Gender Differences in the Gay Pay Gap:
Unmeasured Gender-Linked Characteristics,
Household Division of Labor, or
Greater Bias against Gay Men?

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ABSTRACT

A broad range of studies -- spanning methodologies, years, populations, and nations -- have found that gay men earn less than comparable heterosexual men and lesbians earn either more than, or similar to, comparable heterosexual women. Although these gender differences in the earnings effects of sexual orientation have not been explained, three hypotheses have been suggested: (1) unmeasured gender-linked characteristics that affect earnings are distributed differently by gender and sexual orientation; (2) strength of attachment to market work, relative to household work, vary by gender and sexual orientation; and (3) anti-gay bias is greater for men. We use gender composition of occupations and sharing of market work within households to proxy, respectively, the variation in the unmeasured characteristics and differences in sharing of household duties by gender and sexual orientation. Variation in measured sexual orientation discrimination by gender over time provides some evidence on the role of gender differences in this discrimination. Using data from the 5% Public Use Microdata Samples of the 1990 and 2000 U.S. Census and the American Community Survey for 2001-2007, we find that the unmeasured characteristics explain about half of the gender differential in the gay pay gap, although differences in the household division of labor have no effect on the gay pay gap among women. We also find that the gay pay gap declines for men but does not change for women, when gender composition of occupation and market participation of mate are controlled. This time pattern is consistent with, at least historically, greater gay bias against men.

A broad range of studies -- spanning different methodologies, years, populations, and nations -- have found that gay men earn less than comparable heterosexual men and lesbians earn either more than, or similar to, comparable heterosexual women.   Although these gender differences in the earnings effects of sexual orientation have not been explained, three hypotheses have been suggested.

The first hypothesis, which we label "unmeasured gender-linked characteristics," conjectures that the labor market rewards unobserved characteristics that are more prevalent among men – possibly including physical strength, aggressiveness, or willingness to take risk – more than the unobserved characteristics that are more prevalent among women.   The unmeasured male characteristics may be rewarded either because such characteristics are more productive or because there is discrimination in favor of such characteristics.   If there were fewer gender differences in these gender-linked characteristics among gays than among heterosexuals, then the existence of such "unmeasured gender-linked characteristics" would be consistent with the observed gender patterns in the gay pay gap.   If lesbians were to possess relatively more of these male-linked characteristics than

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heterosexual women, they would earn more. If gay men were to possess relatively fewer than

heterosexual men, they would earn less.

The second hypothesis, which we label "household division of labor," posits that differences in

the levels of specialization in household work versus market work by gender between two-sex (TSP) and

same-sex (SSP) partnerships account for the gender differences in the gay pay gap. If heterosexual

women (men) receive more (less) financial support from their partners and if they therefore actually

perform, or anticipate performing, more (less) household work than their male (female) partners, they

may have lower (more) unobserved labor force attachment or investments and lower (greater) earnings

than their homosexual counterparts.   Because specialization by gender in labor market work and in

household work cannot occur within SSPs, the earnings (and unobserved labor force attachment/

investment) of gay men, who on average contribute less market work, and presumably provide more

household work, for their households than heterosexual men, would be lower.   Similarly, the earnings

(and unobserved labor force attachment/investment) of lesbians, who on average contribute more labor

market work, and presumably provide less household work than heterosexual women, would be higher.

"Household division of labor," then, is a second hypothesis consistent with the observed gender

differences in the gay pay gap.

The third hypothesis, which we label "greater bias against gay men," postulates that there is

greater discrimination against homosexual men than lesbians.   Even if there were no difference in bias

against homosexuals by gender, more discrimination against men could occur if homosexual men are

more likely to disclose their sexual orientation at their workplaces.   Obviously, greater discrimination

could also occur if there were greater biases against gay men than against lesbians.[1]

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[1]   Other reasons for the gender difference in the gay pay gap have been mentioned, but given less emphasis in the literature because they are unlikely to explain as much of the gender differential.   Tebaldi and Elmslie (2006) argue that the significantly higher incidence of HIV/AIDS among gay men decreases their wages. On the demand side, the disease provides an incentive for employers who provide health insurance to avoid hiring gay men and on the supply side the disease reduces the capacity of gay men to work. The gay male pay gap in most of these time periods is too large to be explained by the relatively low incidence of HIV/AIDS among the employed, even among gay men.

These gender differentials in the gay pay gap are also intriguing because they have implications for the gender pay gap in general. The gender pay gap has been well documented, as have the observable characteristics that that are associated with the gap, such as occupation, children, and marital status. The gender pay gap is the gap that remains after controlling for observed experience, effort, educational, and occupational differences between the genders.   This gender gap in wages has been attributed to discrimination based on gender and also to unmeasured or unobservable gender differences in worker productivity, such as differences in unmeasured characteristics or in expectations or labor force attachment, which may arise from gender role differences within marriage and family.

Other than for entry workers, no research has been able to completely "explain" the gender pay gap using gender differences in observable worker characteristics.   Over the last thirty years, improvements in data and in measures of experience, labor force attachment, and other characteristics (as opposed to true improvements in the characteristics themselves) have done little to decrease the unexplained proportion of the gender pay gap (see, for example, Stanley and Jarrell 2004).   The most persuasive empirical support for the hypothesis that unmeasured characteristics, and not discrimination, account for the unexplained gender pay gap among all women may well be the gender differential in the gay pay gap.

In this paper, we use data from the 5% Public Use Microdata Sample (IPUMS) data of the 1990 and the 2000 U.S. Censuses and the 2001-2007 American Community Survey (ACS) to test the three most frequently mentioned explanations of the gender differential in the gay pay gap. Consistent with prior research, we find that SSP white men earn 7 to 16% less than their heterosexual counterparts with equivalent observed human capital in equivalent labor markets. Among women, we find no significant differences by sexual orientation in 1990, but a gay advantage of almost 4% in 2000 and in 2001-2007. After making changes to the standard model used in other research (adding variables that we propose as proxies for the contributions of unmeasured gender-linked characteristics and of the household division of labor to an analysis of the determinants of hourly wage rates), we find that the male gay pay gap decreases by about a third in 1990 and by about half in 2000 and disappears in 2001-2007.   These

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same approaches applied to an analysis of the gay pay gap among women create fewer differences with our initial finding of wage parity or advantage for lesbians. If we do not control for selection into full time full year employment, the addition of the proxy for gender-linked characteristics shows wage parity for lesbians and heterosexual women in 2000 and in 2001-2007.   When we control for selection, however, lesbians have a wage advantage in each of these three periods that is reduced by about three percentage points when the proxy for gender-linked characteristics is included.   While the addition of household division of labor proxies do not alter the overall finding of a lesbian wage advantage, they make clear that the advantage arises from higher wages for the less market specialized partner in lesbian partnerships.

We find that the proxies for gender-linked characteristics and marriage and family roles move the gay pay gap by gender in the expected directions. To the extent that these proxies account for the wage effects of the differences between SSPs and TSPs in actual or perceived gender-linked unmeasured characteristics and household specialization, the findings suggest that these two primary explanations for the gender differential in the gay pay gap explain a sizeable proportion of the gender difference.[2] For men, two to four percentage points of their wage disadvantage is due to unmeasured gender differences in characteristics, while for women, two to three percentage points of their wage advantage is due to the same measure. For men, two percentage points are due to differences in household roles for SSP and TSPs; among women, however, there are no effects on the gay pay gap of differences in household roles.   The biggest change in the gap pay gap by gender arises, however, from the tremendous decline between 1990 and 2001-2007 in the gay penalty for men in the presence of no clear time pattern for women.   We interpret this decline, which is connected to other indicators of

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[2]   Of course, the proxies may "over" control as well as "under" control for underlying productivity differentials that result from unmeasured gender-linked characteristics and household specialization differentials. For example, if workers are sorted into female occupations based on gender-linked characteristics, but the salary effects of these occupational outcomes also reflect overcrowding (or discrimination in selection into the occupations) then the adjustments to earnings associated with occupation include the effects of gender discrimination in occupational sorting as well as the effects of gender differences in characteristics.

decreasing discrimination against gay men, as evidence that gay men faced greater discrimination than gay women, the third explanation for the gender differences in the gay pay gap.

The next section summarizes the most relevant research on the gay pay gap. The third section reviews the data, the models, and the results.   The fourth section discusses the results.

Gender and the Gay Pay Gap

Gender differences in the gay pay gap

Studies that use living arrangements to identify homosexuals[3] generally find that lesbians earn more than, or the same as, heterosexual women and gay men earn less than heterosexual men.   In the United States, these studies have mostly used the data on partnered individuals from the 1990 and 2000 IPUMS.

Using the 1990 IPUMS, Allegretto and Arthur (2001) find a 15.6% pay gap for gay men relative to married men and a gap of 2.4% relative to unmarried partnered heterosexual men.[4]   Clain and Leppel (2001) use the same data and find a comparable gay pay gap of 16% relative to partnered heterosexual men and a significantly positive wage premium (percentage not reported) for lesbians.   Using the same

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[3]   Studies that use other measures to identify heterosexual and homosexual individuals are based on much smaller data sets. They sometimes yield different estimates of the gay pay gap, particularly the penalty for gay men. Carpenter (2005) finds no statistically significant differences in the earnings of homosexuals and heterosexuals with similar characteristics when he uses self-reported sexual orientation to identify homosexuals in the U.S. in 2001. When he compares estimates of the gay pay gap using reports of lifetime sexual behavior, as opposed to recent sexual behavior, to identify U.S. homosexuals from 1988-1994, however, Carpenter (2007) finds that the income penalty for behaviorally gay men is significantly greater, ranging from 23 to 30%. Using lifetime sexual behavior, Badgett (1995) finds a statistically significant 11 to 27% wage penalty for gay men and a non-significant wage penalty for lesbians in the U.S. between 1989 and 1991.   Berg and Lien (2002) use recent sexual behavior and find a significant lesbian premium among women of 30% and a significant gay penalty of 22% among men in the U.S. between 1991 and 1996.   Blandford (2003) combines recent sexual behavior with marital status and finds a significant premium of 17 to 23% for lesbians and a significant penalty of 30 to 32% for gay men in the U.S. from 1989 through 1996. Ahmed and Hammarstedt (2008) in their comparison of Swedish married heterosexuals and homosexual couples in civil unions find that gay men earn significantly less than married men but find little difference between married women and lesbians.

[4]   While some studies control for the marital status of heterosexual couples when assessing the role of homosexuality in outcomes, the marriage effects appear to be largely the result of selection of the higher performing heterosexuals into marriage, rather than representing the direct effects of marriage on earnings.   To avoid results tainted by this selection bias, partnered homosexuals should be compared to all partnered heterosexuals, regardless of marital status.

data, Klawitter and Flatt (1999) find a gay pay gap of 26% for men who reside in jurisdictions with no antidiscrimination policies and a statistically insignificant wage premium for lesbians (employed full year full-time) in the same areas.

Studies using the 2000 IPUMS generally find fewer differences between homosexual and heterosexual partners. Gates and Steinberger (2009) show that this difference is probably due to the 2000 Census miscoding of TSP couples as SSP.[5] Jepsen (2007) analyzes partnered women aged 18 to 65 and finds an annual earnings premium of 10.7% for lesbians relative to married women, and a slightly larger advantage relative to cohabiting women. Antecol et al. (2008) restrict their analyses of the 2000 IPUMS to 25 to 59 year old partnered wage and salary workers of both sexes. They find an hourly wage gap of 11.9% for gay men relative to married men, but a wage advantage of 4% relative to cohabiting men. They find a wage premium of 0.8% for lesbians relative to married women and of 4% relative to cohabiting women with the same controls.

Elmslie and Tebaldi (2007) use the data on living arrangements in the Current Population Survey for 2004 to analyze gender differentials in the gay pay gap.[6] They analyze the gay pay gap in annual earnings, hourly wages, and hourly compensation (which includes a value for employee benefits) for partnered persons who are over age 25 and full-time workers. They find that gay men earn 24% less than married men and 9% less than cohabiting men but they find no wage differences for lesbians.

Studies of other countries show similar patterns of a pay gap for gay men and a pay advantage, or no gap, for lesbians. Arabsheibani et al. (2005), using a British data set that identifies homosexual and heterosexuals living in couples from 1996 to 2001, find that gay men in the United Kingdom earn 5.2% less than their TSP counterparts and lesbians earn 8% more. Ahmed and Hammarstedt (2010) and

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[5]   In the 1990 IPUMS, when a person identified as a spouse was the same sex as the household head, the record was flagged and either the sex (in most cases) or the relationship variable was changed based on other data on the form; in the 2000 IPUMS, in all such cases the relationship was reclassified as an unmarried partnership. Gates and Steinberger (2009) use the 1990 and 2000 IPUMS and the U.S. American Community Survey data to show that the 2000 approach was likely to have incorrectly classified different-sex couples as same-sex. In fact, when we repeat the analyses for this paper with the 2000 IPUMS, we find different, and less consistent, results.

[6]   These data use the same problematic assignment of couples reporting same sex spouses as were used by the 2000 IPUMS.

Ahmed et al (2011) find that gay men in civil unions earn between 10 and 20% less than married men in Sweden and lesbians in civil unions earn between the same and 16% more than married women. Laurent and Mihoubi (2012) find that gay men in France earn 5.5 to 6.5% less than their heterosexual counterparts, but they find no differences for lesbians.

Causes of gender differentials in gay pay gap

Speculation on the causes of the gender disparity in the gay pay gap has focused on the unmeasured effects of gender on pay and potential gender differentials in gay bias.   In particular, the unmeasured traits of workers and the ways that household structures affect labor market decisions by gender may be different for heterosexuals and homosexuals.   It is also possible that gay men face different forms of bias than lesbians do.

On the one hand, gay women and heterosexual women (or gay men and heterosexual men) may differ in unobserved characteristics that the labor market values. Clain and Leppel (2001) speculate that there is discrimination in favor of the "personality characteristics of the stereotypical heterosexual male, rather than discrimination against gays and heterosexual females" (p.43).   Ahmed and Hammarstedt (2008) argue that employers believe that lesbians are more independent, assertive, competitive and self-confident.   Blashill and Powlishtra (2009) confirm stereotypical attributions of masculine and feminine traits to gay men and lesbians.   Clain and Leppel suspect that unobserved characteristics more associated with men are valued more by the labor market. Blau et al (2010) cite unmeasured characteristics such as career orientation as a possible unmeasured characteristic that accounts for higher earnings of lesbians. None of these studies provides any empirical evidence, however, that unobserved, gender-linked traits contribute to the gender differences in the gay pay gap.

On the other hand, both the current and future expected households, and the gender divisions of labor within those households, differentiate TSPs from SSPs and may affect labor market decisions differently by gender and sexual orientation.   Blau et al (2010) and Montag (2012) cite the lower likelihood of SSPs pursing a traditional division of labor in the household as a reason for the gender

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differential in the gay pay gap. Black et al. (2003) and Klawitter and Flatt (1998) explain that many gay

men, who have no expectations that they will form traditional households but rather households with

two "male-sized incomes, invest less in their careers, including being less willing to accept objectionable

working conditions for higher compensation."   In contrast, if lesbians expect that they will not have

families or partners with male-sized earnings, they have greater incentives than heterosexual women to

make labor market investments and decisions that result in greater compensation over their careers.

These expectations would lead heterosexual women to invest less than lesbians, and heterosexual men

to invest more than gay men, in labor market options that increase wages, such as unmeasured skills or

"undesirable" but higher-paying jobs.

While differences between TSPs and SSPs by gender in the actual or the perceived unmeasured

gender-linked characteristics and in household roles could account for lower wages for men in SSPs, and

higher wages for women in SSPs relative to their TSP counterparts, there has been no empirical attempt

to test these hypotheses.   Obviously, there are no data on unmeasured characteristics.   There are also

data issues in measuring household specialization. While there have been studies of the division of

labor in SSP and TSP households, the data sets contain too few SSPs, and too little data on wages and

human capital characteristics of partners, to measure effects on the gay pay gap.

Although we do not measure "unmeasured characteristics," we propose a measure of their

gender typicality.   We propose that a worker's occupation and, more specifically, the gender

composition of his or her occupation, proxies for the gender "typicality" of his or her unmeasured

characteristics.   To measure household specialization, we use information on hours in the labor market

relative to partners' hours.   The bases for using these indicators of unmeasured gender-linked

characteristics and of household roles are discussed below.

Finally, we have no direct measure of gay bias by gender in the data analyzed here. We do have

information, however, from other sources on changing opinions about gay issues over time. We can

also measure the gay differential in wages by gender over time with our data. We use this information

to assess the potential role of differential gay bias by gender.

Unmeasured gender-linked characteristics. If labor markets were to reward the unmeasured characteristics more typical of men more than those more typical of women, if lesbians were either actually or expected to be more likely than heterosexual women to have the unmeasured masculine characteristics, and if gay men were actually or expected to be less likely than heterosexual men to have them, then lesbians would earn more than heterosexual women and gay men would earn less than heterosexual men. Labor markets may value the unmeasured characteristics more typical of men, which may be either of biological or social origin, because they make workers more productive. For example, greater physical strength, belligerence, decisiveness or risk-taking behavior may be more productive, at least in some jobs. Alternatively, the reward for masculine characteristics may arise from discriminatory preferences. In this case, there would be no productivity advantages in possessing masculine characteristics, but employers, co-workers, or customers would simply prefer to work with strong, aggressive risk takers, or workers possessing an array of other unmeasured masculine characteristics.

There are two research literatures that support a proxy variable for measuring gender differences in unmeasured gender-linked characteristics, or at least measuring their role in the gay pay gap. First, research on gender differences in personality characteristics and on the effects of personality characteristics on earnings provides evidence of unmeasured characteristics that vary by gender and could also vary by the combinations of gender and sexual orientation. Second, research on differences in occupations by gender and by personality characteristics and on the earnings differences between female and male occupations suggest that occupational data may proxy personality (or other unmeasured) characteristics that vary with both gender and sexual orientation.

Personality, a noncognitive characteristic not typically included in wage regressions but which is the subject of many recent studies, is a significant predictor of career success (Groves 2005; Nyhus and Pons 2005). Personality differs by gender, and may, therefore, partly explain the residual gender gap when incorporated into wage regressions. Mueller and Plug (2006) find that 3-4% of the gender wage gap can be explained by differences in personality profiles. Studies using the Big Five personality

inventory[7] generally show that agreeableness and neuroticism (which are more common among women) are negatively correlated with earnings[8] (Heineck 2007; Judge et al. 1999; Mueller and Plug 2006; Heinrick and Anger 2009). Heckman et. al. (2006) have shown that noncognitive abilities (personality) strongly influence wages, employment and choice of occupation.

Research on personality and earnings provides evidence that the labor market favors stereotypically masculine characteristics. An antagonistic (low agreeableness) personality has a significant positive association with earnings for men as does emotional stability (low neuroticism), although low agreeableness has the opposite influence, and low emotional stability is not a significant influence, for women (Mueller and Plug 2006). Nyhus and Pons (2005) and Semykina and Linz (2007) find women are more likely to have less rewarding personality traits. Men, however, receive greater earnings premiums (penalties) for personality traits that are more (less) common for males (Mueller and Plug 2006).

Psychological research finds that gay men differ from heterosexual men and lesbians differ from heterosexual women in their interests and in some aspects of personality. Psychological research supports the "gender inversion hypothesis" that gay men's traits are closer to those of heterosexual women and lesbian's traits are closer to those of heterosexual men (Lippa 2000, 2002, 2005, Pillard 1991). There is also evidence that these characteristics are stereotypically ascribed to gays (Tilcsik 2011, Madon 1997, Ward 2008). Regardless of whether unmeasured gender-linked traits are "truly" different

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[7]   The Big Five include agreeableness, extraversion, conscientiousness, neuroticism and openness to experience. Generally, men score lower on agreeableness and neuroticism, conscientiousness shows no significant gender differences, and there are gender differences in the component scores for extraversion and openness to experience (Costa, Terraciano and McCrae 2001). For example, men score higher on openness to ideas, assertiveness, and excitement-seeking while women score higher on openness to feelings, warmth and gregariousness.

[8]   Findings for the other three personality types are mixed and show either insignificant (Heineck 2007) or positive (Judge et al. 1999) correlations with earnings and all three traits are positively associated with job performance (Barrick, Mount and Judge 2001).

for SSPs and TSPs by gender, or whether there is only a perception by others that this is the case, such differences could affect wages, and the occupations in which individuals are employed.[9]

If the intensity with which workers possess unmeasured characteristics that are associated with gender affects their occupational outcomes (Heckman 2006), either due to their own choice of occupation or due to different occupational opportunities, then gender composition of an occupation is a proxy for the intensity of otherwise unmeasured characteristics that are associated with gender. Satterwhite et al. (2009) find that workers within an occupation share common personality traits. Lippa (2008) finds associations between masculinity-femininity characteristics and gender composition of occupations. Jackson (2006) finds that persons in higher technical and managerial occupations are more likely to be passive (as opposed to aggressive) and outgoing relative to persons in other occupations. Agreeableness is more common among workers in social occupations and less common in investigative occupations (Barrick, Mount and Gupta 2003; Judge et al. 1999). Rosenbloom et al (2008) find that workers employed in information technology occupations are more "realistic" and less "enterprising" than others and that gender differentials in these personality characteristics fully explain female underrepresentation in the occupation. Similarly, Filer (1983; 1986) finds that personality is a significant predictor of occupation and that gender differences in personality and personal preferences could partly explain the gender sorting in occupations. The gender composition of occupations reflects, in part, the "gender typicality" of the personalities of workers: men and women employed in female occupations are expected to share more female personality traits and the men and women employed in male occupations are expected to share more male personality traits.

Even if the gender composition of an occupation were a reliable proxy for unmeasured gender-linked characteristics of persons employed in one occupation relative to those in another, the wage effect (that is the coefficient in a wage regression equation) of gender composition of occupations depend on both labor market demand (which may be based on productivity or on discrimination) and

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[9] Regardless of whether we specifically state that the differences in unmeasured characteristics can be either actual or perceived in the following discussion, we mean that to be the case.

supply (which is affected both by workers' preferences and constraints).[10]   To the extent that the wage

effects of increasing female representation are caused by forces other than productivity and workers'

preferences (that is, by discrimination against those with more of the gender-linked characteristics), the

gay pay gap would be "over" adjusted when the effects of unmeasured gender-linked characteristics are

measured by the effects of female representation in an occupation on earnings.

Household gender roles. Becker's (1985) theory of marriage proposes that spouses allocate

their workloads so as to take advantage of the complementarities that arise from gender differences.   If

women have a comparative advantage in household work because time spent in housework is more

compatible with childbearing or because their employment prospects are inferior to their spouse's

prospects, women will be more likely than their male partners to specialize in housework.   Because they

do not bear children, men would have a comparative advantage in market production and this

comparative advantage is re-enforced when the labor market also offers them higher wages.

Therefore, TSPs may specialize in household and market tasks based on gender.

Numerous researchers have confirmed differences in specialization by gender within TSPs and

they have also found that specialization is correlated with earnings.   Co-residence with an opposite sex

partner is associated with an increase in the time that women spend on housework but has the opposite

association for men (Gupta 1999).   Married women are more likely than unmarried women to work

part-time (Hirsch 2005).   Greater domestic responsibilities are negatively correlated with the earnings

of women (Swaffield 2007), and time spent on housework chores that are traditionally wives' duties are

negatively correlated with earnings (Hersch and Stratton 2002).   The negative correlation between

wives' labor supply and husbands' earnings (Chun and Lee 2001) and the positive correlation between

wives' time spent on domestic work and husbands' earnings (Bardasi and Taylor 2008) show the

association between household specialization and earnings.   Husbands who are more productive

devote more of their energy to paid work and their wives perform more domestic duties.

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[10]   Many have argued that "female" occupations are underpaid due to overcrowding of women in those occupations as a result of barriers to entry to "male" occupations.   See, for example, Sorensen (1990) and Anker (1997).

Because they have historically been unable to marry in any state, and now are only able to do so in a few states, SSPs have not been able to form contracts to protect the financial future of partners who specialize in household work.   In addition, the substantially lower probabilities of having children to support likely change specialization within the partnership.

Consistent with Becker's theory of specialization within marriage, there are significantly greater differences in total working hours between partners in TSPs than in SSPs (Jepsen and Jepsen 2006; Black et al 2007). SSPs more evenly share household labor than TSPs (Solomon, Rothblum and Balsam 2005). These greater differences in the household division of labor among TSPs are associated with greater gender differences in earnings.   Higgins (2003) concludes that these differences make the gender pay gap smaller among homosexuals.

Differences in earnings and/or in work hours between partners have been used to measure the extent of labor market specialization within TSPs and SSPs (Jepsen and Jepsen 2006; Lundberg and Rose 1998).   The proportion of work hours contributed to the partnership, as a measure of the extent of labor market specialization within the household, may be the result, rather than the cause, of earnings differences. A couple may quite rationally decide to have the partner who is offered the higher wage specialize in the labor market while the lower earner specializes more in household tasks. To the extent that the wage effects of labor market specialization are the effect of the wage offer, and not the cause, the gay pay gap is "over" adjusted when the effects of household specialization, as measured by the contribution of the worker to the household's labor market hours, are controlled.

Greater bias against gay men.   If the biases against homosexuality were gender based so that gay men were disfavored but there were weaker, or no, biases against lesbians or if the homosexuality of men were more visible than that of women to agents in the labor market, then gay men would earn less than heterosexual men and lesbians might have earnings more equivalent to their heterosexual counterparts.   Badgett (1996) argues that gay men are significantly more likely than lesbians to disclose their sexual orientation at their workplaces. Because a substantial proportion of workers are reluctant to work with or to employ homosexuals (Badgett 2006; Klawitter and Flatt 1998), discriminators' greater awareness of male homosexuals may produce greater differentials for men.

There is also some evidence of greater bias against male homosexuals. Elmslie and Tebaldi (2007) cite survey evidence that heterosexual men report stronger biases toward gays than toward lesbians. Herek (2002) reports on a 1999 survey showing that respondents reacted more negatively to gay men than to lesbians. For example, the survey showed that respondents were more likely to believe that gay men were mentally ill and were less likely to support adoption rights for gay men.

As with the other alternatives, differences in biases against gay men and lesbians differences might account for a larger gay pay gap for men.   They cannot, by themselves, however, explain wage premiums for lesbians.

The extent or intensity of bias against homosexuals, and against gay men in particular, appears to have changed dramatically between 1990 and 2007. Garretson (2009) tracks responses to the question about whether same-sex sexual relations were wrong as posed in the General Social Survey (GSS) from 1973 through 2009. Until the early 1990s, there was little change in the small (under 15%) proportion of respondents who said such relations were "not wrong at all."   From the early 1990s on, however, there was strong and steady growth in the respondents who so responded, with nearly 40% of all respondents, and the majority of those under age 30, agreeing by 2009. Garretson also analyzed the time trend for approval of various gay rights issues as measured by 17 surveys that had the same organization asking the same question over time and found similar results as with the GSS question.

If stronger biases against gay men than against lesbians were to account for all or some of the gender differential in the gay pay gap, then the decline in bias should have stronger effects on the male gay pay gap than the female gap.

Data, Methods and Results

Data

We use IPUMS data on partnered whites from the 1990 and 2000 censuses and the 2001-2007 ACS. Because African American heterosexual partnerships have a weaker division of labor with respect to labor market efforts,[11] because race potentially interacts with gay disparities in the labor market, and because there are very small numbers of African American gays in our sample, we restrict our analysis for this paper to whites.   We identify SSPs as the partners in household in which the household head and the unmarried partner are the same gender.[12] The PUMS defines an unmarried partner as a "person who is not related to the householder, who shares living quarters, and who has a close personal relationship with the householder."[13]

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[11]　For example, Cohen (1999) finds that never married black women have *lower* hourly wages than their married counterparts, while (as expected with a gender division of labor in the household) white never married women have higher wages than white married women.

[12]　For 1990 and 2000, and in most states in 2001-2007, same-sex partners could not legally marry. When couples are recorded as same-sex spouses (i.e., married), the U.S. Census Bureau recoded either their gender or their marital status. Differences in this recoding procedure have resulted in differences in the measurement of same-sex partner households between the 1990 Census and the measurement in the 2000 Census and the 2001-2007 ACS. In the 1990 census, when the spouse was the same sex as the household head, the record was flagged and either the sex or the relationship variable was changed based on other data on the form. In the 2000 census and the ACS, these cases were all recoded as same-sex unmarried partners leading to the inclusion of misclassified heterosexual married couples in the SSUP population in the cases where the incorrect sex of spouses are recorded. In order to avoid incorrectly identifying same-sex partners, couples for whom at least one partner had their marital status or gender allocated by the Census Bureau were dropped from this study. Black et al. (2007), Gates and Steinberger (2009), and Montag (2012) discuss these measurement issues in more detail.

[13]　Carpenter (2004) finds that people identified as same sex cohabiting couples are indeed behaviorally homosexual indicating that living arrangements provide an accurate measure of sexual orientation.

We select all persons aged 25 to 64 who are married or in an unmarried partnership.[14] We include only partnered persons in the analysis because we have no way of identifying whether persons who are not in partnerships are homosexuals or heterosexuals. Workers who are not in partnerships in the IPUMS data, therefore, include both heterosexuals and homosexuals. We do not distinguish married heterosexuals from cohabiting partners in our analyses. For the data on all years and states included in these analyses, marriage is not coded, and in most cases not legally possible, for gay partnerships. For heterosexual partnerships, there is evidence of extensive selection of the more economically successful into marriage (Ginther and Zavodny 2001; Ono 2003; Xie et. al 2003). It is not possible, therefore, to measure the effect of homosexual orientation on earnings by comparing to married partnerships only or cohabiting partnerships only. The sorting of heterosexual partnerships into marriage or cohabitation is not relevant to measuring the wage effects of being in a homosexual partnership. For this reason, we ignore the endogenous selection of heterosexual partnerships into marriage.

Because we are interested in the gay pay differences resulting from potentially differential treatment in the labor market, we are interested in rates of pay more than annual earnings that are more strongly affected by labor supply and work hour decisions. For this reason, we convert earnings to hourly wage rates. In order to assure the accuracy of the hourly wage, we restrict the earnings analyses to persons who are full year full-time workers. We exclude self-employed workers and unpaid family workers because their hourly wages cannot be accurately computed. We also exclude people with education less than eight years and workers earning less than $5 an hour.

We identify the earner with the higher (and lower) annual work hours within each partnership as the partner who is more (less) likely to have specialized in labor market activities. Of course, full year full-time workers are more likely to be the higher annual hours workers in a partnership, leading to

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[14] Tebaldi and Elmslie (2006) suggest that same sex roommates may be erroneously classified as same sex unmarried partners. As this would be mainly be a problem for the college age population, we use their solution of excluding respondents younger than 25.

more than half of full year full time employed SSPs and TSPs being the higher hours worker in their partnerships. Lower hours partners are more likely to be part-time or part year workers or persons not in the labor force, workers who are not included in our earnings analyses.

Tables 1a and 1b provide summary statistical data on the labor force characteristics of partnered workers employed full-time full year by gender, sexual orientation, and whether the partner is employed for more or fewer annual hours than his or her partner.[15] Across all the categories and years in these tables, SSPs are younger (as indicated by potential years of experience)[16] and better educated than TSPs who are full year full-time workers.

Table 1a presents the descriptive data for white men. SSPs have lower hourly wages on average than TSPs, and they also average fewer total annual work hours. Gay white men are better educated than TSPs. The two most striking differences across these groups of partnered white men, however, involve occupations and their earnings relative to their partners. Gay men are employed in occupations with about 1.7 times greater representations of women (47-50% female for SSPs vs. 27-29% for TSPs). The differences in the likelihoods of being the higher or the lower hours worker in the partnership are almost as large. About 73% of gay white men who are employed full-time full year are the higher hours workers in their partnerships (that is, relatively more specialized in labor market activities than their partners), while over 90% of TSPs are the higher hours employees in their partnerships. As expected, SSPs are far less likely to have dependent children.

Table 1b presents similar data for white women. Among white women, SSPs have higher hourly earnings, work more annual labor market hours, and have higher educational attainment. In contrast to white male SSPs, however, white female SSPs provide a somewhat greater proportion (relative to TSPs) of their partnership's total employment hours: 56-57% versus 54-55%. Similar to white men, the striking differences across TSP and SSP white women are the differences in their occupations and their

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15   When each partner contributes 0.5 of the couple's total annual work hours, we consider both partners as "higher hours" workers.

16   Potential experience equals age minus 6 minus total years of education.

likelihoods of being the higher or the lower hours worker in the partnership. Lesbians are employed in occupations with more men, on average 1.2 times more (53-54% vs. 65-66%). Lesbian women employed full year full-time are also more likely to be the higher earner in their partnerships. While 74-76% of white female SSP full-time full year workers are the higher hours workers in their partnerships, only 59-62% of TSPs are the higher hours workers in theirs. SSPs have fewer dependent children, but the differences with TSPs are less than among men.

There are large differences in occupation and in household roles both by gender and by sexual orientation. Most importantly, the gender differences both in occupation and in household roles are in the opposite directions for TSPs and SSPs.

Methods and Results

We start by measuring the gay pay gap by gender, using the standard human capital approach common in prior studies, a regression of log-earnings on whether the worker is in a same sex partnership, controlling for education, potential experience, geography, and total annual hours worked. We control for geographic differences in the cost of living by controlling for the size of metropolitan area and the state of residence.   Because children may affect work attachment, either positively or negatively, we also control for presence of children.

The first column of Table 2 shows the expected result that gay men earn less than heterosexual men. SSP white men who are employed full-time full year earn approximately 15.7% less in hourly wages than TSPs in 1990, 9.2% less in 2000 and about 6.6% less in 2001-2007 after controlling for the effects of education, annual work hours, potential experience, geography, and number of children.   The second column shows the expected result for women: SSPs earn the same as TSPs in 1990 and slightly less than four percent more in 2000 and 2001-7, consistent with prior studies.

The hourly wage is observed, and men and women are included in these analyses, only if they are employed full year full time. Because individuals choose to be full time full year workers conditional on their wages and the unobserved characteristics that determine their wages, the coefficients of OLS

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hourly wage estimations are biased.[17]   We use a Heckman two stage correction to address this issue, using the proportion of persons employed in the local labor market and the partnerships annual unearned income as independent variables directly affecting selection into full time full year employment but assumed to not directly affect the hourly wage rate.[18]   The first columns of Tables 3a and 3b show the SSP wage differential estimated using OLS (as in Table 2), in the top panel, and using the two stage Heckman selection correction, in the bottom panel. For men (Table 3a), the selection control decreases the coefficient of SSP in 1990 and 2000, but reduces the SSP disadvantage in 2001-2007. For women, the selection control increases the coefficient of SSP in all three time periods.   These effects are consistent with TSP women being more positively selected into full time full year employment than SSP women; SSP women are full time full year regardless of their wages.   TSP men are more negatively selected than SSP men; in 1990 and 2000 TSP men are more likely than SSP men to be full time full year regardless of their wages.

     Unmeasured gender-linked characteristics.   To assess the potential role of unmeasured gender-linked characteristics on gender differences in the gay pay gap, we analyze the effect of occupations on the gay pay gap.   We do this with two alternative specifications of the earnings regression: (1) adding a series of dummy variables for each 3-digit census occupation; and (2) adding a single variable measuring the female proportion of the workers in the 3-digit census occupational code. The hourly wage regression that includes 3-digit census occupational codes, then, measures the gay pay gap after controlling for the net effects of all aspects of these occupations that affect pay, including unmeasured skills, (such as cognitive or personality characteristics and educational specialization), amenities or compensating differentials, and the gender composition of the occupation.   When we control for 3-digit census occupation, the resulting gay pay gap is controlling for differences in hourly

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[17]   Leppel 2009 shows that lesbians are more likely to be employed than TSP women and that SSP men are less likely to be employed than TSP men.   Similarly, Tebaldi and Elmslie (2006) show that SSP women supply more labor than TSP women, and the opposite is the case for men.

[18]   Elmslie and Tebaldi (2007) also use a Heckman selection equation to examine wage differentials by sexual orientation, using household unearned income as the identifying variable in the first stage.

wages within occupations that arise from all sources.   So, adding a control for the 3-digit occupation to

a regression is expected to decrease the coefficients on measured skills (e.g., education) because part of

the return to skills is in occupational placement and on the selection effect (e.g., inverse of the Mill's

ratio) because persons drawn to jobs with compensating differentials (that is, offering higher amenities

and lower pay) are more likely to have weaker labor force attachment.   In contrast, the hourly wage

regression that includes the gender composition of an occupation controls for only one aspect of

occupation, i.e., its gender composition.   If the gender composition of an occupation were to proxy the

intensity of unmeasured gender-linked characteristics possessed by a worker more than it proxies other

skills both measured and unmeasured, then the regression coefficients on measured skills, such as

education, and on selection would be close to the coefficients when occupational gender composition is

not controlled, and greater than the coefficients in regressions where occupation is fully controlled.

The gay pay gap estimated by a regression controlling for gender composition of the occupation would

then be likely to be based on a comparison of SSPs and TSPs with more similar endowments of

unmeasured gender-linked characteristics.

The gay pay gaps by gender, after controlling for occupational differences using a series of 3-

digit occupational dummies and then using the female share of the occupation, are reported in the

second and third columns of Tables 3a and 3b. (The top panel shows the OLS results and the bottom

panel shows the Heckman selection corrected results.)   The second column shows the gay pay gap

controlling directly for occupation by adding a series of dummy variables (fixed effects) representing the

3-digit census occupational code of workers.   The third column shows the gap when we control for

occupation with a single variable, the proportion female in the occupation.

Occupation accounts for between two and four percentage points of the white male SSP

disadvantage. In the top and bottom (selection controlled) panels of Table 3a for all three time periods,

the coefficients in either columns 2 or 3 increase (decrease in absolute value) by two to four percentage

points relative to those in column 1. For the most part, the increase in the coefficient (decrease in the

SSP disadvantage) is greater when only occupational gender composition is controlled (column 3) as

opposed to when the occupation is completely controlled (column 2). If the greater share of SSPs

working in these occupations reflects differences in unmeasured gender-linked characteristics, that is,

these gay men have a lower intensity of unmeasured typically more masculine characteristics and/or a

higher intensity of unmeasured typically more feminine characteristics than otherwise comparable men

in TSPs, then the gay pay gap controlling for the gender composition of occupations adjusts for the wage

effects of the labor market's evaluation of unmeasured gender-linked characteristics. We note that,

consistent with this interpretation, the coefficients on skill (education) and labor force attachment

selectivity (the inverse of the Mill's ratio) are absolutely smaller for each time period and selection

approach for the column 2 regression than for column 1 (0.084 vs. 0.233 coefficients for education and

-0. 131 vs.-0.191 coefficients for the Mill's ratio, for example for 2001-2007) or column 3 (0.243 for

education and -0.184 for Mill's ratio). These results, and the complete regression results, are available

from the authors.

Among white women, controlling for 3-digit census occupation does not change the gay pay gap

as much (compare columns 1 and 2 of Table 3b). Lesbians are consistently in better paid occupations,

as demonstrated by the fact that the column 2 coefficients with occupations controlled yield less of a

wage advantage than column 1 where occupation is not considered. When the wage effects of female

representation in those occupations are controlled, however, the lesbian pay advantage decreases by

two to three percentage points (compare column 3 with column 1), effectively disappearing if we do not

control for selection (upper panel of Table 3b). We also note that, as for men above, the coefficients on

skill (education) and labor force attachment selectivity (the inverse of the Mill's ratio) are smaller for

column 2 than column 1 (0.043 vs. 0.185 for education and 0. 06 vs. 0.192 for the Mill's ratio) or column

3 (0.125 for education and 0.065 for Mill's ratio).

Household division of labor.   If men within heterosexual partnerships were to specialize in

labor market activities while women were to specialize in home production, if household specialization

were to differ within homosexual relationships, and if there were systematic disparities in earnings

arising from the productivity effects of household specialization, then estimations of the gay pay gap by

gender that ignore specialization will be biased.   For women, we may be comparing TSP women who

are less likely to be specialized in the labor market with SSP women who include earners more

specialized in the labor market and who have, therefore, invested more in labor market skills.   And for

men, we have the opposite situation. We compare TSP men who are more likely to be specialized in the

labor market with SSP men who include greater proportions of earners less specialized in the labor

market.   Such comparisons, in the absence of controls for the differences in labor force attachment,

would yield the widely established result—a positive gay pay gap for women and a negative gay pay gap

for men.

To estimate the gay pay gap for similarly situated individuals—that is, workers with the same

actual and expected degree of attachment to, and investment in, the labor market—we perform two

analyses. First, we add a control for the worker's share of the partnership's total annual labor market

hours to the wage regressions.   Second, we sort earners according to whether they work more or less

annual hours than their partners. We then re-estimate our earnings regressions for these two groups:

(1) only the higher hours partner; and (2) only the lower hours partner.[19]   The first analysis is reported

in the fourth column, of Tables 3a and 3b and the second set of results are reported in the four

subsequent columns of Tables 3a and 3b.

Adding controls for the proportion (and the square of the proportion) of the couple's total

annual labor market hours provided by the worker decreases the gay pay gap among white men roughly

another one to two percentage points (compare columns 3 and 4 of Table 3a).   Among white women,

these controls for labor market specialization within the household have no effect.   Although TSP white

women are less specialized in the labor market than comparable SSPs (see Table 1b), this specialization

has no effect on the pay advantage for lesbians.

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[19]   Although wages might seem to be appropriate indicators of labor market specialization within
partnerships, we do not use partnership, or partner's, wages to measure the effects of specialization on hourly
wages for one basic reason.   The relationship between own hourly wage rate and the proportion one contributes
of the partnership's total labor income is tautological. Partners earning higher hourly wages contribute more of
the partnerships' total labor market income, other characteristics being the same, simply because they have a
higher wage.

When we sort the partners into those relatively specialized in the labor market (the higher work hours member of the couple) and those less specialized (the lower work hours), the gay pay disadvantage among higher hours male TSP and SSP partners (columns 5 and 6 of Table 3a), or among lower hours TSP and SSP partners (columns 7 and 8 of Table 3a), are somewhat lower (especially in the lower, selection-controlled, panel) than the gaps estimated when these groups are combined (columns 1 and 4 of Table 3a.

Comparisons of higher hours female TSP and SSP partners (columns 5 and 6 of Table 3b) and of lower hours partners (columns 7 and 8) to the same regressions with no controls for the higher or lower hours partner (columns 1 and 4), show some wage effects for this division. Especially in the lower panel's selection-controlled results, the lesbian wage advantage disappears in 1990 and remains in 2000 and 2001-2007, but is due to the wage advantage of higher hours SSPs over TSPs.

Greater bias against gay men. As discussed above, a post-1990 decline in the gay pay gap for men, with no similarly timed change for women, is consistent with the hypothesis that there is greater labor market discrimination against gay men than against lesbians. Table 3a shows a strong downward trend in the gay pay gap among men across all of the results, regardless of the column or panel. Table 3b shows no comparable time trends in the gay pay gap, or advantage, among women.

Discussion

We assess empirically the role of three hypotheses frequently suggested to explain the gender differentials in the estimated gay pay gap: (1) unmeasured gender-linked characteristics; (2) gender differences in household roles; and (3) greater bias against gay men. We start with hourly pay differences by sexual orientation and gender for partnered persons with equivalent experience, education, location, and children that are comparable to those found in other studies. These analyses, shown in Table 2, show the familiar gender differential in the gay pay gap of a pay disadvantage for gay men and no difference (1990) or a pay advantage (2000 and 2001-2007) for lesbians.

One explanation is that the labor market is not discriminating by gender or by sexual orientation, but simply valuing unmeasured gender-linked characteristics that are more prevalent among heterosexual men than among heterosexual women or homosexual men. If persons in occupations of the same gender compositions are more likely to share unmeasured gender-linked characteristics than persons in occupations with different gender compositions, then female representation in a worker's occupation proxies his or her unmeasured gender-linked traits.

Men in SSPs are employed in occupations with more women than men in TSPs; the average female share of occupations employing SSP white men is 47 to 50%, but only 27-29% for TSP men (Table 1.a). The white gay male pay gap declines about four percentage points (comparing SSP coefficient in columns 1 and 3 of Table 3a). In contrast, lesbians are employed in occupations with fewer women relative to women in TSPs. The average female share in the occupations for white SSP women is 53-54%, but 65-66% for TSPs (Table 1.b). The lesbian pay advantage in 1990 of 5.6% (Table 3b, column 1, lower panel) declines to a 3.2% advantage, and the lesbian pay advantages of 8.2% in 2000 and of 5.1% in 2001-2007 declines to 5.1% and 2.2% advantages, when we control for female representation in occupations.

To the extent that female composition of occupation proxies the intensity of gender-linked unmeasured personality, cognitive, and physical traits, these characteristics account for about six percentage points, which is about a quarter of the gender difference in the gay pay gap for whites in 1990, a third in 2000, and almost three-quarters in 2001-2007. We calculate the effect of gender linked characteristics on the gender difference in the gay pay gap by dividing the difference in the SSP coefficients between men and women in the wage regressions including a measure of the gender composition of occupation (from lower panel of Tables 3a and 3b, column 3 for 1990: (-0.158) - (0.032) = -0.190) by the total difference in these SSP coefficients with no occupation controls (from column 1 for 1990: (-0.191) - (0.056) =-0.247) and subtracting from one. Similar computations for 2000 (the gender difference goes from 0.212 to 0.142) and for 2001-2007 (the gender difference goes from 0.146 to 0.071) produce a one-third and a one-half decrease in the gender difference in the gay pay gap.

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Of course, the gender composition of an occupation may be correlated with other aspects of work, in addition to unmeasured gender-linked personal characteristics, which affect pay. For the most part, the lower panel analyses (Heckman selection controlled) using the full 3-digit occupational information (column 2) have less of an effect than gender composition on the gay pay gap. So, the change in the gap is due to something about the occupation that is reflected in its female composition only. Female representation in occupations might be correlated, for example, with better working conditions in the occupation (Sorenson 1989, Gupta 1993). Because women in SSPs have partners who earn less than the partners of women in TSPs, lesbians may choose occupations with more men because these occupations compensate more with wages and less with working conditions. Similarly, gay men may be selecting occupations with more women because they prefer better working conditions and are less concerned with wages because they have partners who earn more than those of TSP men. If gender composition of occupations tells us about working conditions, then our controls for occupation are also a proxy for unmeasured gender differences in preferences for amenities versus wages, which might reasonably be included among unmeasured gender-linked traits.

The second explanation for the gender difference in the gay pay gap is that relative household specialization in labor or home roles occurs by gender within TSPs, but not within SSPs. Furthermore, SSPs have less specialization between partners than TSPs. As a result, TSP men are more labor market specialized than SSP men, while the opposite occurs by sexual orientation for women. To the extent that labor market specialization increases earnings—by encouraging, for example, higher rates of unobserved investments in skills for the partner specialized in the labor market—the gay pay gap is expected to differ by gender, being greater among men.

While we find evidence that gender differentials in the gay pay gap are affected by household specialization, the effects are smaller than for unmeasured gender-linked characteristics. Furthermore, they are due entirely to the effects for TSPs and SSPs among men; there are no effects of household specialization on the gay pay advantage for women. The differences in household specialization between SSPs and TSPs, according to Tables 1a and 1b are large. Within heterosexual couples, men

generally worker the greater number of hours in the partnership (91 to 93% of TSP men who are

employed full year full-time) and women are the partners working fewer hours (59 to 62% of TSP white

women who are employed full year full-time).   In contrast, among SSP men and SSP women who are

employed full year full-time, similar shares (around 73 to 76%) provide the larger share of hours in the

partnership.

Even though there are sizeable differences in household specialization by sexual orientation

within gender groups, these differences do not have as large an effect on gender differences in the gay

pay gap as the female representation in their occupations (unmeasured gender-linked characteristics).

For white men, the gay pay gap declines 2.1 to 2.5 percentage points, from a disadvantage of 15.8% to

13.5% in 1990, from a disadvantage of 9.1% to 7.0% in 2000 and from a disadvantage of 4.9% to 2.4% in

2002-7, when household specialization is controlled by adding a variable, the proportion of the

partnership's total annual labor market hours the worker contributes, to the analysis.   Among white

women, however, the pay gap does not change; columns 3 and 4 are equivalent for the Heckman-

controlled estimations in Table 3b.   Therefore, household specialization differences between white TSPs

and SSPs by gender decrease the gender differential in their gay pay gap an additional two percentage

points or about a sixth to a third.

The role of household specialization is also evident in the results for more labor market

specialized and less specialized partners. The gay pay gap among men is smaller when estimated

separately for labor market specialized partners and non-specialized partners (Compare column 1 to

columns 5 and 7 or column 4 to columns 6 and 8 of Table 3a).   This is not surprising because non-

specialized partners are expected to earn less and SSP men are more likely to be non-specialized than

TSP men.   The gap is also larger among specialized (higher hours partners) men than among non-

specialized (lower hours partners) men.

While household specialization effects on the gay pay gap were not evident for when we simply

control for specialization (column 4 of Table 3b), the separate estimations for specialized (columns 5 and

6) and non-specialized (columns 7 and 8) women show some effects of specialization on the size of the

gay pay gap (or advantage) relative to the analyses combining the specialized and the non-specialized (columns 1 and 4). The effects of household specialization on the relative wages of lesbians are opposite those for gay men. The lesbian advantage is smaller when estimated separately for labor market specialized partners and non-specialized partners (Compare column 1 to columns 5 and 7 or column 4 to columns 6 and 8 of Table 3a). This is not surprising because non-specialized partners are expected to earn less and SSP women are more likely to be labor market specialized than TSP women. Once we compare women in SSPs and TSPs who are the higher earners and control for occupation and market hour shares (column 6 of Table 3b), there is no gay advantage in 1990, but advantages of 4.8% and 5.8% in 2000 and 2002-2007. The gay pay advantage for lesbians is due to the higher wages of higher earners in the partnership.

The proxies that we use to measure gender-linked characteristics (female representation in occupation) and household roles (partner's proportion of couple's total work hours and whether a higher or lower hours worker in the couple) move the gay pay gap by gender in the expected direction, and account for about thirty to 40% of the gender disparity in the gay pay gap for 1990 and 2000 and 75% in 2001-2007.[20] These proxies, however, may understate or overstate the true role of these unmeasured characteristics. The proxies understate the role if there is truly more variation in unmeasured gender-linked characteristics than in gender composition of occupations and in household specialization than in partnership differences in relative contributions to total hours in the labor market. The proxies overstate the role if there is truly less variation in unmeasured gender-linked characteristics than in gender composition of occupations and in household specialization than in partnership differences in relative contributions to total hours in the labor market. They also overstate the role if

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[20] This is computed in the manner discussed above for gender composition of occupations. We calculate the effects of gender linked characteristics and of specialization on the gender difference in the gay pay gap by dividing the difference in the SSP coefficients between men and women in the wage regressions including a measure of the gender composition of occupation and household roles (from Tables 3a and 3b, column 4 for 1990: ((-0.135) - (0.031) = 0.166) by the total difference in these SSP coefficients with no occupation or household role controls (from column 1 for 1990: (-0.191) - (0.056) =-0.247) and subtracting from one. Similar computations for 2000 (the gender difference goes from 0.212 to 0.121) and for 2001-2007 (the gender difference goes from 0.142 to 0.033) produce a forty percent and a 75 percent decrease in the gender difference in the gay pay gap.

the wage effects of gender composition of occupations or of share of household labor market hours are based on discrimination or labor market impediments, rather than on productivity or preference effects. And they misstate the effects if gender composition of occupations is not linked to unmeasured gender linked characteristics and if hours worked do not proxy labor market specialization within a couple.

Finally, we note that the estimated wage effects of being gay for men and women converge over time, after controlling for selection, unmeasured gender-linked characteristics, and the household division of labor. The gender difference in the gay pay gap has declined primarily due to the decrease in the gay male disadvantage.

Conclusions

To the extent that a variable measuring the female composition of occupation accounts for the wage effects of the actual or perceived differences between SSPs and TSPs in gender-linked unmeasured characteristics, we find that a quarter to half of the gender differential in the gay pay gap arises from gender differences in unmeasured gender-linked characteristics. To the extent that a variable measuring the worker's share of the partnership's total annual hours of employment accounts for household specialization differences between SSPs and TSPs, we find that household role differences affect only men and account for a small proportion of the gender differences in the gay pay gap.

While we cannot directly measure the effects of greater bias against gay men than lesbians, the time patterns of substantial decreases in the gay pay gap for men between 1990 and 2001-2007, regardless of how the gap is measured, with very little if any time pattern for the differences for women, at a time when public opinion polls show broadening public acceptance of homosexuality is consistent with at least historical differences in bias against gays by gender.

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	All Partnerships		Higher Earners		Lower Earners	
	Table 1a					
	Characteristics of White Male Workers Employed Full-Time Full Year, Married or Cohabitating Partners					
	in Heterosexual and Homosexual Relationships, by Partnership Type and Partnership Earnings Statuses					
Variables	**Same-Sex**	**Two-Sex**	**Same-Sex**	**Two-Sex**	**Same-Sex**	**Two-Sex**
Own Annual Wage Income						
1990	$32,981	$36,094	$34,429	$36,611	$29,018	$29,628
2000	$52,259	$54,074	$54,620	$55,024	$45,785	$44,603
2001-7	$66,676	$64,207	$69,908	$65,609	$57,076	$50,468
% Couple's Total Annual Wages						
1990	56.4%	76.3%	60.2%	78.0%	45.9%	54.6%
2000	57.0%	73.2%	61.2%	75.2%	45.6%	52.8%
2001-7	58.7%	72.7%	63.4%	74.9%	44.9%	50.8%
% Couple's Total Paid Hours						
1990	55.5%	70.7%	59.3%	72.7%	45.3%	45.9%
2000	56.1%	68.1%	60.1%	70.3%	45.0%	45.7%
2001-7	57.8%	68.2%	62.0%	70.5%	45.1%	45.8%
Education						
1990	15.02	13.42	15.02	13.41	15.01	13.49
2000	14.98	13.89	15.01	13.96	14.96	13.89
2001-7	15.22	14.20	15.24	14.20	15.15	14.19
Potential Experience						
1990	15.45	21.98	15.78	22.05	14.53	21.18
2000	18.76	22.90	17.74	22.93	19.13	22.89
2001-7	21.06	23.99	21.32	23.98	20.27	24.09
% Female in Occupation						
1990	47.2%	26.7%	46.3%	26.5%	49.7%	28.9%
2000	48.1%	28.2%	51.4%	30.9%	46.8%	28.0%
2001-7	49.7%	29.3%	49.0%	29.1%	52.1%	32.1%
Partner 's Wage Income						
1990	27,349	12,014	24,515	11,051	35,104	24,064
2000	43,259	20,764	37,522	18,833	58,995	40,027
2001-7	43,829	21,428	37,851	19,296	61,583	42,319
Has Dependent Child (%)						
1990	4.6%	69.2%	4.7%	70.2%	4.3%	57.4%
2000	5.8%	65.5%	6.2%	66.6%	4.6%	54.4%
2001-7	5.8%	62.8%	6.2%	63.9%	4.7%	52.3%
N						
1990	3195	1228610	2340	1137734	855	90876
2000	6146	1210797	4504	1100467	1642	110330
2001-7	8004	1183307	5988	1073759	2016	109548
% of Gender-Race-Partner						
1990	NA	NA	73.24%	92.60%	26.76%	7.40%
2000	NA	NA	73.28%	90.89%	26.72%	9.11%
2001-7	NA	NA	74.81%	90.74%	25.19%	9.26%

	Table 1b					
Characteristics of White Female Workers Employed Full-Time Full Year, Married or Cohabitating Partners						
in Heterosexual and Homosexual Relationships, by Partnership Type and Partnership Earnings Statuses						
	All Partnerships		**Higher Earners**		**Lower Earners**	
Variables	**Same-Sex**	**Two-Sex**	**Same-Sex**	**Two-Sex**	**Same-Sex**	**Two-Sex**
Own Annual Wage Income						
1990	$28,388	$21,331	$28,923	$22,062	$26,757	$20,255
2000	$44,084	$34,011	$45,549	$35,739	$39,944	$31,485
2001-7	$53,489	$42,257	$55,164	$44,635	$48,307	$38,368
% Couple's Total Annual Wages						
1990	56.7%	46.6%	60.1%	52.7%	46.3%	37.7%
2000	56.4%	48.8%	59.9%	55.3%	46.4%	39.4%
2001-7	57.7%	51.4%	61.7%	58.2%	45.5%	40.3%
% Couple's Total Paid Hours						
1990	56.4%	53.6%	60.0%	59.9%	45.4%	44.3%
2000	55.7%	53.8%	59.4%	60.3%	45.2%	44.2%
2001-7	57.2%	55.1%	61.1%	61.7%	45.2%	44.4%
Education						
1990	15.00	13.35	14.95	13.20	15.17	13.57
2000	15.14	13.90	15.18	13.98	15.13	13.84
2001-7	15.31	14.25	15.28	14.20	15.40	14.34
Potential Experience						
1990	20.64	15.31	14.86	19.10	15.46	21.69
2000	18.42	22.14	18.09	20.88	18.53	23.01
2001-7	20.55	23.51	20.72	24.41	20.04	22.03
% Female in Occupation						
1990	52.6%	65.2%	51.8%	63.7%	55.3%	67.3%
2000	53.0%	65.7%	51.7%	64.0%	56.7%	68.1%
2001-7	54.3%	65.7%	53.2%	63.9%	57.5%	68.6%
Partner 's Wage Income						
1990	24,000	28,992	21,438	24,736	31,819	35,255
2000	36,981	42,253	33,193	35,678	47,686	51,863
2001-7	37,105	40,038	32,487	33,270	51,390	51,108
Has Dependent Child (%)						
1990	17.7%	60.2%	19.0%	57.4%	13.8%	64.4%
2000	20.9%	56.7%	21.4%	53.5%	19.7%	61.4%
2001-7	23.0%	53.4%	23.4%	49.9%	21.6%	59.0%
N						
1990	2407	639507	1813	380810	594	258697
2000	6374	720760	4708	427965	1666	292795
2001-7	8211	725672	6205	450336	2006	275336
% of Gender-Race-Partner						
1990	NA	NA	75.32%	59.55%	24.68%	40.45%
2000	NA	NA	73.86%	59.38%	26.14%	40.62%
2001-7	NA	NA	75.57%	62.06%	24.43%	37.94%

Table 2
Earnings Differentials* (Same Sex Partnership Coefficient) for
Full-time Full Year Employed Partners in Same Sex Relationships
Relative to Two Sex Partners, By Gender
(Dependent Variable: Natural logarithm of hourly earnings; numbers in italics
are t-statistics)

	White Men	White Women
1990	-0.157	0.011
	-20.48	*1.53*
2000	-0.092	0.039
	-14.78	*7.27*
2002-7 (ACS)	-0.066	0.037
	-12.02	*7.81*

* All differentials listed are based on an OLS regression analysis that also includes dummies for the nine census regions, dummy for being a metropolitan area of over one million, total work hours, total work hours squared, total years of education, total years of education squared, total years of potential experience (age minus years of education minus 6), total years of potential experience squared, and the number of dependent child. (See Appendix for full regression results.)

	Table 3a

Table 3a
Earnings Differentials* for White Male Full-time Full Year Partners in Same Sex Relationships Relative to Two Sex Partners, By Labor Market Specialization Relationship to Partner*
(Dependent Variable: Natural logarithm of hourly earnings; numbers in italics are t-statistics)

	All Earners				Higher Hours Partner		Lower Hours Partner	
	1	2	3	4	5	6	7	8
OLS, no selection								
1990	-0.157	-0.128	-0.123	-0.103	-0.154	-0.104	-0.129	-0.099
	-20.48	*-17.96*	*-16.24*	*-13.75*	*-17.24*	*-11.90*	*-8.82*	*-6.75*
2000	-0.092	-0.073	-0.054	-0.037	-0.092	-0.043	-0.069	-0.036
	-14.78	*-12.73*	*-8.73*	*-6.07*	*-12.63*	*-5.93*	*-5.86*	*-3.04*
2002-7	-0.066	-0.046	-0.024	-0.008	-0.063	-0.011	-0.041	-0.000
	-12.02	*-10.09*	*-4.46*	*-1.45*	*-10.02*	*-1.74*	*-3.92*	*-0.03*
Heckman selection corrected								
1990	-0.191	-0.156	-0.158	-0.135	-0.164	-0.114	-0.125	-0.095
	-23.82	*-21.07*	*-19.76*	*-17.21*	*-17.44*	*-12.46*	*-8.43*	*-6.41*
2000	-0.130	-0.099	-0.091	-0.070	-0.107	-0.056	-0.067	-0.028
	-19.79	*-16.74*	*-13.98*	*-11.01*	*-14.01*	*-7.53*	*-5.61*	*-2.35*
2002-7	-0.091	-0.067	-0.049	-0.024	-0.075	-0.018	-0.040	0.000
	-16.19	*-13.32*	*-8.72*	*-4.35*	*-11.60*	*-2.90*	*-3.88*	*0.00*
Controls for:								
3-digit Occupations	N	Y	N	N	N	N	N	N
% Female in Occupation	N	N	Y	Y	N	Y	N	Y
Proportion of Couple's Market Work Hours	N	N	N	Y	N	Y	N	Y

* Each regression analysis includes all of the independent variables listed in the footnote for Table 2, plus the variables indicated. (See Appendix for full regression results.)

Table 3b
Earnings Differentials* for White Female Full-time Full Year Partners in Same Sex Relationships Relative to Two Sex Partners, By Labor Market Specialization Relationship to Partner*
(Dependent Variable: Natural logarithm of hourly earnings; numbers in italics are t-statistics)

	All Earners				Higher Hours Partner		Lower Hours Partner	
	1	2	3	4	5	6	7	8
OLS, no selection								
1990	0.011	0.008	-0.009	-0.011	0.013	-0.008	0.001	-0.019
	1.53	*1.20*	*-1.26*	*-1.44*	*1.55*	*-0.89*	*0.09*	*-1.29*
2000	0.039	0.032	0.010	0.010	0.039	0.009	0.033	0.007
	7.27	*6.56*	*1.85*	*1.82*	*6.25*	*1.43*	*3.21*	*0.73*
2002-7	0.037	0.033	0.008	0.007	0.044	0.016	0.032	0.002
	7.81	*7.90*	*1.77*	*1.52*	*4.71*	*1.75*	*5.72*	*0.45*
Heckman selection corrected								
1990	0.056	0.047	0.032	0.031	0.015	-0.006	0.027	0.006
	6.86	*6.27*	*4.11*	3.89	*1.64*	*-0.67*	1.73	0.38
2000	0.082	0.069	0.051	0.051	0.042	0.048	0.075	0.012
	14.38	*13.23*	*9.08*	*9.17*	*6.68*	*4.45*	*6.85*	*1.99*
2002-7	0.051	0.048	0.022	0.019	0.086	0.058	0.034	0.004
	9.64	*10.18*	*4.26*	*3.63*	*8.13*	*5.56*	*6.05*	*0.76*
Controls for:								
3-digit Occupations	N	Y	N	N	N	N	N	N
% Female in Occupation	N	N	Y	Y	N	Y	N	Y
Proportion of Couple's Market Work Hours	N	N	N	Y	N	Y	N	Y

*Each regression analysis includes all of the independent variables listed in the footnote for Table 2, plus the variables indicated. (See Appendix for full regression results.)