frijters P. (2004) "How Important is Methodology for the Estimates of the Determinants of Happiness?", *The Economic Journal,* 114: 641-59.

Firpo S., Fortin N. & Lemieux T. (2009) "Unconditional Quantile Regressions", *Econometrica,* 77: 953-973.

Herek G. (2002) "Gender Gaps in Public Opinion about Lesbians and Gay Men", *Public Opinion Quarterly,* 66: 40-66.

Klawitter M. (2014) "Meta-Analysis of the Effects of Sexual Orientation on Earnings", *Industrial Relations*, 54: 4-32.

Machado J. & Santos Silva J. (2005) "Quantiles for Counts", *Journal of the American Statistical Association,* 100: 1226-37.

Meyer I. (2003) "Prejudice, Social Stress, and Mental Health in Lesbian, Gay, and Bisexual Populations: Conceptual Issues and Research Evidence", *Psychological Bulletin,* 129: 674-97.

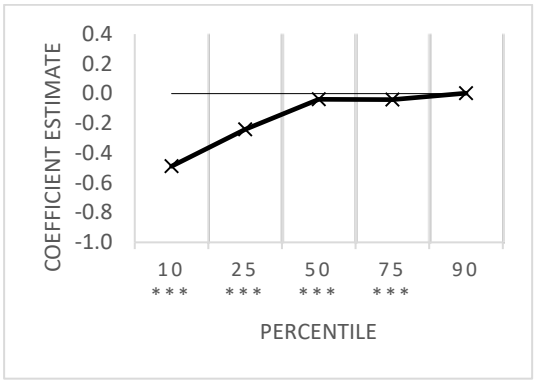
Perales F. (2016) "The Costs of Being 'Different': Sexual Identity and Subjective Wellbeing over the Life Course", *Social Indicators Research,* 127: 827-49.

Powdthavee N. & Wooden M. (2015) "Life Satisfaction and Sexual Minorities: Evidence from Australia and the United Kingdom", *Journal of Economic Behavior & Organization,* 116: 107-26.

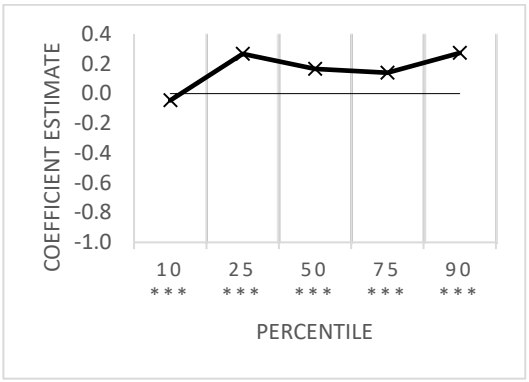
Weichdelbaumer D. (2003) "Sexual Orientation Discrimination in Hiring", *Labour Economics*, 10: 629-642.

Figure 1: Impact of Sexual Identity Across the Unconditional Wellbeing Distribution

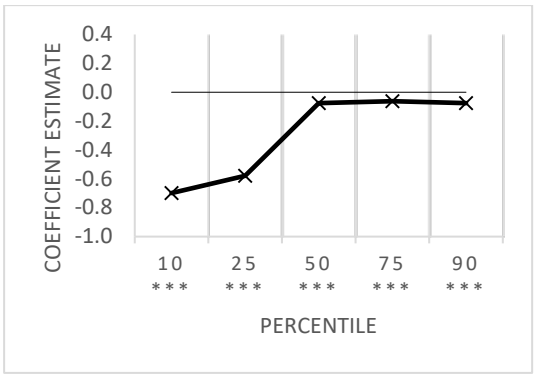
(a) Male – homosexual



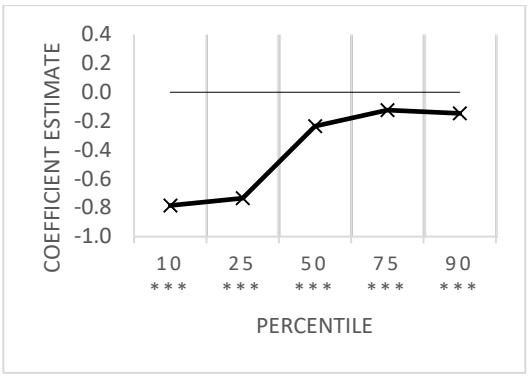
(b) Female – homosexual



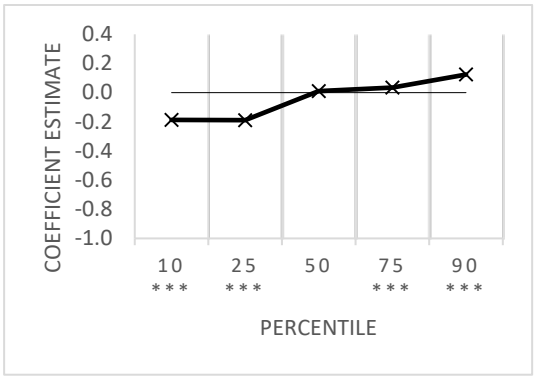
(c) Male – bisexual



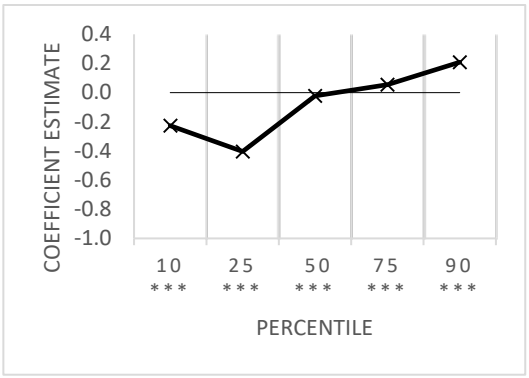
(d) Female – bisexual



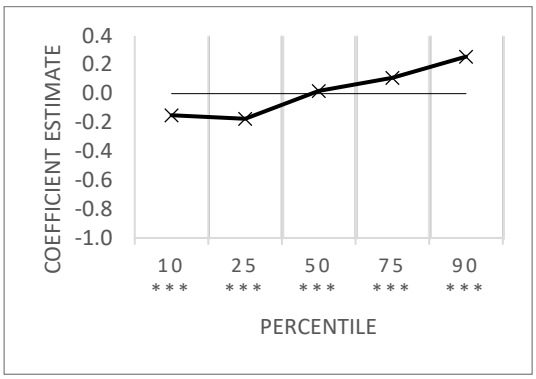
(e) Male – other



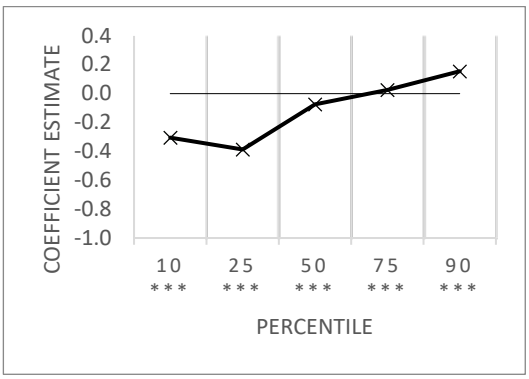
(f) Female – other



(g) Male – not disclosed



(h) Female – not disclosed



Note: *** denotes statistical significance at the 95% confidence level.