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Sexual Orientation and Social Exclusion in Italy

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Abstract

This work explores the role of discrimination in shaping individuals' lives and opportunities, with specific respect to sexual orientation. The role of sexual orientation in explaining earning differences has been increasingly emphasized in empirical literature on discrimination mainly as a result of the growing availability of data sources on gays and lesbian populations. Available evidence predominantly converges on the one hand on the identification of discrimination treatments for gays and positive wage differential for lesbian women with respect to heterosexual counterparts. On the other hand, disagreement pervades interpretations of the predominant above-described labour market outcome.

In trying to move beyond such conflicting views, we consider a holistic approach to social exclusion, defined as individuals' ability to fully participate to social life by examining five domains: monetary poverty, labour market attachment, housing conditions, subjective well-being, and education.

Three samples of different waves of the Banca d'Italia "Survey on household income and wealth" (SHIW - 2006, 2008 and 2010) were pooled in order to perform the empirical analysis on a reasonably sized sample of heterosexual couples identified according to a cohabitation criteria. Following the SHIW characteristics and definition of household, we are able to differentiate homosexual couples belonging to a sub-population of out same-sex couples from those who are not openly out about their homosexual relationship.

We develop an understanding of social exclusion as a non-dichotomous concept (that is, one is not necessarily "included" or "excluded", but a continuum of intermediate conditions exist) through fuzzy analysis techniques and develop a synthetic index of inclusion/exclusion as well as a number of partial indexes, composed of several variables pertaining to a certain domain.

Overall indicators of social exclusion are examined for the full sample and for the sub-sample of workers only, comparing individuals cohabiting in same-sex couples with heterosexual counterparts.

Our results point out that a significant and non-negligible portion of the social exclusion suffered by lesbian and gay couples cannot be accounted for by observable factors and may therefore be attributed to the impact of discrimination. Coherently with the existing literature, we find a differentiated impact on gay men and lesbian couples. However, and possibly more relevantly, we also find significant differences between the couples of "out" homosexual individuals and those composed of "closeted" individuals.

Introduction

This work explores the role of discrimination in shaping individuals' lives and opportunities, with specific respect to sexual orientation. Discrimination based on sexual orientation has been increasingly analysed within the economic literature, mainly as a result of the growing availability of data sources on gays and lesbian populations. However, the bulk of such literature focuses on the labour market, investigating three main spheres: firms' human resources policies, work conditions and earnings.

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Specifically, the empirical literature has mainly explored the role played by sexual orientation in determining earnings gaps, consistently finding strong evidence of wage discrimination against gay men. Evidence for lesbian women is less clear-cut, though it often points to a positive earning differential with respect to their heterosexual counterparts. Such mixed evidence has been interpreted in different ways. Some interpretations rely on the neoclassical theory of household specialisation and focus on the hypothesis that different social orientations are associated with different unobservable skills or tastes (*selection effect*). Others emphasize the role of discriminating behaviour in the labour market (*discrimination effect*).

In trying to move beyond such conflicting views, we consider a holistic approach to social exclusion, defined as individuals' ability to fully participate to social life. We examine five domains of inclusion: monetary poverty, labour market attachment, housing conditions, subjective well-being, and education; and we compare lesbian and gay men's situation relative to their heterosexual counterparts and the population average. Observed differences in the social inclusion of certain populations, such as the lesbian and gay men (LG) population, with respect to the rest of the population, may arise from household-specific characteristics, market dynamics or public policy. Thus, they cannot be interpreted as a clear sign of discrimination. However, systematic differences certainly denote a lack of equal opportunities in one or more of the three mentioned spheres of society.

We employ three different waves of the "Survey on household income and wealth" (SHIW - 2006, 2008 and 2010) produced by the *Banca d'Italia*. Due to specific characteristics of the SHIW survey and specifically its peculiar definition of sample units ("families", rather than households), we are able to distinguish between a narrow definition of same-sex couples, that we deem may approximate the conditions of the "out" LG people living in couple ("out LG couples"), and a more comprehensive definition, aiming at including those who are not openly out about their homosexual relationship (sub-population of "closeted LG couples").

We develop an understanding of social exclusion as a non-dichotomous concept (that is, one is not necessarily "included" or "excluded", but a continuum of intermediate conditions exist) through fuzzy analysis techniques and develop a synthetic index of inclusion/exclusion as well as a number of partial indexes, composed of several variables pertaining to a certain domain.

Overall indicators of social exclusion are examined for the full sample and for the sub-sample of workers only, comparing individuals cohabiting in same-sex couples with heterosexual counterparts. The distribution of the aggregate measure exhibits a bi-modality when subjective indicators are taken into account, suggesting that a sub-group of the same-sex couples population experiences an average degree of inclusion comparable to the opposite-sex population, while another sub-group fares much worse. A more distinct lower average indicator is instead identified when only objective variables are considered.

Our results point out that a significant and non-negligible portion of the social exclusion suffered by lesbian and gay couples cannot be accounted for by observable factors and may therefore be attributed to the impact of discrimination. Truncated regressions of the overall social inclusion indicator (as well as on that only comprising objective variables) show a greater vulnerability of individuals in same-sex couples, with remarkable differences between out LG couples and those composed of "closeted" individuals. Coherently with the existing literature, we find a differentiated impact on gay men and lesbian couples.

1. Sexual orientation discrimination in the literature

A noticeable body of literature on LG discrimination is recently emerging across different disciplines as a result of a growing public policy attention and availability of data sources.

In the management and the sociological literatures, one of the most commonly identified forms is the compression of the right to privacy or, better, of the right to a full and free expression of personal identity. Evidence on Italy shows a higher risk of negative reaction from outing in the working environment according to interviews to a non-representative sample (Barbagli and Colombo, 2001), and the potential repercussion on the hiring process and the career advancement, as well as the possible consequences in terms of harassment, mobbing or dismissal (Curtarelli et al., 2004). Several studies show that invisibility in the working place (as more generally in the public life), especially if forced by a hostile environment, reduce health conditions and more generally individual well-being (Smith e Ingram, 2004; Griffith e Hebl, 2002; Mays e Cochran, 2001; Croteau, 1996). Furthermore, it involves negative effects on workers' social interactions, participation and sharing of company's mission. Given the relevance of network effects, invisibility in the workplace thus constrains homosexuals' advancement in remuneration and career regardless of employers' willingness to discriminate (Barr, 2009). Such a forced invisibility reduces workers productivity and companies' capacity to innovate, and thus affect the society as a whole (King and Cortina, 2010; Ragins and Cornwell, 2001; Day, 2000).

As mentioned, the bulk of the economic literature focuses on three different forms of labour market discrimination based on sexual orientation: human resources policies, work conditions and earnings.

Concerning the former, gay and lesbian adults are vulnerable to discrimination during the hiring and/or the dismissal process, in career advancement, and in the access to training. According to Leppel (2009), the probability of individuals in same sex couples to be unemployed is greater than married individuals, while a positive effect is associated to anti-discrimination laws. Discrimination in the hiring process concerns the stage of curricula comparison as well as the job interview (Drydakis, 2009). Other studies report a lower inclusion of lesbian and gays in training and barriers to career advancement (Carpenter, 2008). Despite a lack of studies on the dismissal phase, it is possible to remark the potentially discriminative role played by selection criteria requested to access specific unemployment benefits for redundant workers (as for the *Cassa Integrazione Guadagni* and *Mobilità* schemes in Italy) such as the presence of dependent household members.

With respect to work condition, economic and sociological literature explored the issues of unionization, mobbing, and harassment in the work place (Herek, 2008; Smith and Ingram, 2004; Mays and Cochran, 2001).

The role of sexual orientation in explaining earning differences has been increasingly emphasized in the empirical literature on discrimination. Available evidence on the one hand predominantly converges on the identification of discrimination treatments for gays and positive wage differential for lesbian women with respect to heterosexual counterparts (see Annex 1 for a summary of the literature on the sexual orientation wage gap). On the other hand, disagreement pervades the interpretations of the above-described commonly identified labour market outcome, the wage penalty (premium) for gay men (lesbian women).

Some complementary interpretations emphasize the fact that different social orientations are associated to different unobservable skills or tastes (*selection effect*). Earning gaps are often interpreted in terms of the neoclassical theory of household specialization. Becker (1991) focuses on the connections between gender-based household specialization and the resulting accumulation of human capital. The lack of biological comparative advantage in gays and lesbian couples should foster a lower degree of household specialization if compared to heterosexual couples, and affect the amount and type of human capital accumulation and accordingly the levels of income. Earning differentials are thus due to different educational choices associated to household specialization: assuming that sexual orientation awareness precedes human capital accumulation, lesbian women invest more in market-oriented human capital when realize that will not fall in a traditional household, and consequently earn more than heterosexual women. Gay men's educational and occupational choices would correspondingly be affected by the expectation that they will be part of a non-traditional household, which would lead them to low-paying "feminine" occupations and

earnings (Black et al., 2007; Black et al., 2000). Consistently, Goldin (1990) and Blandford (2003) highlight how paternalistic discrimination suffered by women in the labour market may have affected lesbian women to a lesser degree given their deviation from traditional gender roles. Another source of potential difference in productivity is linked to health conditions. Higher incidence of HIV among homosexual male workers may translate in wage penalties if the employer expects lower productivity. According to the statistical theory (Phelps, 1972; Arrow, 1973), if employers face incomplete information, they may rely on perceived group characteristic to determine expected productivity of employees and as a consequence provide lower wage to those perceived as less productive or costly (in case of negative views are widespread among coworkers and clients).

Others advocate the prevalence of a discriminating behaviour based on sexual orientation in the labour market (*discrimination effect*). According to Badgett (1995) discriminating mechanism in the workplace such as homophobia and heterosexism may result in higher wages for heterosexual workers. This position is consistent with surveyed perceptions of bias against gay men (Herek 1988; Kite and Whitley 1996).¹

2. Identification of the relevant population

Due to the unavailability of data, as well as serious classificatory issues concerning the definition of who belongs to the lesbian, gay and bisexual population, we restrict our empirical analysis to cohabiting couples bound by an emotional partnership.

We employ three consequent waves of the Bank of Italy's "Survey on household income and wealth" (SHIW) containing a representative sample of Italy's population in years 2006, 2008 and 2010. The three waves were pooled in order to perform the empirical analysis on a reasonably sized sample of same-sex couples, and we interpret the result of a repeated cross-section analysis of the data as loosely representing the average situation along the whole period.² Despite the small sample size (which, with more than 25,000 individuals in each wave is nonetheless relatively big in comparison with Italy's 60 millions population), the Bank of Italy's survey particularly fits to our analysis because for each respondent, the filling in of the questionnaire is aided by a professional interviewer certifying both the anonymity of the survey as well as the correctness of the answers (e.g. by providing all the necessary information and making sure that the respondents understand well the questions and the answer options).

The SHIW survey collects data on households on the basis of a designated "head of the household" (HH), by which the Bank of Italy denotes the person earning the highest yearly income in the household irrespective of their gender. It should be remarked that, by SHIW's definition, it is not sufficient that two or more individuals live in the same place for them to be considered as a unique household. Instead, both a moral relationship and the actual sharing of resources are two further necessary conditions.³ Indeed, the Italian version of the questionnaire refers to the sample unit and to its members as a "famiglia" (family), a word that both in the interviewer's and the respondent's

¹ Other articles supporting evidence to the discrimination hypothesis are Klawitter and Flatt (1998), and Arabsheibani et al. (2005).

² Within SHIW, a randomly chosen fraction of the sample is involved in a longitudinal survey (i.e. they are interviewed in two consequent years), but in our study duplications were removed in order to make a repeated cross-section analysis feasible without recurring to a longitudinal modelisation of the data (again, the reason being the extremely low size of the population of same-sex couples, which were not included in the randomly selected longitudinal sample). In case of such duplications, the older observation was removed.

³ Private email and telephone communications with the Bank of Italy's Sample Survey Division allowed us to understand that more specifically, according to the instructions provided to the interviewers, the condition of "sharing of resources" is to be understood as wealth and/or income pooling, whereby the simple subdivision of dwelling-related bills (such as gas or electricity) among people that reside in a same house is not considered as a sufficient manifestation of the people forming a unique household. The criterion is thus to be understood as relatively stricter than in other population surveys.

understanding certainly excludes such conditions as, for example, roommates and flatmates, co-living students, or elderly people co-living with full-time care service persons. For this reason, in the rest of this section it appears as appropriate to refer to the sample units as families rather than as households.

Next to the head, all the other family members are identified in terms of their relationship with the HH. The question on the relationship with the family head is asked to the HH him/herself and not to the single family members, despite following parts of the questionnaire are then addressed directly at them. For each family member, the second question (after their sex),⁴ reads “Position in the family”,⁵ with fourteen possible answers (fifteen in the 2010 wave). Next to “Family head” (option n. 1), in the 2006 and 2008 waves the second option is “spouse or partner of the head” (in the 2010 wave the two options are separated, thence the additional answer option). The other possible options are reported in Table 1 below.

Table 1. “Position in the family” possible options in the SHIW questionnaire

1. Family head (HH, in the 2010 wave: “Reference person”)
2. Spouse/partner of the HH (in the 2010 wave the two options were separated, constituting respectively options n. 2 and 3, all subsequent options were thus rescaled by 1)
3. Parent of the HH
4. Parent of the spouse/partner of the HH
5. Child of the HH and of his/her current spouse
6. Child of the HH or of the spouse, from previous relationship
7. Spouse/partner of the child of the HH or of the HH’s spouse/partner
8. Grandchild of the HH or of his/her spouse/partner
9. Niece/nephew of the HH or of his/her spouse/partner
10. Sibling of the HH
11. Sibling of the HH’s spouse/partner
12. Spouse/partner of the sibling of the HH or of the HH’s spouse/partner
13. Other relative of the HH or of the HH’s spouse/partner
14. Other member not related to the HH (the obvious meaning in Italian is not “legally or biologically” related).

Source: Banca d’Italia SHIW Survey Questionnaire

Since we aim at comparing the social inclusion of the people in same-sex couples vis-à-vis the people in opposite-sex couples, we include in our analysis only the families in which there is a couple (although such families may include other family members). In a narrow definition, same-sex couples are defined as the family members who choose answer n. 2 and the respective family heads, if they are of the same sex. We also include among the people in a same-sex couple the child and partner of the family head and/or of the head’s spouse/partner, if in the family there is only one child (so that the sex of the child and that of the partner can be attributed with certainty), as well as the partner and sibling of the head or of the head’s spouse, if there is only one sibling in the family (again, the reason being the impossibility to match siblings and their partners or children and their partners, given the formulation of the question and of the possible answers, see Table 1).

However, we also put forward a more comprehensive definition of same-sex couples. Aiming at

⁴ It is unfortunate that the questionnaire does not refer to people’s gender, but only to their (legal) sex.

⁵ The questionnaire’s English translation, available online on the Bank of Italy’s website, incorrectly reports “Status in household”.

proxying the couples of same-sex people who are not openly out about their relationship, we select the people (and the respective family heads) who selected answer n. 14 (“other family member not related to the head of the household”), provided that a number of conditions are met: (i) that there is no other adult in the family, but the person and the family head; (ii) that there is no partner/spouse of the head, in the family; (iii) that the age difference between the respondent and the family head is not greater than 25. Such restrictive conditions appear as necessary in order to minimise the probability of errors in the classification of respondents on the side of the interviewers (although, as mentioned, all the interviewers are professionals specifically trained for the SILC survey, our target population comprises such a small share of the total sample to make an extremely conservative approach necessary). On the other hand, given the very restrictive definition of “family” within the survey, and given the vast array of possible answers (including “other cohabiting relative”), in our opinion it is legitimate to consider the sub-population so defined as a proxy for “closeted” same-sex couples, because there would be hardly be a rationale for the existence of further family members that are not related to the family head nor to some other family member.

While we are aware of the difficulties in defining the boundaries of a lesbian, gay and bisexual (LG) population, as well as of the difficulties of deciding over each individual’s belonging to such population, for ease of exposition in what follows we will refer to same-sex couples as “LG couples” and to opposite-sex couples as “heterosexual couples”. Specifically, we will refer to the sub-population defined according to the criteria above as the “closeted LG couples”, whereas the narrower sample described earlier will be referred to as “out LG couples”.

Our final sample is composed of 17,950 individuals (23% observed in 2006, 23% in 2008, 54% in 2010, see footnote 3), of which 72 belonging to same-sex couples. Of these, 44 are classified as “out” and 28 as closeted. The mean age of individuals in same-sex couples is 45.9 years old, as opposed to 54.9 for individuals in heterosexual couples, and the difference is statistically significant ($F(1, 17948)=28.20$). Similarly, in our sample individuals in same-sex couples live in smaller households: 2.58 members on average, as opposed to 3.08, with a range between 2 and 5 for LG couples and between 2 and 12 for heterosexual couples ($\text{Chi}^2(8)=21.6130$). On the contrary, the geographical distribution of the LG population is not statistically different from the total population, with 38.1% living in the North (36.2% for the heterosexual population), 33.3% in the Centre (as opposed to 29.5%) and 28.6% in the South (34.3% for the heterosexual population, overall $\text{Chi}^2(2)=0.6621$). Such result may be a consequence of a larger structural feature of Italy’s population, i.e. the very low geographical mobility (which may be attributed to cultural and historical factors, such as the very late national unification, as well as economic, such as the very high rate of home-ownership). While there obviously is perfect equality between men and women in the heterosexual population (since we only consider couples), the LG population is more unevenly distributed, with 64% men and 36% women.

As shown in the next section, LG couples appear to have higher educational attainments on average, though lower earnings. However, differences appear as higher between the closeted LG and the out LG population, than between the out LG and the heterosexual population.

3. Fuzzy logic and methodology

In the European Union, social exclusion has been defined by the European Council in very precise terms (for the sake of data comparability across European countries). It is computed by Eurostat as the intersection of three indicators: one measuring income poverty (specifically, the at-risk-of-poverty rate after social transfers is used, i.e. the share of population earning a yearly income lower than 60% of the median income); one measuring labour market attachment, though at the household rather than the individual level (the “People living in households with very low work intensity” indicator); and one measuring multidimensional poverty (the share of “severely materially deprived

people” in the population).⁶ The aim of such measure is to capture the diffusion of social exclusion in the population, defined as “a process whereby certain individuals are pushed to the edge of society and prevented from participating fully by virtue of their poverty, or lack of basic competencies and lifelong learning opportunities, or as a result of discrimination” (European Commission, 2004).

Such an approach has the advantage of recognising both the social and the multidimensional nature of poverty/social exclusion. However, it share all the limitations of the “head-count ratio” family of indicators (Alkire and Foster, 2011). Specifically: (i) it measures the number of “excluded” people in the population, without telling anything concerning the degree or severity of such exclusion; and (ii) it is based on a dichotomous concept of social exclusion: given a poverty line for each variable, every individual exhibiting a value of such variable strictly above the poverty line is considered as totally included in society, and every individual at or below the poverty line is considered as completely excluded from society. Such feature is liable to two sorts of limitations. First, an empirical one, in so far as the results crucially depend on the definition of the poverty line (which in this case has been normatively set by the policy-maker), and they ignore the potential dynamic nature of poverty, i.e. the fact that a substantial number of individuals may cross the poverty line in different directions along a certain time span, getting in and out of poverty. Second a conceptual problem, given the gradual nature of “inclusion” and “exclusion”, with people enjoying different degrees of participation in society, rather than being strictly divided into two separate groups.

As a consequence, we employ a fuzzy set approach to the measurement of social exclusion (for recent reviews, see for example Ragin and Pennings, 2005; Berenger and Verdier-Chouchane, 2007; Chiappero-Martinetti, 2008; Chiappero-Martinetti and Roche, 2009). Assuming it is possible to summarise all the several dimensions of inclusion into a straight line, we posit that social inclusion and exclusion should be conceptualised as a continuous variable that may be normalised so as to take on values comprised between 1 (denoting full social inclusion) to 0 (denoting complete exclusion).

Let X be the set of dimensions x of social inclusion (denoted by A). We define a fuzzy operator μA (“membership function”) as the following function:

$$\mu A(x): X \rightarrow [0, 1]$$

where $\mu A(x) = 0$ indicates that x does not belong to A ; $\mu A(x) = 1$ indicates that x completely belongs to A ; and finally the general case, $0 < \mu A(x) < 1$, indicates that x partially belongs to A . The closer the value of the membership function, the closer is the subject to full social inclusion. From an empirical point of view, the main difference between such an approach and the typical microeconomic estimates of poverty is that values comprised between zero and one are not interpreted here as a risk or probability to fall into poverty, but rather as the individual’s value of the degree of social inclusion/exclusion.

The operationalisation of the fuzzy set approach requires three steps: first, identification of the relevant dimensions of inclusion/exclusion; second, definition of a functional form for the membership function; third, choice of a method of aggregation, including weighting of the dimensions (see for instance Cheli and Lemmi, 1995; Qizilbash, 2003; Roche, 2008; Qizilbash and Clark, 2005).

Concerning the first point, we complemented the three dimensions selected by the European Council, i.e. monetary poverty, labour market attachment and multidimensional deprivation, with

⁶ “Severe material deprivation” denotes a condition of enforced lack of four or more deprivation items among a predefined list of 9 items: 1. inability to face unexpected expenses; 2. inability to pay for one week of holiday away from home per year; 3. being late or having arrears in debts repayments (including mortgage or rent, utility bills or to hire purchase instalments); 4. inability to pay for a full meal with meat, chicken or fish every other day; 5. inability to pay to keep the home adequately warm; 6. not having a washing machine; 7. not having a colour TV; 8. not having a telephone; 9. not having a car.

two further dimensions: subjective well-being and education. As remarked by Alkire (2007), the choice of dimensions that we consider as relevant necessarily includes a strongly normative content, and for this reason it is important to adopt a shared definition and to remain open to public scrutiny. From this point of view, the dimensions of education and subjective well-being seemed, among the several variables concretely available in our dataset, as the most unanimously valued in the literature as conducive to higher levels of social inclusion. For all the five dimensions considered, the subsequent selection of the single variables necessarily had to be strongly affected by the availability of data. Given the nature of the SHIW database, we were able to collect in-depth information concerning the monetary dimension of social inclusion, encompassing both current income and accumulated wealth. On the other hand, the definition of multidimensional deprivation (or asset poverty) had to be limited to the housing dimension due to lack of data, despite the normative EU official definition includes some other items not related to housing (such ownership of a car, ability to enjoy yearly holidays and adequate nutrition). Finally, concerning the labour market attachment dimension, we distinguished two main sub-populations: those of working age who are employed or looking for employment, whom a special set of questions was addressed, for which we have information concerning job quality, past experience, etc.; and the rest of the population, for which all information available in the dataset is labour market status (employed vs. not employed). Table 2 below summarises all variables composing the five dimensions.

Table 2. List of indicators per each dimension of social exclusion

Monetary poverty	Labour market attachment	Housing	Subjective well-being	Education
Individual income	Hours worked (all sample)	Estimated value of the dwelling	Self-perceived health status	Educational attainment
Equivalent family income	Accumulated years of social contributions (employed sample)	Square meters per person	“Income allows to make ends meet”	
Equivalent family consumption	Degree of flexibility of previous employment (employed sample)	Number of bathrooms/toilets		
Equivalent family expenditure for food	Actively looking for a job – cannot find one (employed sample)	Legal claim on the dwelling (ownership, rent, free disposal, etc.)		
Equivalent family net wealth	Firm size (employed sample)			
Equivalent family real assets				

Monetary poverty is assessed through individual and family indicators. Non-income indicators such as those based on consumption, expenditure for food, net health and real assets allow to capture a more reliable estimate of monetary well-being. However, the fact that most variables are only

measured at the household level may be particularly problematic from a gender perspective, since it neglects the role of intra-household distribution in shaping individuals' actual access to household resources (Botti, Corsi, D'Ippoliti, 2012). OECD equivalence scales have been applied to all indicators defined at the household level, in order to account for different household sizes. The only labour market indicator available for the entire sample is working time (chosen as a quantitative measure of individual labour market attachment). For workers, accumulated years of social contributions and firm size are especially relevant in the Italian case, because of differentiated regimes of social benefits and job protection associated with different levels of the two variables: social security and public pension entitlements are proportional to the accumulated years of social contributions, whereas the contractual degree of job flexibility is negatively related to firm size (i.e. in large firms there is a ban on employees firing, if the employer cannot provide substantive arguments for the decision to fire). The degree of (past) job flexibility is computed as a ratio of the number of different previous labour experiences over the individual's total working years at the time of the interview.

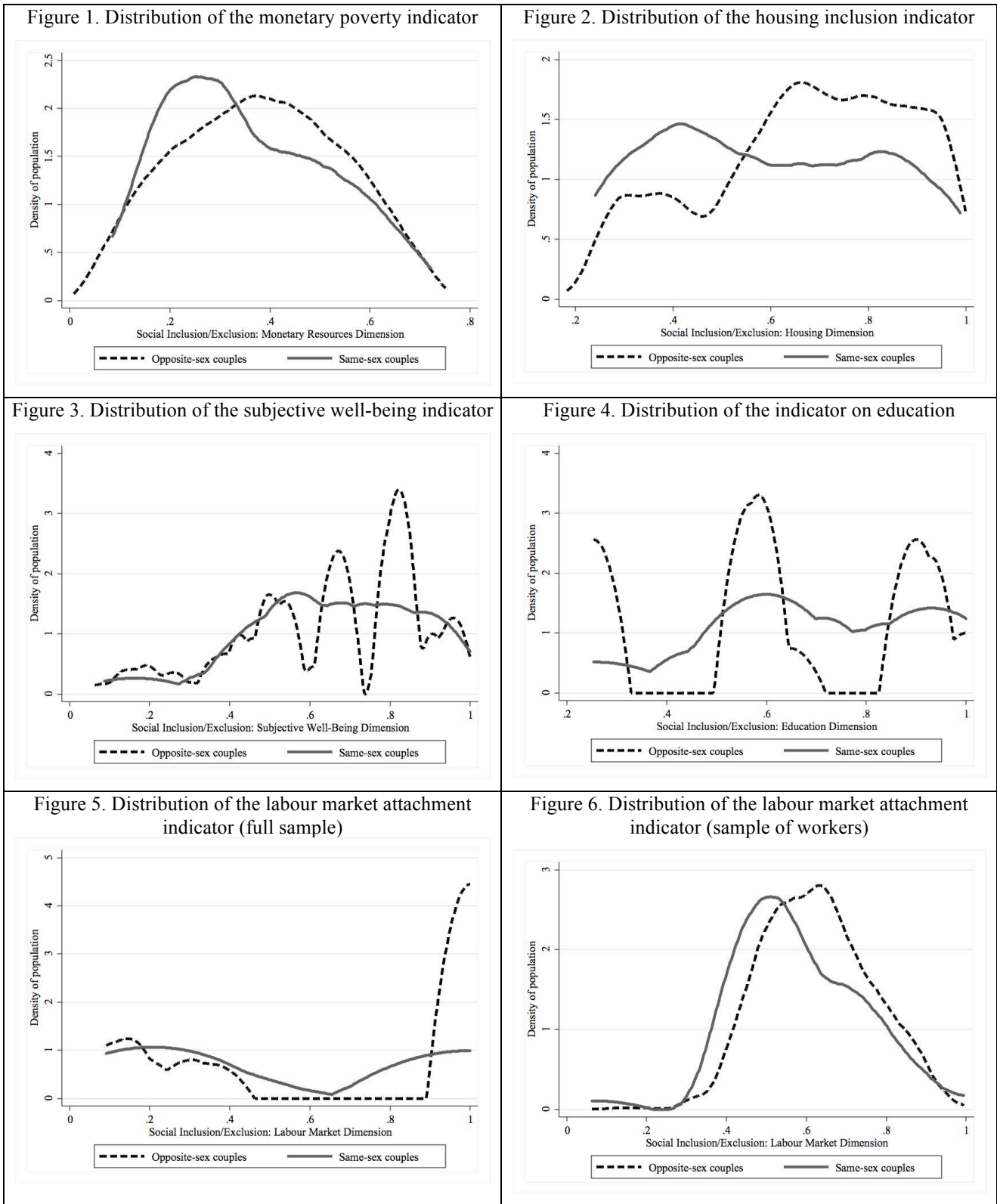
The second necessary step in order to proceed to the analysis of data is, for every variable, the definition of a membership function. Several ex-ante methods have been proposed in the literature (for an overview, see the contributions in Lemmi and Betti, 2006). We opt for a data-driven method, whereby the membership function is equal to the empirical distribution function of each variable x (arranged in increasing order, by k):

$$\mu(x_k) = \begin{cases} 0, & \text{if } k = 1 \\ \mu(x_{k-1}) + \frac{F(x_k) - F(x_{k-1})}{1 - F(x_1)} & \text{if } k > 1 \end{cases}$$

Such an approach is conceptually similar to stating that a person's degree of social inclusion in a certain context is related to its relative position in society in that context. While in a dichotomous approach to poverty in most industrialised countries the poverty line is computed as some function of certain characteristics of the observed population (for example the income poverty line in the European Union is defined as 60% of the median income), in our context individual's relative standing is defined as a function of the whole observed (sample) distribution.

Figures 1 to 6 show the results of this process, distinguishing heterosexual couples from same-sex couples. As it is shown in figure 1, same-sex couples on average exhibit a distinctly lower level of monetary resources, as well as of inclusion in the housing dimension (figure 2). The distributions of both educational attainments and subjective well-being are, on the contrary, similar for both populations, as shown in figures 3 and 4 (the variables composing the two indexes are not continuous). Figure 5 shows a similar division in both populations between individuals working full-time and individuals working zero or almost zero hours (this is a consequence of the very limited diffusion of part-time arrangements in Italy), though opposite-sex couples exhibit a relatively higher majority of the population working full-time. Finally, considering only the sub-sample of people attached to the labour market, figure 6 shows similar distributions of labour market inclusion in the two populations, although the distribution of the inclusion of workers in same-sex couples is shifted to the left, denoting lower mean and median levels of inclusion.

Figures 1-6. Distribution of the social inclusion/exclusion indicators in the five dimensions



Source: authors' elaboration on Bank of Italy's "Survey of Household Income and Wealth", several years.
Note: kernel density estimation, Epanechnikov method.

By definition, the application of the membership function to each variable of interest produces a number of standardised variables that necessarily range between zero and one, with a variance which is function of the sample distribution of each variable ("fuzzyfication" of variables). Such variables are therefore expressed in a same unit of measurement and can be aggregated. Indeed, the

computation of a synthetic measure of multidimensional social inclusion is the final step of our approach. We decided to aggregate the several variables for each dimension through a weighted average of the respective membership functions (a version of the so-called weak union aggregation technique). As opposed to other possible aggregating operators, the weighted average allows us to allow for a certain degree of substitutability across the variables within a same dimension. Allowing for substitutability appears as especially convenient when, as in our case, we selected the dimensions and components of social inclusion without knowing the individuals' preferences.

The means of the membership functions, for each variable, were used as weights in the aggregation. While we refer the interest reader to Brandolini (2008) or Deutsch and Silber (2005) for extensive discussions on the use of data-driven weighting functions, the intuition beyond our approach lies in our aim to assign a higher weight to the variables in which more people exhibit a near-full social inclusion. That is to say we consider those variables to be more relevant in the determination of the depth of social exclusion, in which only few people appear as deprived (this may be thought of as the multidimensional counterpart of the "keeping up with the Joneses" hypothesis).

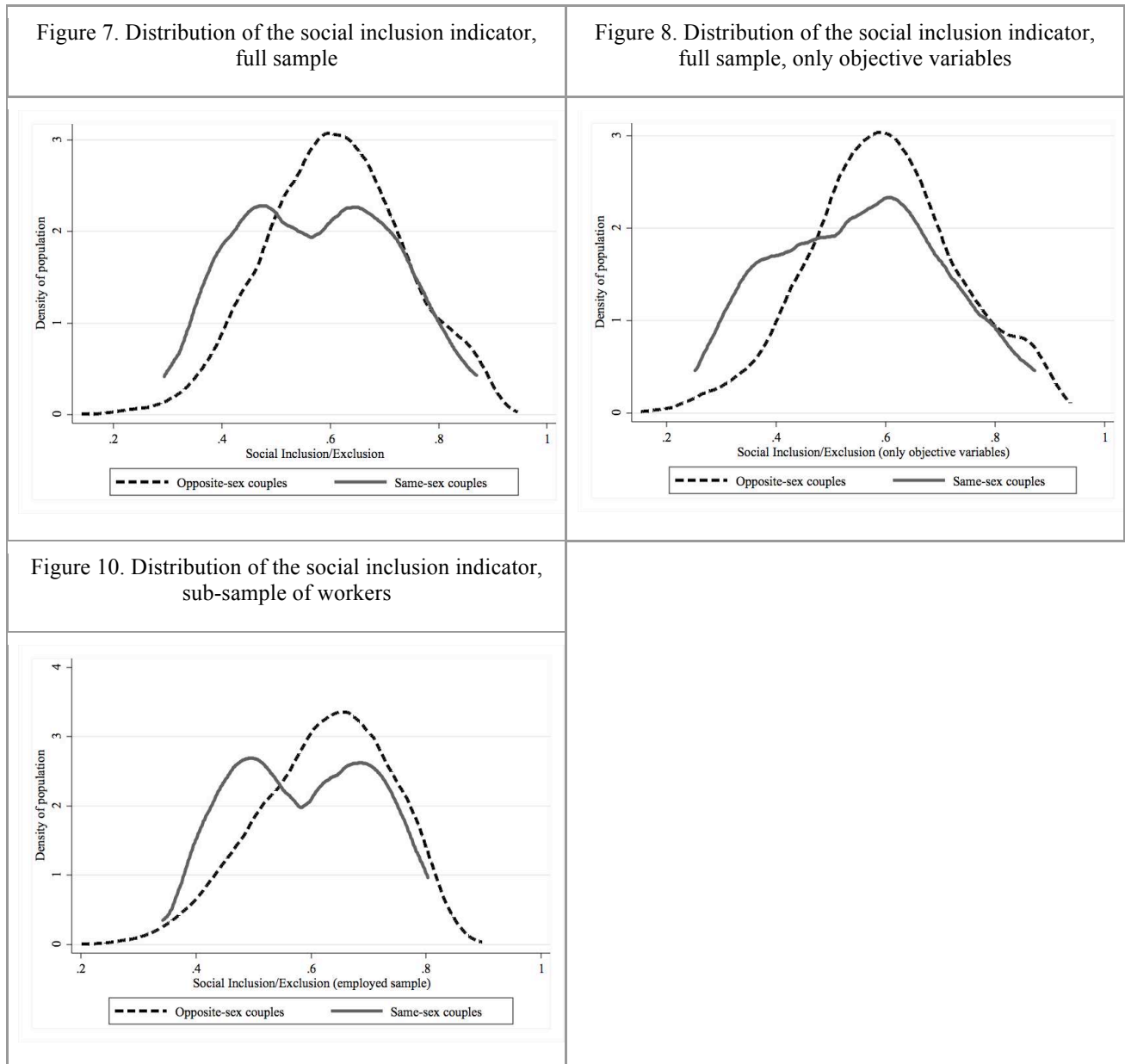
In conclusion, the indicator derived according to this procedure may at the same time be considered as an indicator of both social exclusion and social inclusion: whereas virtually no individual exhibits "full" exclusion or "full" inclusion (corresponding to values exactly equal to zero and one, respectively) nearly all individuals lie somewhere along the way between the two poles. In the next section, we investigate how people living in same-sex couples systematically lie closer to the condition of exclusion than the rest of the population.

Results

Figures 7 to 9 show the distribution of the overall indicator of social inclusion/exclusion, for the full sample and for the sub-sample containing workers only (in which case more variables are included in the labour market dimension, see table 2). As shown in figure 7, same-sex couples exhibit a distribution of the social inclusion/exclusion characterised by higher variance, though with less extreme values. While the opposite-sex couples population exhibits a neat inverted-U shaped distribution, the same-sex couples population appear to exhibit two masses of more concentrated distribution, one close to the opposite-sex population average, one corresponding to values distinctly lower. Thus, it may be inferred that a certain part of the same-sex couples population enjoys an average level of social inclusion comparable to the opposite-sex population, while another group fares much worse.

The same considerations appear to hold for the workers sub-samples, as shown in figure 9. In figure 8, we estimated the distributions of the inclusion/exclusion indicator only considering the objective variables, i.e. excluding the "subjective well-being" dimension of inclusion. As shown, the same-sex couples population still appears as more evenly dispersed along the function's support $[0, 1]$, though this time the distribution appears to have lost its bi-modality, while showing a distinctly lower average than the opposite-sex population.

Figures 7-9. Distribution of the overall social inclusion/exclusion indicator



Source: authors' elaboration on Bank of Italy's "Survey of Household Income and Wealth", several years.

Note: kernel density estimation, Epanechnikov method.

We run truncated regressions on both the complete social inclusion/exclusion indicator, as well as on that only comprising objective variables, as shown in table 3.⁷ Belonging to a same-sex couple appears as significantly related to one's social inclusion, specifically increasing the exposure to social exclusion by roughly 4%, *ceteris paribus*. As shown in regressions 2 and 7, out same-sex couples do not appear as significantly less included in society, whereas closeted same-sex couples suffer from a social exclusion higher than 12% with respect to the population average. Similarly, while women belonging to same-sex couples seem to fare similarly to the rest of the population, once controlling for other observable characteristics, men suffer from an inclusion in society lower by roughly 5% (regressions 3 and 8). However, when running separate regressions for women (regressions 4 and 9) and men (regressions 5 and 10), in both cases people belonging to same-sex couples appear as more excluded on average than people in opposite-sex couples, though for men

⁷ Truncated regressions appear as necessary in so far as the dependent variable is by construction constrained between 0 and 1, and we are interested in comparing the relative inclusion of sub-groups of the population.

the coefficient is more statistically significant (it should be recalled, however, than for women there are less observations in the sample).

Table 3. Determinants of social inclusion: truncated regressions on whole sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Inclusion					Only				
LG couple	-0.042			-0.038	-0.044	-0.042			-0.040	-0.044
	(0.014)**			(0.023)+	(0.019)*	(0.015)**			(0.024)+	(0.020)*
LG out		0.009					0.013			
		(0.018)					(0.020)			
LG closeted		-0.122					-0.128			
		(0.023)**					(0.024)**			
LG women			-0.034					-0.037		
			(0.024)					(0.025)		
LG men			-0.046					-0.045		
			(0.018)*					(0.019)*		
Man	-0.009	-0.009	-0.009			-0.013	-0.013	-0.013		
	(0.002)**	(0.002)**	(0.002)**			(0.002)**	(0.002)**	(0.002)**		
Year 2008	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	-0.019
	(0.002)**	(0.002)**	(0.002)**	(0.003)**	(0.003)**	(0.002)**	(0.002)**	(0.002)**	(0.003)**	(0.004)**
Year 2006	0.007	0.006	0.007	-0.001	0.015	0.015	0.014	0.015	0.004	0.025
	(0.002)**	(0.002)**	(0.002)**	(0.003)	(0.003)**	(0.002)**	(0.002)**	(0.002)**	(0.003)	(0.004)**
Family size	-0.014	-0.014	-0.014	-0.013	-0.016	-0.016	-0.016	-0.016	-0.015	-0.019
	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.002)**
Age	0.008	0.008	0.008	0.008	0.010	0.007	0.007	0.007	0.007	0.009
	(0.000)**	(0.000)**	(0.000)**	(0.001)**	(0.001)**	(0.000)**	(0.000)**	(0.000)**	(0.001)**	(0.001)**
Age quadratic	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)**	(0.000)**	(0.000)**	(0.000)**	(0.000)**	(0.000)**	(0.000)**	(0.000)**	(0.000)**	(0.000)**
sigma: Const	0.121	0.121	0.121	0.115	0.125	0.128	0.128	0.128	0.121	0.132
	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**
Constant	0.464	0.466	0.464	0.473	0.394	0.434	0.436	0.434	0.445	0.348
	(0.013)**	(0.013)**	(0.013)**	(0.017)**	(0.020)**	(0.014)**	(0.014)**	(0.014)**	(0.018)**	(0.021)**
Observations	17934	17934	17934	8957	8977	17936	17936	17936	8958	8978

+ significant at 10%; * significant at 5%; ** significant at 1%

Note: control variables include dummy variables for urban size and regional fixed effects. Standard errors in parentheses.

When considering only the population actively involved in the labour market, similar results are obtained, as shown in table 4. Workers living in same-sex couples suffer a lower inclusion by more than 5% (regression 11), even when considering only objective measures (regression 13). Workers in out same-sex couples, however, do not appear as systematically excluded from society, whereas workers in closeted same-sex couples suffer from an inclusion lower than the rest of the population by roughly 12% (regressions 12 and 14).

Table 4. Determinants of social inclusion: truncated regressions on workers sub-sample

	(11)	(12)	(13)	(14)
	Inclusion		Only	
Same-sex couple	-0.051		-0.052	
	(0.016)**		(0.016)**	
Same-sex out		0.011		0.009
		(0.022)		(0.022)
Same-sex closeted		-0.120		-0.119
		(0.023)**		(0.023)**
Man	-0.016	-0.016	-0.014	-0.014
	(0.003)**	(0.003)**	(0.003)**	(0.003)**
Year 2008	-0.017	-0.017	-0.018	-0.018
	(0.003)**	(0.003)**	(0.003)**	(0.003)**
Year 2006	0.006	0.005	0.011	0.010
	(0.003)*	(0.003)+	(0.003)**	(0.003)**
Family size	-0.011	-0.012	-0.011	-0.012
	(0.001)**	(0.001)**	(0.001)**	(0.001)**
Age	0.007	0.007	0.007	0.008
	(0.002)**	(0.002)**	(0.002)**	(0.002)**
Age quadratic	-0.000	-0.000	-0.000	-0.000
	(0.000)*	(0.000)*	(0.000)+	(0.000)+
sigma: Constant	0.107	0.107	0.108	0.108
	(0.001)**	(0.001)**	(0.001)**	(0.001)**
Constant	0.476	0.477	0.406	0.407
	(0.040)**	(0.040)**	(0.040)**	(0.040)**
Observations	7335	7335	7336	7336

+ significant at 10%; * significant at 5%; ** significant at 1%

Note: control variables include dummy variables for urban size and regional fixed effects. Standard errors in parentheses.

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Annex 1. Summary of the literature on the sexual orientation wage gap

Author(s)/year	Data	Definition of Sexual Orientation	Results
Allegretto, S. and Arthur, M. (2001)	1990 US Census; 5% sample of men aged 20-64 in the labor force	Cohabiting	Wage differential mostly due to marriage premium, estimated at 14.1%. Gay men earn -15.6% than similarly qualified married heterosexual men and -2.4% than unmarried cohabiting heterosexual men.
Antecol, H. et al. (2008)	2000 US Census; 5,785 gay men, and 6,205 lesbian women	Cohabiting	Lesbian women earn +31.6% than cohabiting women and +19.7% than married women. Gay men earn -4.5% than their married but +28.2% than their cohabiting counterparts. Differences in HC largely explain the wage advantage for lesbians irrespective of marital status and for gay men relative to their cohabiting counterparts, while occupational sorting play only a modest role. The wage penalty for gay men relative to their married counterparts is largely unexplained.
Arabsheibani, G. et al. (2005)	LFS 1996(QI)-2002(QIV); 929 cohabiting homosexuals (570 men, 359 women)	Cohabiting	The returns to higher education are lower for gays than for non-gays. Evidence suggests that gay men earn less than heterosexuals with the same characteristics while lesbian women earn more.
Badgett, L. (1995)	General Social Survey (GSS) 1989-91; random sample of 38 women and 43 men out of 1680 full time employed	Behavioural	behaviorally gay and bisexual men earn between -11% and -27% than heterosexual counterparts, depending on the definition of sexual orientation used. Wage penalty for behaviorally lesbian and bisexual women are statistically insignificant
Berg, N. and Lien, D. (2002)	GSS 1991-96; random sample of 64 men and 52 women out of a population of 2287 full time workers	Behavioural	Homosexual men earn between -16% and -28% than heterosexual counterparts with similar demographic characteristics while Homosexual women earn between +13% and +47%, not controlling for actual hours worked.
Black, D. et al. (2003)	GSS 1989-96; different random samples according to 3 definitions of sexual orientation	Behavioural	According to two different definitions of sexual orientation based on behaviour respectively in the past year and in the last 5 years, lesbians have a wage premium of 20-30% and gays have a wage penalty of 14-16%. Marriage premium is estimated at 20%.
Blandford, J. (2003)	GSS 1989-96; random sample of 78 men and 62 women (respectively 2.6% and 2.1 of male and female sample)	Behavioural	Gay or bisexual men have wage penalty of 30-32%. Lesbian or bisexual women have wage premium of 17-23%.
Booth, A. and Frank, J. (2008)	convenience sample of LG are 93 out of 706 staff of British Universities (13%)	Identity	LG males and females have no return to partnership for either the academics and the administrators.
Brown, C. (1998)	Statistic's Canada 1991 Census	Cohabiting	Men in same-sex couples earn less than heterosexual men (in all marital status -except single and never-married - and age cohorts) while the reverse apply to women in same-sex couples
Carpenter, C.	3 rd National Health and Nutrition Examination	Behavioural	Men with same-sex behavior experience a 23% income penalty to similarly situated

Elmslie, B. and Tebaldi, E. (2007)	2004 Current Population Survey (CPS); 1,120 gay men and 678 lesbians out of a sample of 91,240	Cohabiting	earn more in both cases. Cohabiting gay men earn -24% than married heterosexual men (marriage premium estimated at 15%) and -9% than unmarried cohabiting heterosexual men. No evidence to suggest discrimination of lesbians.
Frank, J. (2006)	UK Association of University Teachers (AUT) survey of academic and non-academic university staff; 61 LG men and 49 LG women out of a sample of 784 individuals.	Identity	No evidence to suggest LG men or women suffer wage penalties compared to heterosexuals. Suggest there may be a 'glass ceiling' for LG men in the academic field at the top ranks.
Heineck, G. (2009)	1994 International Social Survey Programme data.	Behavioural	Wage penalty of 17-20% for gay men arising from discrimination. No penalty affect earnings of lesbian women and bisexual individuals.
Jepsen L. (2007)	PUMS of 2000 US Census; 14,528 lesbian women compared to 9,787 cohabiting and 89,457 married heterosexual women.	Cohabiting	Cohabiting lesbians earn app. +10% than married heterosexual and earn more than cohabiting heterosexual females.
Klavitter M.M., and Flatt V. (1998)	PUMS of 1990 US Census	Cohabiting	Earning differentials are not affected by policies. Gay men earn significantly less and lesbians earn significantly more than their heterosexual counterparts at comparable human capital characteristics.
Plug, E. and Berkhout, P. (2004)	Survey of graduates with a tertiary education in the Netherlands; 241 gay men and 198 lesbian women (respectively 53 and 122 bisexual) out of a sample of 5,163 men and 6,437 women.	Identity	3% wage penalty for young and highly educated gay males and 3% wage premium for similarly qualified lesbians (almost fully compensating the traditional gender pay gap).
Plug, E. & Berkhout, P. (2008)	Annual survey of individuals who completed college education in the Netherlands, 2003/04, 2004/05 and 2005/06; 435 gay men out of 7,158 full-time working individuals.	Self-identified sexual attraction	The earnings penalty for being gay/bisexual is statistically significant at 3-4%. Disclosure estimates provide little evidence of labour market discrimination but rather, support selection theory: undisclosed gay/bisexual men concentrate in lower paid occupations and earn -5-9%.