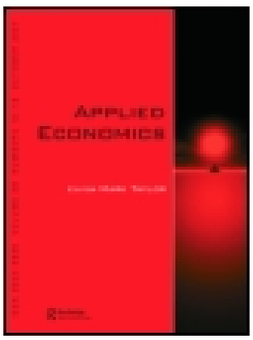

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An investigation into sexual orientation discrimination as an explanation for wage differences

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This study explores the effects of sexual orientation on earnings. It is found that, *ceteris paribus*, men living with male partners tend to earn less than other men, and women living with female partners tend to earn more than other women. These earnings differentials tend to vary by region. They also vary by education and occupation for men, and with the presence of minor children for women. In addition, the age-earnings profiles of women living with female partners tend to be higher, flatter, and less concave than those of other women.

I. INTRODUCTION

Labour market discrimination exists when two equally qualified individuals are treated differently in the labour market, on the basis of some personal characteristic unrelated to productivity. Discrimination can take the form of differences in compensation, or differences in hiring and promotion practices. When discrimination occurs, individuals may not be employed in the job where they can contribute the most. Consequently, discrimination is inefficient, from a social perspective. Furthermore, because discrimination results in two equally qualified individuals being treated differently, discrimination is also counter to the interests of equity.

In the past few decades, legislators have moved towards a public policy that the labour market treatment of individuals should be based on their productivity, rather than on their personal characteristics. Laws prohibit acts of labour market discrimination based on race, colour, religion, gender, and national origin. They also prohibit acts of labour market discrimination based on age and physical or mental disability. However, labour market protection at the federal level in the USA does not extend to gays and lesbians. If discrimination against gays and lesbians exists, widening the scope of federal legislation to fight it is justified on the grounds of efficiency and equity. While it may be argued that current legislation has not been 100% effective in eliminating discrimination against women and minorities, there is evidence that it has had a measurable impact (Beller, 1982; Leonard, 1984).

In order to detect labour market discrimination based on sexual orientation, one must inspect the data for differences in labour market outcomes by sexual orientation. If such differences exist and cannot be fully explained by differences in productivity, discrimination based on sexual orientation may be present. The unexplained portion of the differential is commonly used as an estimate of the impact of labour market discrimination.

While there have been numerous economic studies of race and gender discrimination (e.g. Gunderson, 1989; Smith and Welch, 1989), the issue of discrimination on the basis of sexual orientation has been largely neglected by the economic literature. The exception is Badgett's (1995) study. She found that gay and bisexual males earn from 11–27% less than heterosexual males controlling for experience, education, occupation, marital status, size of SMSA, and region of residence. She also found that lesbian and bisexual women earn less than heterosexual women, but the finding was not consistently statistically significant across specifications.[1]

[1] Badgett's sample included only 34 (4.9%) lesbian or bisexual women, and only 47 (5.2%) gay or bisexual men, so insignificant results are not surprising.

In Badgett's earnings equations for women, the effect of sexual orientation was reflected in two ways. It was reflected by a dummy variable and by the interaction of the dummy variable with the variable measuring experience, to capture differences in the effectiveness of the proxy for experience for lesbian and heterosexual women. No interactions of the dummy variable with any other independent variables were included. In Badgett's earnings equations for men, the effect of sexual orientation was reflected simply by a dummy variable. The implication is that the effect of sexual orientation is in the form of a parallel shift of earnings equations. The effects of sexual orientation on earnings, however, may be more complex. To explore other possibilities, the present study examines many interaction terms in the earnings equations of both the men and the women.

In this study, the results for males corroborate those of Badgett. It is found that men living with male partners earn less than men not living with partners, *ceteris paribus*. Men living with male partners earn less than men living with female partners, if they are college educated, working in the Midwest or working in blue collar occupations. For the most part, the estimated effects on earnings are within the range calculated by Badgett.

Results that are statistically significant and generally opposite in sign to Badgett's are found for women, however. Women living with female partners tend to earn more than women not living with partners, *ceteris paribus*. This is especially true if they are living in the Midwest or living with their own minor children, in which case they also earn more than comparable women with male partners.

Section II contains a discussion of the theoretical framework of discrimination on the basis of sexual orientation. A description of the data follows in Section III. Estimation results are presented and discussed in Section IV. The primary conclusions of this research are reviewed in Section V.

II. THEORETICAL FRAMEWORK

If the attitudes of employers, co-workers and/or consumers are anti-homosexual, these individuals could exhibit a taste for discrimination against gays and lesbians.[2] For this taste to be manifested in discriminatory behaviour, however, these individuals must be able to distinguish gays and lesbians from heterosexuals. Gays and lesbians, fearing adverse job consequences, may avoid disclosing their sexual orientation. The practice of hiding one's sexual preference is likely to reduce the measurable impact of discriminatory behaviour.

Hiding one's sexual preference, however, is likely to cause anxiety and stress. Concealing one's sexual identity may also result in reduced opportunities to meet a compatible individual with whom a strong relationship can be developed. Many gays and lesbians may, therefore, reveal their sexual inclinations despite the possible negative effects on career advancement and income. Disclosure of sexual orientation may also occur indirectly or involuntarily. Inferences may be drawn based on conversations or other information. In some cases, a voluntary disclosure to one co-worker may become an involuntary disclosure to an employer or other co-workers.

If employers, co-workers and/or consumers have tastes for discrimination and can distinguish gay and lesbian employees from heterosexual employees, the result may be lower earnings for gays and lesbians. There is a behavioural response, however, that could produce a positive impact of homosexuality on earnings level. Gays and lesbians may respond to the threat of employment discrimination by working harder. Many believe that if they are sufficiently productive, they could overcome the stigma of sexual orientation. Under these circumstances, the dummy variable indicating their sexual orientation would be capturing a productivity advantage.[3]

III. DATA AND DESCRIPTIVE STATISTICS

Reliable and representative data on sexual orientation are extremely rare. Badgett (1995) used three years of the General Social Survey, which includes answers to questions about the gender of one's sexual partners. The present study uses data from the 1/1000 Public Use Microdata Sample (PUMS) of the 1990 Census of Population and Housing. In this data set, an unrelated individual who is living in the household may be classified as either (i) a roomer, boarder or foster child, (ii) a housemate or roommate, (iii) an unmarried partner, or (iv) other non-relative. Persons of the same sex who are classified as unmarried partners are, for the purposes of this study, presumed to be involved in a gay or lesbian relationship.[4]

Persons living in group quarters were eliminated from the study. Moreover, this analysis was restricted to civilian

[2] For an economic analysis of tastes for discrimination, see Becker (1971). Becker noted that perfect competition would drive employers with tastes for discrimination out of the market. However, discrimination stemming from the tastes of co-workers or consumers can persist, with negative impacts on the wages of those who are the victims of discrimination.

[3] For a discussion of this reaction, see Woods (1993: 209).

[4] Note that the sexual orientation of individuals who are not living with a partner is not identifiable. It is also possible that lesbian and gay couples may have, intentionally or unintentionally, misreported their relationships. The effects of these classification errors on the results are considered in a later footnote.

workers, 65 years old or younger, who were employed at least 35 hours per week and at least 40 weeks per year, because earnings levels, measured as annual wages or salary income, are lower for employees who work part-time or only part of the year.[5,6]

There are numerous factors besides discrimination that can influence earnings. Some of these factors pertain to individual productivity. The productivity variables used in the study were age, education, fluency in the English language, health status, and occupation. The variable COLLEGE was set equal to one if the respondent has completed college and zero otherwise. The variable HS was set equal to one if the respondent has completed high school, and zero otherwise. The coefficients on these variables measure the effects of degree completion, compared to workers who did not complete high school.[7] The variable AGE measured the individual's years of age. To allow for a non-linear relationship between wage and age, the square of AGE (AGESQ) was also used in the analysis.[8] The variable FLUENT was set equal to one if the individual speaks English well or very well, and zero otherwise. To capture possible effects of disability and disease (including HIV and AIDS), a dummy variable (HLTHLIM) for ill health was considered. If the individual's activities were limited by poor health, the variable was set equal to one; otherwise it was zero. Three dummy variables for occupational categories (WHCOLL, BLCOLL, and SERVICE) were included in the analysis. The variable WHCOLL was set equal to one if the individual's occupation was among white collar occupations, and zero otherwise. The variable BLCOLL was set equal to one if the individual's occupation was among blue collar manufacturing occupations, and zero otherwise. The variable SERVICE was set equal to one if the individual's occupation was among service occupations, and zero otherwise. When all three of these variables appear in a specification, their coefficients measure the impact of being in these occupations, compared to working in farming, forestry or fishing.[9]

Other factors that influence earnings are unrelated to productivity. The conditions of the local labour market are examples. In this paper, the variables used to reflect these conditions were region and urban residence. Urban residence was captured by a dummy variable (CITY) with value one if the area in which the respondent lived was partially or fully in a central city location, MSA or PMSA, and zero otherwise. Regional effects were measured using three dummy variables for geographic location. NEAST was set equal to one if the individual lived in New England or the Mid-Atlantic states, and zero otherwise. MDWEST was equal to one if the individual lived in the North Central states, and zero otherwise. WEST was equal to one if the individual lived in the Mountain or Pacific states, and zero otherwise. When all three of these variables appear in a specification, their coefficients measure the impact of living in these states, compared to living in the south.

Personal characteristics that trigger discriminatory feelings also influence earnings. These characteristics may include gender, race, and sexual orientation. In this study, the sample was sorted by gender, and men and women were analysed separately. The race variable was a dummy variable (WHITE) with value one if the respondent was white, and zero otherwise. Individuals with unmarried partners of the same sex were assumed to be gay or lesbian (SAMESEX= 1). Individuals not reporting such living arrangements were assumed to either be heterosexual or to have disclosed nothing about sexual orientation (SAMESEX= 0).

Finally, personal characteristics that reflect household composition may influence the individual's relative tastes for non-pecuniary job characteristics. The presence of an

[5] To avoid possible problems of bias from the selection of these full-time workers, a two-stage estimation procedure proposed by Heckman (1976) is applied. In the first stage of this procedure, a probit analysis is applied to estimate a function determining whether an individual works full-time year round. This process yields an estimate of lambda, the inverse of Mill's ratio, known as the hazard rate in reliability theory. The estimated lambda is then used as a regressor in the earnings function, along with other factors that influence earnings. According to Heckman, the results of this procedure can be quite close to those yielded by maximum likelihood estimation. While the resulting estimator is not efficient (in the statistical sense) compared to a maximum likelihood estimator, it is much simpler computationally. This correction is thought to be more critical for women than for men, since women display more variability in work behaviour. However, for the sake of comparison, the correction is used for both genders here.

[6] The data set reports accurate measurements of earnings up to $139 999. Income levels above $140 000 are censored and reported as the state median of incomes in excess of $140 000.

[7] Let β_X represent the coefficient on variable X in the estimated earnings equation. Then high school graduates earn an extra amount β_{HS}, compared to those who did not complete high school. College graduates earn an extra amount $\beta_{HS} + \beta_{COLLEGE}$, compared to high-school dropouts. Dummy variables based on degree completion are easily constructed from the data set; years of schooling cannot be accurately inferred in all cases.

[8] Information on actual years of labour market experience is not available in this data set. It is quite common to measure potential experience as age – years of schooling – 5. However, this practise has been questioned in recent research (Murphy and Welch, 1990; Light and Ureta, 1995). Given these concerns and the imprecise measurement of years of schooling in the PUMS data, the present specification uses AGE and education variables separately, rather than in linear combination.

[9] The use of broad occupational categories in wage studies is common. However, to the extent that there are wage differences among the occupations within a broad category, these differences may be mistakenly attributed to sexual orientation, if the distribution of individuals among occupations within the broad category is systematic, and not uniform, by sexual orientation.

Table 1. *Definitions of variables*

Variable name	Definition
LNINC	Natural logarithm of 1989 wages or salary
PINCOME	1989 income of spouse or unmarried partner, if any
SAMESEX	1 if individual has a same-sex unmarried partner; 0 otherwise
WHITE	1 if race of individual is white; 0 otherwise
COLLEGE	1 if individual completed college; 0 otherwise
HS	1 if individual completed high school; 0 otherwise
AGE	Years of age, if 90 or less; 90 otherwise
AGESQ	Square of age
CITY	1 if individual resides in a central city location, MSA or PMSA; 0 otherwise
HLTHLIM	1 if individual is limited in kind or amount of work, has a mobility limitation, or has a personal care limitation; 0 otherwise
FLUENT	1 if individual is fluent in the English language; 0 otherwise
DKIDS	1 if individual is female and living with minor children; 0 otherwise
NEAST	1 if individual lives in the northeast; 0 otherwise
MDWEST	1 if individual lives in the midwest; 0 otherwise
WEST	1 if individual lives in the west; 0 otherwise
BLCOLL	1 if individual's occupation is among precision production, craft, or repair occupations, or the individual works as an operator, fabricator or labourer; 0 otherwise
WHCOLL	1 if individual's occupation is among managerial or professional specialties, or the individual works in a technical, sales or administrative support position; 0 otherwise
SERVICE	1 if individual is in a service occupation; 0 otherwise
LAMBDA	Inverse of the Mill's ratio, estimated from probit equation results reported in the Appendix

adult partner who works may allow the individual to accept a lower wage in exchange for more pleasant working conditions, *ceteris paribus*, compared to individuals without such partners. On the other hand, the presence of a partner may indicate a greater need for household income, resulting in the opposite effect.[10] The 1989 income of one's adult partner (PINCOME), if any, is used to help sort out the effects of partnership. For women, the presence of one's own minor children (DKIDS= 1) may force the individual to seek more flexible working schedules, and accept correspondingly lower wages, compared to individuals with no such children (DKIDS= 0).[11,12]

The effect of sexual orientation on earnings may not take the form of simply a parallel shift of the earnings equation. Therefore, terms interacting SAMESEX with the other explanatory variables were added to the equations.[13]

For convenience, the definitions of the variables are summarized in Table 1. Table 2 provides descriptive statistics for males living with male partners, males living with female partners, and males not living with partners. Table 3 provides the same information for females.

It can be seen from these tables that households of gay and lesbian couples are quite rare or under-reported. Substantial undercounting of gays and lesbians must be occurring, if one is to believe the figure of 10% frequently cited (Woods, 1993; p. 274).[14]

It can also be seen that the percentage of non-white persons is smaller among men living with partners of the same sex than among other men. The difference in racial

[10] Empirical evidence for men shows the latter tendency, while that for women shows the former tendency (Light and Ureta, 1995).

[11] This variable is based on a question that was asked only of women. While it should, theoretically, be possible to scan all records of persons in each household to impute a measurement for men, it would greatly add to the complexity of the computer programming. Moreover, it is not clear that biological paternity could be deduced, in the way that biological maternity is addressed directly for women. Therefore, this option was not pursued.

[12] Wood *et al.* (1993) found that mothers earned no less than women without children, once hours and experience were controlled. In the absence of accurate information on the latter, DKIDS picks up the effects of reduced hours and/or experience.

[13] With no *a priori* basis for limiting these interactions to a select few, a specification search was conducted to determine which interaction terms were empirically important, given the specific samples.

[14] While it has been assumed that gays and lesbians who are not living in households with unmarried partners have disclosed nothing about their sexual orientation in the workplace, it is perhaps naïve to do so. Badgett presented arguments that errors in measuring the extent of workplace disclosure result in a bias against finding discrimination. For example, it could be argued that gay and lesbian individuals who are not living with partners might have nevertheless disclosed sexual orientation in the workplace and so might face discrimination at work. If so, it would lower (marginally) the average earnings of the group against which individuals with partners of the same sex are measured. One may also argue that those in partnership may not have disclosed their living arrangements or sexual orientation to employers, co-workers and consumers, and so do not face discrimination at work. Moreover, these individuals may possess personal characteristics, both measured and unmeasured (e.g. greater sense of commitment), which make them more desirable employees as well as partners. Again, these effects would result in a bias against finding discrimination.

Table 2. *Descriptive statistics*[a]: *males*

	With male partners	With female partners	With no partners
Mean earnings (natural log)	10.12	10.26	10.12
Percentage white	91.21%	87.34%	84.17%
Percentage living in cities	95.60%	74.47%	79.53%
Percentage high school graduates	93.41%	84.42%	87.59%
Percentage college graduates	46.15%	26.34%	29.26%
Mean age	33.87	40.69	37.70
Percentage with health limitations	9.89%	5.56%	6.61%
Percentage living in northeast	18.68%	21.11%	19.79%
Percentage living in midwest	9.89%	24.97%	23.38%
Percentage living in west	35.16%	20.11%	24.44%
Percentage blue collar	15.38%	42.15%	37.31%
Percentage white collar	73.63%	48.39%	50.58%
Percentage in service occupations	9.89%	7.61%	9.87%
Percentage fluent	98.90%	98.05%	97.85%
Mean partner's income	$28 723	$12 554	–
Number of observations	91	31 153	5585

Notes: [a] In the interest of greater comparability among workers, this study includes only persons who worked at least 35 hours per week and at least 40 weeks per year.

Table 3. *Descriptive statistics*[a]: *females*

	With female partners	With male partners	With no partners
Mean natural logarithm of earnings	10.17	9.80	9.87
Percentage white	93.10%	85.31%	77.42%
Percentage living in cities	86.21%	74.71%	81.72%
Percentage high school graduates	94.83%	88.53%	86.89%
Percentage college graduates	53.45%	22.23%	25.75%
Mean age	37.57	39.02	40.90
Percentage with health limitations	3.45%	4.18%	6.58%
Percentage living in northeast	39.66%	19.93%	22.06%
Percentage living in midwest	15.52%	23.97%	20.93%
Percentage living in west	29.31%	19.82%	20.66%
Percentage blue collar	15.52%	13.45%	13.27%
Percentage white collar	75.86%	76.34%	73.39%
Percentage in service occupations	8.62%	9.81%	12.99%
Percentage fluent	96.55%	98.10%	98.49%
Percentage living with minor children	12.07%	47.08%	30.58%
Mean partner's income	$26 222	$29 951	–
Number of observations	58	18 367	7603

Notes: [a] In the interest of greater comparability among workers, this study includes only persons who worked at least 35 hours per week and at least 40 weeks per year.

composition is similar for women. The percentage of persons living in urban areas is greater for women living with partners of the same sex than for other women; the gap is much greater for men. Individuals living with partners of the same sex are more educated than other individuals. Individuals living with partners of the same sex are also

Unintentional misreporting by gay and lesbian couples, systematically linked with low education and/or low income, would also contribute to a bias against finding discrimination. Gay and lesbian couples intentionally not reporting themselves to be living with partners of the same sex are likely to have hidden their sexual orientation from their employers and co-workers, as well. If they have not, and face discrimination as a result, the end product would be, if anything, a bias against finding discrimination. Most likely, the magnitude of this bias would be mitigated by the characteristics that make these individuals more desirable employees as well as partners, and the small size of this group, relative to heterosexuals in the sample. As a singular exception, a bias towards finding discrimination would exist if there were self-selection of high-income couples into intentional misreporting.

younger than other individuals, on average, in this sample; the gap is greater for men than for women.

The average earnings of men living with male partners are virtually identical to those of women living with female partners. The average earnings level was greater among the women living with partners of the same sex than among other women. The reverse was true for men. Given the educational advantage, individuals living with partners of the same sex should experience higher earnings. Furthermore, the tendency of these individuals to live in more populous areas, where employment prospects are generally better and cost of living is higher, could further increase the level of earnings. Also, because individuals with partners of the same sex are less likely to be non-white, racial discrimination would tend to increase the earnings advantage for these individuals relative to others. However, *ceteris paribus*, discrimination on the grounds of sexual orientation may result in lower earnings for individuals with partners of the same sex. Statistical analysis that takes these other variables into consideration is necessary to determine whether individuals living with partners of the same sex suffer from lower earnings than otherwise comparable individuals.

IV. ESTIMATION RESULTS

The statistical package SAS was employed to estimate probit and earnings equations.[15] Tables 4 and 5 report the results of the statistical estimation of earnings equations for males and females, respectively. Terms with low *t*-statistics were dropped.[16] The equations reported show the results for two samples: a sample of individuals living with married or unmarried partners, and a sample of individuals living without partners or with partners of the same sex.[17]

The results show that men living with partners of the same sex have lower earnings than otherwise similar men. It is found that these men earn about 22% less than men not living with partners, *ceteris paribus*.[18] Men living with male partners earn 16% (27%; 35%) less than comparable men living with female partners, if they are college-educated (working in blue collar occupations; living in the Midwest).[19]

However, women living with partners of the same sex tend to have higher earnings than otherwise similar women. At most ages, women with female partners have earnings that are significantly greater than those of women not living with partners, *ceteris paribus*. This is particularly true if they are living in the Midwest or with their own minor children, in which case they also earn more than women living with male partners. Between the ages of 37–48, however, women with female partners are at a slight disadvantage, if childless and not living in the Midwest; they have earnings which are at most 4% lower than women not living with partners, *ceteris paribus*.[20,21]

One explanation for the observed earnings differential between individuals living with partners of the same sex and other individuals is that employers, co-workers, and/or consumers discriminate against gays in favour of hetero-

As Badgett pointed out, however, statistical correction for errors in categorizing those facing possible discrimination on the basis of sexual orientation is not feasible, without direct information on disclosure and, in the present case, sexual orientation of those reportedly not living with partners.

[15]The results of the probit analysis are discussed in the Appendix.

[16]To facilitate the specification search, a stepwise regression procedure with backward elimination is used. The approach leads to different specifications for different samples. This outcome should not be surprising as an empirical possibility, given that there may be less variability in X_k or higher multicollinearity of X_k with the other X's (and hence no finding of a significant effect of X_k) in one sample than in the other.

[17]It is not obvious, *a priori*, whether individuals living with partners of the same sex have more intangible characteristics in common with individuals living with heterosexual partners or with individuals living with no partners. In the former case, the individuals are likely to be more similar with respect to the intangible characteristics that contribute to the decision to form a partnership. (This issue is mentioned in note 14.) In the latter case, the individuals are likely to be more similar with respect to on-the-job behavioural characteristics associated with low or no risk of fertility. Given these considerations, the investigation is conducted using both samples.

[18]This result is calculated as antilog $(-0.25097267)-1$, using the coefficient for SAMESEX. Note that this gap is narrower for men whose male partners earn income. (It decreases by 5.3 percentage points for every 10 000 dollars of the partner's income.)

[19]These results are calculated using the coefficients of interaction terms individually. For example, for college-educated men, the result is calculated as antilog $(-0.17957414)-1$, assuming that BLCOLL= 0 and MDWEST= 0, so that the interaction terms involving SAMESEX and these other variables contribute nothing additional.

[20]In comparison to women not living with partners, the effect of homosexuality on the natural logarithm of females' earnings is $2.25476325-0.10908765\text{AGE}+0.00129331\text{AGESQ}$, for the base case, assuming MDWEST= 0 and DKIDS= 0. This effect is positive prior to age 37 and after age 48. It is minimized at approximately 42 years of age, when the expression equals -0.04. The reported percentage gap is calculated as antilog$(-0.04)-1$. The variation with age may be caused by the differences in the nature of the comparison group of women not living with partners, at different ages. Among the younger cohorts are those less committed to the labour force, desiring marriage, but not yet married. Their number dwindles with age, as these individuals marry out of the sample. An opposing effect is occurring among the older cohorts, as the number of those surprised by divorce, unprepared for the labour force, increases.

[21]A female partner may contribute to home production in a way that enhances the mother's market productivity. If so, the estimated coefficient on the interaction of SAMESEX and DKIDS could be a reflection of her reward, in the absence of variables measuring her

Table 4. *Results for estimation of earnings equations*[a]*: males*

Variable	Coefficient[b]	Coefficient[c]
INTERCEPT	7.166***	8.165***
	(0.0001)	(0.0001)
WHITE	0.178***	0.116***
	(0.0001)	(0.0001)
COLLEGE	0.282***	0.256***
	(0.0001)	(0.0001)
HS	0.210***	0.173***
	(0.0001)	(0.0001)
AGE	0.082***	0.048***
	(0.0001)	(0.0001)
AGESQ	−0.0008***	−0.0004***
	(0.0001)	(0.0001)
CITY	0.195***	0.175***
	(0.0001)	(0.0001)
HLTHLIM	−0.175***	–
	(0.0001)	
FLUENT	0.280***	0.188***
	(0.0001)	(0.0001)
NEAST	0.122***	0.135***
	(0.0001)	(0.0001)
MDWEST	0.056***	0.051***
	(0.0001)	(0.0064)
WEST	0.091***	0.076***
	(0.0001)	(0.0001)
WHCOLL	0.410***	0.307***
	(0.0001)	(0.0001)
BLCOLL	0.294***	0.198***
	(0.0001)	(0.0001)
SERVICE	0.133***	
	(0.0001)	–
PINCOME	–	$5.12/10^{6}$**
		(0.0480)
SAMESEX	–	−0.251***
		(0.0063)
SAMESEX*COLLEGE	−0.180**	–
	(0.0263)	
SAMESEX*MDWEST	−0.426**	–
	(0.0187)	
SAMESEX*BLCOLL	−0.315**	–
	(0.0216)	
LAMBDA	0.066	−0.272***
	(0.4744)	(0.0001)
R^2	0.295	0.282
F statistic	726.4***	148.3***
	(0.0001)	(0.0001)
n	31 244	5676

Notes: [a] p-values are in parentheses.
[b] sample of males with partners.
[c] sample of males with male partners or no partners.
* significant at the 10% level;
** significant at the 5% level;
*** significant at the 1% level.

sexual men and against heterosexual women in favour of lesbians.

One interpretation of this finding is that employers, co-workers, and/or consumers are discriminating in favour of the personality characteristics of the stereotypical heterosexual male, rather than discriminating against gays and heterosexual females. Perhaps the more closely an employee fits that mould, the more favourably the individual is looked upon. In their review of the literature on psychological test results and female homosexuality, Riess *et al.* (1974) found that non-projective studies showed lesbians to be 'more dominant, autonomous, assertive and detached – in fact, more like the stereotypic male'. Thus, employers, co-workers, and/or consumers may prefer the personality characteristics of lesbian employees to those of heterosexual women employees.

Other explanations for the earnings differentials are possible, however. To a large extent, these explanations revolve around the immeasurable or unobservable factors that may contribute to the earnings gap. Correlation of sexual orientation with these omitted variables may cause the SAMESEX variable to reflect their effects.

One factor concerns the amount of on-the-job training that the individual has. Relative to other females, females living with female partners may have invested more heavily in on-the-job training, because of a stronger commitment to life-long labour force participation.[22] This difference may be responsible for the observed wage gap, but is not being attributed appropriately, in the absence of a variable that measures investment in on-the-job training.

Another explanation for the observed earnings disparities is suggested by the recent work of Goldsmith *et al.* (1997) that shows that self-esteem, as psychological human capital, has a positive effect on earnings. The effect of this unobservable factor may possibly be reflected in the positive (negative) impact of living with a partner of the same sex for women (men). Lesbians (gays) may have greater (less) self-esteem in market work, because they are more (less) like the stereotypic heterosexual male worker, in comparison to observationally-equivalent women (men) who are not living with partners of the same sex.

The existing evidence is consistent with all three of the above explanations.[23] Further study of this question with a

hours of work and experience, or her partner's time spent in home production. Given the small number of women on which the estimate is based, however, one should not place too much emphasis on the magnitude of the effect. Moreover, one should realize that the result could be caused by simultaneity bias: lesbians with higher incomes are more likely to have children. They are more likely to be able to maintain custody of children born as a result of a previous heterosexual relationship, and more likely to be able to afford artificial insemination or be approved for adoption.

[22] These women may have also chosen career tracks (with higher starting wages) in firms with delayed-compensation incentive systems.

[23] It must be remembered that the bias against finding discrimination, discussed in note 14, may be responsible for some of the findings for women.

Table 5. *Results for estimation of earnings equations[a]: females*

Variable	Coefficient[b]	Coefficient[c]
INTERCEPT	8.169***	6.857***
	(0.0001)	(0.0001)
WHITE	–	0.065***
		(0.0001)
COLLEGE	0.338***	0.305***
	(0.0001)	(0.0001)
HS	0.158***	0.220***
	(0.0001)	(0.0001)
AGE	0.036***	0.090***
	(0.0001)	(0.0001)
AGESQ	−0.0004***	−0.0010***
	(0.0001)	(0.0001)
CITY	0.185***	0.260***
	(0.0001)	(0.0001)
HLTHLIM	–	−0.271***
		(0.0001)
FLUENT	0.189***	0.199***
	(0.0001)	(0.0001)
NEAST	0.120***	0.114***
	(0.0001)	(0.0001)
MDWEST	0.023**	–
	(0.0169)	
WEST	0.116***	0.077***
	(0.0001)	(0.0001)
WHCOLL	0.276***	0.394***
	(0.0001)	(0.0001)
BLCOLL	0.175***	0.272***
	(0.0001)	(0.0001)
SERVICE	–	–
DKIDS	−0.032**	−0.155***
	(0.0310)	(0.0001)
PINCOME	$3.53/10^6$***	–
	(0.0001)	
SAMESEX	–	2.255**
		(0.0299)
SAMESEX*AGE	–	−0.109**
		(0.0455)
SAMESEX*AGESQ	–	0.0013*
		(0.0616)
SAMESEX*MWEST	0.330**	0.313*
	(0.0406)	(0.0755)
SAMESEX*DKIDS	0.371**	0.513**
	(0.0430)	(0.0106)
LAMBDA	−0.085**	0.253*
	(0.0364)	(0.0573)
R^2	0.282	0.305
F statistic	451.9***	176.6***
	(0.0001)	(0.0001)
n	18 425	7661

Notes: [a] p-values are in parentheses.
[b] sample of females with partners.
[c] sample of females with female partners or no partners.
* significant at the 10% level;
** significant at the 5% level;
*** significant at the 1% level.

richer data set would help to determine which explanations are correct.

In the current study, one cannot ignore the clues revealed by the differences between individuals with partners of the same sex and others, in the effects on earnings of other independent variables. For example, the age-earnings profiles of women with female partners are higher, flatter, and less concave than those of other women. This result may be associated with differences in job choices and/or patterns of investment in on-the-job training, and not necessarily the outcome of discrimination.

On the other hand, consider the regional variations in the earnings of individuals living with partners of the same sex, relative to others. Regional variations may reflect regional differences in attitudes towards homosexuality. Such differences are documented by opinion polls.[24] They are also reflected in state-by-state differences in the legal treatment of gays and lesbians.[25] While correlation of these differences with the observed coefficients on regional interaction variables in Tables 4 and 5 is not obvious, it does provide food for thought. It is quite plausible that regional differences in discriminatory behaviour are responsible for these latter results, and so contribute to the earnings gap between gays and lesbians and heterosexuals.

V. CONCLUSIONS

Analysis of the data from the 1/1000 Public Use Microdata Sample of the 1990 Census of Population indicates that, *ceteris paribus*, men living with male partners tend to earn less than other men, while women living with female partners earn more than other women. In addition to finding an earnings gap between individuals with partners of the same sex and others, the current study also reveals differences in the effects on earnings of other personal characteristics. First, there tend to be regional variations in the earnings differentials between individuals living with partners of the same sex and other individuals. Second, these differentials tend to vary by education and occupation for men, and with age and presence of children for women.

These results may be due in part to omitted variables correlated with sexual orientation. Further research with a richer data set would help to clarify the role of these variables. However, it could be argued that the results reflect the existence of regional differences in discrimina-

[24] For example, the 1990 General Social Survey has been investigated and empirical evidence was found that suggests that disapproval of homosexuality is greater in the Northeast and the Midwest than in the West, but not as great as in the South. Intraregional differences complicate the interpretation of these patterns. Specifically, in the South, there is greater disapproval in the South Central states than in the South Atlantic states. In the West, there is greater disapproval in the Mountain states than in the Pacific states. A finer classification of geographical location would be ideal, but would further split samples which are already small in this study. (For example, only ten lesbians in the PUMS data set live in the South.)

[25] In the early 1990s, only seven states (California, Connecticut, Hawaii, Massachusetts, New Jersey, Vermont and Wisconsin) had laws prohibiting discrimination in employment on the basis of sexual orientation. One state (Colorado) had a law prohibiting any protection on the basis of sexual orientation. For more information, see Norris and Randon (1993). Assuming no sudden shifts in popular opinions

tory behaviour. It remains to be seen whether the federal government will amend its legislation so as to prohibit such discriminatory behaviour.

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APPENDIX

Tables A1 and A2 show the results of probit estimation for males and females, respectively. The coefficients measure the influence of the variables on the probability of being employed full-time year round, versus not full-time or not full year. The sample does not include individuals who never worked or who last worked prior to 1985, inasmuch as there is no occupational information for these individuals.

For the most part, the signs of the coefficients make sense. The probability of being a full-time year round worker increases with age, but at a rate that diminishes with age. City dwellers and individuals fluent in the English language are more likely to be full-time year round workers, presumably because of greater labour market opportunities for individuals with these characteristics. Individuals who are in farming, forestry, or fishing are less likely to work full-time year round; seasonality of demand in these occupations surely is a factor. Women in households with their own minor children are less likely to be full-time year round workers; the presence of minor children may make it difficult for mothers to hold a full-time job.

The negative sign of COLLEGE requires some explanation. College-educated individuals are less likely to be full-time year round workers than individuals with a high school diploma. Perhaps these individuals are more likely to be self-employed and/or influenced by the income effect of high wages in making their labour supply decisions, compared to individuals with only a high school diploma. Nevertheless, in comparison to individuals who have not completed high school, those who are college-educated are more likely to be full-time year round workers, since the summed effect of their degrees is positive.

The results of the first stage of estimation are employed in the second stage for both genders, for purposes of comparison. The adjustment proves to be significant in three of the four earnings equations, the exception being the equation involving men living with female partners. For the sample of men with male partners or no partners, the coefficient of lambda is significantly negative. Thus, for this group, the individuals are negatively self-selected; those who are more likely to work full-time year round are more likely to have lower earnings, *ceteris paribus.* For the sample of women with male or female partners, there is similar negative self-selection. For the sample of women with female or no partners, there is positive self-selection.

between 1989 and the early 1990s, these differences in state laws reflect differences in attitudes towards homosexuality that could have affected 1989 earnings.

Table A1. *Results for estimation of probit equations*[a]*: males*

Variable	Coefficient[b]	Coefficient[c]
INTERCEPT	−2.677***	−3.767***
	(0.0001)	(0.0001)
WHITE	0.191***	0.095**
	(0.0001)	(0.0296)
COLLEGE	−0.035	−0.124***
	(0.1347)	(0.0040)
HS	0.222***	0.254***
	(0.0001)	(0.0001)
AGE	0.156***	0.201***
	(0.0001)	(0.0001)
AGESQ	−0.0020***	−0.0024***
	(0.0001)	(0.0001)
CITY	0.124***	0.148***
	(0.0001)	(0.0002)
HLTHLIM	−0.876***	−0.733***
	(0.0001)	(0.0001)
FLUENT	0.252***	0.110
	(0.0001)	(0.2725)
NEAST	0.060***	−0.005
	(0.0094)	(0.9175)
MDWEST	0.034	0.015
	(0.1195)	(0.7335)
WEST	−0.097***	−0.096**
	(0.0001)	(0.0264)
WHCOLL	0.334***	0.379***
	(0.0001)	(0.0001)
BLCOLL	0.161***	0.241**
	(0.0012)	(0.0108)
SERVICE	0.136**	0.195*
	(0.0136)	(0.0588)
PINCOME	$1.73/10^6$***	$-8.52/10^6$
	(0.0065)	(0.1113)
SAMESEX	3.762	4.684
	(0.9993)	(0.9995)
SAMESEX*WHITE	0.313	0.513
	(0.4985)	(0.2725)
SAMESEX*COLLEGE	0.369	0.610*
	(0.2810)	(0.0908)
SAMESEX*HS	−0.361	−0.509
	(0.5601)	(0.4209)
SAMESEX*AGE	0.056	0.034
	(0.5597)	(0.7273)
SAMESEX*AGESQ	−0.0007	−0.0005
	(0.5457)	(0.6865)
SAMESEX*CITY	−10.273	−10.804
	(0.9987)	(0.9992)
SAMESEX*HLTHLIM	0.429	0.211
	(0.3327)	(0.6400)
SAMESEX*FLUENT	0.688	1.051
	(0.5949)	(0.4496)
SAMESEX*NEAST	−0.745	−0.723
	(0.1311)	(0.1514)
SAMESEX*MDWEST	−1.325***	−1.483***
	(0.0058)	(0.0028)
SAMESEX*WEST	−0.618	−0.569
	(0.1377)	(0.1827)
SAMESEX*WHCOLL	4.966	5.222
	(0.9991)	(0.9994)
SAMESEX*BLCOLL	5.384	5.571
	(0.9991)	(0.9994)
SAMESEX*SERVICE	5.035	5.195
	(0.9991)	(0.9994)

Table A1. *continued*

Variable	Coefficient[b]	Coefficient[c]
log likelihood	−15 533.7	−4006.0
n	37 958	7728
No. full-time year round	31 244	5676

Notes: [a] *p*-values are in parentheses.
[b] sample of males with partners.
[c] sample of males with male partners or no partners.
[*] significant at the 10% level;
[**] significant at the 5% level;
[***] significant at the 1% level.

Table A2. *Results for estimation of probit equations*[a]*: females*

Variable	Coefficient[b]	Coefficient[c]
INTERCEPT	−2.430***	−4.164***
	(0.0001)	(0.0001)
WHITE	−0.239***	0.072**
	(0.0001)	(0.0166)
COLLEGE	0.017	−0.130***
	(0.3419)	(0.0001)
HS	0.187***	0.230***
	(0.0001)	(0.0001)
AGE	0.133***	0.210***
	(0.0001)	(0.0001)
AGESQ	−0.0017***	−0.0025***
	(0.0001)	(0.0001)
CITY	0.089***	0.166***
	(0.0001)	(0.0001)
HLTHLIM	−0.519***	−0.700***
	(0.0001)	(0.0001)
FLUENT	0.097**	0.075
	(0.0450)	(0.4121)
NEAST	−0.116***	−0.052
	(0.0001)	(0.1343)
MDWEST	−0.079***	−0.066*
	(0.0001)	(0.0516)
WEST	−0.123***	−0.122***
	(0.0001)	(0.0004)
WHCOLL	0.630***	0.515***
	(0.0001)	(0.0016)
BLCOLL	0.663***	0.539***
	(0.0001)	(0.0011)
SERVICE	0.075	0.030
	(0.3823)	(0.8528)
DKIDS	−0.551***	−0.498***
	(0.0001)	(0.0001)
PINCOME	$-5.80/10^6$***	$8.44/10^6$
	(0.0001)	(0.6350)
SAMESEX	−7.232	−7.110
	(0.9995)	(0.9997)
SAMESEX*WHITE	1.450	1.481
	(0.1857)	(0.2047)
SAMESEX*COLLEGE	−1.674	−1.832
	(0.1772)	(0.1924)
SAMESEX*HS	2.374	2.107
	(0.9996)	(0.9998)
SAMESEX*AGE	1.104*	1.125
	(0.0826)	(0.1067)
SAMESEX*AGESQ	−0.0115***	−0.0117
	(0.1605)	(0.1919)

Table A2. *continued*

Variable	Coefficient[b]	Coefficient[c]
SAMESEX*CITY	1.530	1.360
	(0.4525)	(0.6059)
SAMESEX*HLTHLIM	−4.229**	−4.354**
	(0.0307)	(0.0391)
SAMESEX*FLUENT	−6.907	−6.959
	(0.9995)	(0.9997)
SAMESEX*NEAST	1.297	1.062
	(0.3563)	(0.4796)
SAMESEX*MDWEST	−0.789	−1.269
	(0.6941)	(0.5470)
SAMESEX*WEST	−2.760	−3.223
	(0.1160)	(0.1157)
SAMESEX*WHCOLL	−11.511	−11.600
	(0.9985)	(0.9991)
SAMESEX*BLCOLL	–	–
SAMESEX*SERVICE	−10.834	−11.112
	(0.9986)	(0.9992)
SAMESEX*DKIDS	6.861	7.485
	(0.9989)	(0.9993)
Log likelihood	−23012.9	−6872.9
n	35866	12044
No. full-time year-round	18425	7661

Notes: [a] *p*-values are in parentheses.
[b] sample of females with partners.
[c] sample of females with female partners or no partners.
* significant at the 10% level;
** significant at the 5% level;
*** significant at the 1% level.