

Negrusa, Brighita; Oreffice, Sonia

Working Paper

Sexual orientation and household savings: Do homosexual couples save more?

IZA Discussion Papers, No. 4961

Provided in Cooperation with:

IZA – Institute of Labor Economics

Suggested Citation: Negrusa, Brighita; Oreffice, Sonia (2010) : Sexual orientation and household savings: Do homosexual couples save more?, IZA Discussion Papers, No. 4961, Institute for the Study of Labor (IZA), Bonn

This Version is available at:

<https://hdl.handle.net/10419/36940>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

IZA DP No. 4961

Sexual Orientation and Household Savings: Do Homosexual Couples Save More?

Brighita Negrusa
Sonia Oreffice

May 2010

Sexual Orientation and Household Savings: Do Homosexual Couples Save More?

Brighita Negrusa
RAND Corporation

Sonia Oreffice
*Universidad de Alicante
and IZA*

Discussion Paper No. 4961
May 2010

IZA

P.O. Box 7240
53072 Bonn
Germany

Phone: +49-228-3894-0
Fax: +49-228-3894-180
E-mail: iza@iza.org

Any opinions expressed here are those of the author(s) and not those of IZA. Research published in this series may include views on policy, but the institute itself takes no institutional policy positions.

The Institute for the Study of Labor (IZA) in Bonn is a local and virtual international research center and a place of communication between science, politics and business. IZA is an independent nonprofit organization supported by Deutsche Post Foundation. The center is associated with the University of Bonn and offers a stimulating research environment through its international network, workshops and conferences, data service, project support, research visits and doctoral program. IZA engages in (i) original and internationally competitive research in all fields of labor economics, (ii) development of policy concepts, and (iii) dissemination of research results and concepts to the interested public.

IZA Discussion Papers often represent preliminary work and are circulated to encourage discussion. Citation of such a paper should account for its provisional character. A revised version may be available directly from the author.

ABSTRACT

Sexual Orientation and Household Savings: Do Homosexual Couples Save More?*

We analyze how sexual orientation is related to household savings using 2000 US Census data, and find that gay and lesbian couples own significantly more retirement income than heterosexuals, while cohabiting heterosexuals save more than their married counterparts. In a household savings model, we interpret this homosexual-specific differential as due to the extremely low fertility of same-sex couples, in addition to the precautionary motives driving cohabiting households to save more than married ones. Evidence from homeowners' ratio of mortgage payments to house value exhibits the same pattern of savings differentials by sexual orientation and cohabiting status.

JEL Classification: D1, D12, J15, J16

Keywords: sexual orientation, household savings, retirement, housing

Corresponding author:

Sonia Oreffice
Department of Economics
University of Alicante
Campus de San Vicente
03080 Alicante
Spain
E-mail: sonia@merlin.fae.ua.es

* Sonia Oreffice acknowledges financial support from the Spanish Ministry of Science and Innovation (ECO 2008-05721/ECON). We thank Pierre-André Chiappori, Lola Collado, Erik Hurst, Sebastian Negrusa and Climent Quintana-Domeque for helpful comments and suggestions. Errors are ours.

1. Introduction

This paper examines how sexual orientation is associated with household savings, to investigate differences in savings behavior across types of couples, i.e., gay, lesbian, heterosexual married and cohabiting households, and to further explore same-sex household decision-making. A recent and widespread phenomenon across developed countries is the sizable presence of homosexual partnerships¹, and the important legal and cultural movement toward providing these households with the same rights and status as heterosexuals, e.g., Massachusetts and Spain legalizing same-sex marriages in 2004. However, the economic analysis of household behavior is still centered on heterosexual families.

A large body of theoretical and empirical literature analyses heterosexual households' outcomes, focusing on the savings patterns of married couples at different stages of their life cycle and comparing them to singles² (Blow Browning, Ejrnaes, 2009; Zissimopoulos, Karney and Rauer, 2008; Browning and Lusardi, 1996; Browning, 2000). Regrettably, there is very little relevant theory or evidence on couples' savings that takes into account the type of relationship (cohabiting vs. marriage), or the characteristics of the individuals in the couple, for instance their differential lifetime uncertainty (Blow et al., 2009; Browning, Chiappori, Weiss, 2010). In particular, we are not aware of any study on sexual orientation and household savings.

In this first analysis of homosexual couples' savings decisions, we develop a simple two-period model of household savings decisions, following Browning et al. (2010), and consider differences by gender in survival rates, variation in precautionary motives due to the status of the relationship, and role of children. These forces potentially affect couples' savings and may vary by sexual orientation, as same-sex partners share the same gender, are not married (by the year 2000,

¹ In the US, they are estimated to be between 2 and 10 percent of the population, most likely around 5 percent of the total population over 18 years of age (Smith and Gates, 2001). Other countries such as UK and France exhibit comparable estimates (Sells, Wells, Wypij, 1995).

² Cohabiting individuals are often disregarded in this type of analysis, or included in the same category as singles, e.g., Zissimopoulos, Karney and Rauer (2008).

no US state had legalized same-sex marriage) and typically exhibit very low fertility. We then use data from the 2000 United States Census and show that homosexual couples significantly own more retirement and social security income than heterosexual married or cohabiting couples, also after controlling for partners' ages. Additionally, we estimate higher savings for heterosexual cohabiting than for married households. Evidence from home-owners on the ratio of their mortgage payments relative to the value of their house confirms the same pattern of savings differentials by sexual orientation and cohabiting status.

Economic studies of same-sex couples present both similarities and differences between same-sex and heterosexual households. Black, Sanders, Taylor (2007) assume that families' preferences do not systematically differ by sexual orientation. They instead emphasize the differences in biological constraints, affecting homosexuals' fertility, location, household specialization and human capital choices. The similarities in family preferences is also found by Jepsen and Jepsen (2002), in terms of positive assortative mating for non-labor and labor market traits across all types of couples, even though to a smaller extent for same-sex couples. Becker (1991) highlights the disparities between homosexual unions and heterosexual marriages due to the lack of difference in comparative advantage between partners and to the presence of complementarities. Jepsen and Jepsen (2006), Tebaldi and Elmslie (2006) and Antecol and Steinberger (2009) link sexual orientation to partners' labor supply, in a unitary household framework, while Orefice (2009) finds that gay and lesbian households' labor supplies are affected by bargaining power forces (proxied by partners' age and non-labor income differences) similarly to heterosexual couples. There is also evidence in the literature of persistent wage disparities among gay, lesbian and heterosexual workers, with lesbians' earning significantly more than heterosexual women, and gay men earning significantly less than heterosexual men (e.g., Allegretto and Arthur, 2001, Black, Makar, Sanders, Taylor, 2003, Jepsen, 2007). Finally, Jepsen and Jepsen (2009) and Leppel (2007) empirically test home-ownership rates differentials by sexual orientation, showing

that the rate for homosexuals is lower than that for married but higher than for opposite-sex cohabiting couples, and that gay and lesbian households do not differ in this respect. Nevertheless, they do not provide any theoretical decision-making framework with which to interpret these findings.

However, neither of these studies of same-sex couples nor the literature on savings examine the role of sexual orientation in household savings choices, which is the focus of the present paper. Black et al. (2007), Jepsen and Jepsen (2002), and Oreffice (2009) suggest that family preferences and intra-household bargaining do not depend on sexual orientation. We want to analyze and test whether this applies to savings decisions as well, comparing homosexual to heterosexual couples and their characteristics potentially driving savings behavior.

We use US Census data for the year 2000, specifically its five-percent sample, which provides the most recent largest sample of gay and lesbian partners and their detailed demographic, income and home ownership information, along with standard samples of heterosexual individuals. These data allow us to identify only members of same-sex couples but not single gays or lesbians. This limitation represents a lesser concern here, because our analysis applies to couples. Our empirical strategy consists of estimating the effects of being a homosexual rather than a married or cohabiting couple, comparing household retirement and social security income, and home-owners' ratio of mortgage payments relative to house value, cross-sectionally among gay, lesbian, and heterosexual couples. While the US Census data do not provide any direct consumption variable that would more closely fit a theoretical analysis of household savings, retirement and social security income for the elderly is the result of household savings throughout the life cycle (Lee, 2001, Lillard and Weiss, 1997). Moreover, the ratio of mortgage payments to house value reflects the couple's capacity and willingness to save rather than consume (Browning and Lusardi, 1996; Zissimopoulos, et al., 2008; Wolff, 1998; Deaton and Paxson, 1994; Lin, Chen and Lin, 2000; Hurst, Chin Luoh, Stafford, 1998).

Our empirical analysis reveals that same-sex households save more than opposite-sex households, controlling for age, education and other socioeconomic characteristics. Specifically, both gay and lesbian couples are found to save more than heterosexual cohabiting couples, who in turn save more than married couples, all the comparisons being statistically different. This evidence is consistent with our interpretation that homosexuals save more than heterosexual individuals since they have much fewer children (Browning and Ejrnaes, 2009; Scholz and Seshadri, 2007), and possibly a less binding relationship. In particular, we find that gays or lesbians own \$5,785 more annual retirement and social security income than the average married couple, who in turn owns \$2,442 less annually than the average heterosexual cohabiting couple. Evidence from the ratio of mortgage payments to house value of homeowners exhibits the same pattern of “savings” differentials by sexual orientation and cohabiting status. The channel of sexual orientation can explain differences in household savings behavior, in addition to gender and commitment motives.

Alternative explanations such as discrimination against homosexuals in the savings and housing market, differences in life expectancy characterizing homosexual couples, and misreporting of unmarried homosexual partners in the 2000 Census sample, are considered. We argue that these phenomena cannot consistently explain our results, given our predictions on couples’ savings and the corresponding evidence.

This first study of homosexual couples’ savings behavior presents evidence on retirement and social security income and homeownership of a homosexual-specific saving pattern, with respect to heterosexual married and cohabiting couples. In spite of our data unavailability of a panel dimension and of direct consumption variables, we believe that this analysis is a necessary and useful starting point in the economic understanding of homosexual household savings behavior, and that these documented differences may inform future policy decision-making targeted at household savings, the elderly and homeowners. We show that a sizable demographic group in the population, and a relatively new household type, saves more than heterosexual households.

The paper is organized as follows. Section 2 illustrates the theoretical framework. Section 3 describes the data and the empirical specification. Section 4 presents the empirical results and the sensitivity analysis. Section 5 concludes.

2. Theoretical Framework

We develop a simple two-period model of household savings decisions, following Browning et al. (2010). We consider intra-household differences in survival rates, presence of children, and precautionary motives, as forces affecting couples' savings, possibly differently by sexual orientation. The question we are addressing is how household savings may depend on sexual preferences and through which couples' characteristics.

A household is composed of two decision-makers, head and partner (or spouses), each having a distinct utility function on consumption. Households are assumed to live up to two periods, and to make Pareto-efficient decisions about each member's consumption. Preferences are egoistic, in that one mate's utility does not depend on the other's consumption. Let C_t^i for $i = h, p$ denote member i 's consumption of a private composite good (whose price is normalized to unity) in period t . The utility function of each member is assumed to be the same across periods and across partners, i.e. $u(C^i)$, where u is strictly quasi-concave, increasing, and continuously differentiable for $i = h, p$. In period 1, each member has an exogenously given income that we assume to be unity for both³. These incomes are the only source of household income, and in period 2 household income is simply what is saved from period 1. All prices are set to unity and the real interest rate to zero. In the first period, the household joint expenditure is X_1 . How this expenditure is transformed into consumption and how this consumption is shared between the two people are decisions that we side

³ We abstract from analyzing how differences in income across individuals and types of couples may affect savings behavior, as our focus is on more "primitive" characteristics of homosexual and heterosexual couples.

step here. Thus, we follow Browning et. al (2010) and assume that there is a linear transformation from expenditure to “private-equivalent” consumption and the resulting consumption good is shared equally (if both members are alive). Consequently, the first period per capita consumption is given by μX_1 where $\mu \in [0.5, 1]$. If $\mu = 1$ all consumption is public, i.e. two persons can live as cheaply as one, while if $\mu = 0.5$ all consumption is purely private. The intermediate case allows for both a public and private component. In the second period, the household joint expenditure is X_2 and is subject to the same scale effects as X_1 . As the real interest rate is set to zero, the budget constraint is simply $X_2 = (2 - X_1)$. Finally, we abstract from the non-pecuniary benefits of companionship, follow convention and assume that the utility from companionship is additive; in particular, it does not influence the trade-off between consumption and saving. For ease of exposition, we first employ a two-person model with a man and a woman, focusing on heterosexuals as our benchmark, and we then characterize the potential differences with respect to gay and lesbian couples.

2.1 Benchmark model

We take into account each individual’s survival probability, with the woman surviving with probability one to the end of period 2, while the man has a probability of survival after the end of period 1 equal to λ , with $0 < \lambda < 1$. The survival probability is the only source of uncertainty in the model, and is gender-specific (after controlling for age, i.e. conditional on being in period 2)⁴. We assume that the two agents have preferences that can be represented by a stationary intertemporally additive utility function with no discounting (Browning et al., 2010):

$$U^M = u(\mu X_1) + \lambda u(\mu X_2)$$

$$U^W = u(\mu X_1) + \lambda u(\mu X_2) + (1 - \lambda)u(X_2)$$

⁴ λ may also capture the degree of risk aversion, the higher the λ the more risk averse the individual is, consistent with the finding that women are more risk-averse than men (gender-specific parameter).

where the couple stays together if the husband survives to the second period. Note that we have assumed the same sub-utility function $u(C_t^i)$ for each person in each period, and that we do not allow for ‘caring’ preferences, so that M does not gain anything from W’s private consumption and vice-versa. However, the scale factor μ can be interpreted as capturing some caring in the sense that consumption of the other (when together) raises the value of expenditures. Specifically, this factor may capture different levels of commitment and relationship stability, as well as uncertainty in terms of entitlement to survivor’s benefits that characterize married versus unmarried couples, with higher μ for more stable couples (see subsection 2.3).

Agents are assumed to coordinate and reach Pareto-efficient outcomes, in line with the collective model assumption (Browning et al., 2010; Chiappori, 1988). We further assume that the members of the couple have equal weights in the joint utility function, so that the household maximizes the following objective function:

$$U = 2u(\mu X_1) + 2\lambda u(\mu X_2) + (1 - \lambda)u(X_2)$$

by choosing X_1 , and subject to the budget constraint $X_2 = (2 - X_1)$. Solving this maximization problem yields the following first order condition (assuming interior solutions):

$$2\mu u'(\mu \hat{X}_1) = 2\mu\lambda u'(\mu \hat{X}_2) + (1 - \lambda)u'(\hat{X}_2)$$

which implies that the per capita consumption in the first period is higher than in the second period (i.e. $\hat{X}_1 > \hat{X}_2$), if the consumption good is not fully public (i.e. $\mu < 1$), and the couple remains together in the second period. Given the budget constraint, it follows that that the couple saves less than half of their total income, as it can be seen from the first order condition:

$$\begin{aligned} u'(\mu \hat{X}_1) &= \lambda u'(\mu \hat{X}_2) + \frac{(1 - \lambda)}{2\mu} u'(\hat{X}_2) \\ &< \lambda u'(\mu \hat{X}_2) + \frac{(1 - \lambda)}{2\mu} u'(\mu \hat{X}_2) \end{aligned} \quad (1)$$

$$\begin{aligned} &< \left[\lambda + \frac{(1-\lambda)}{2\mu} \right] u'(\mu\hat{X}_2) \\ &\leq u'(\mu\hat{X}_2) \Rightarrow \mu\hat{X}_1 > \mu\hat{X}_2 \end{aligned}$$

Differently from this heterosexual household benchmark, homosexual couples do not face different survival probabilities for each of their members, since both partners share the *same gender* (*same λ* for both). Therefore, their objective function becomes:

$$U = 2u(\mu X_1) + 2\lambda u(\mu X_2)$$

subject to the same budget constraint as above. We consider the same set of preferences of opposite-sex couples, without imposing dissimilar utility functions as the channel through which sexual orientation may affect savings. The first order condition follows:

$$2\mu u'(\mu\hat{X}_1) = 2\lambda\mu u'(\mu\hat{X}_2) \quad (2)$$

$$\frac{u'(\mu\hat{X}_1)}{u'(\mu\hat{X}_2)} = \lambda$$

From the first order condition (1), we have that $u'(\mu\hat{X}_1) > \lambda u'(\mu\hat{X}_2)$ for opposite-sex couples, and from first order condition (2) we have that $u'(\mu\hat{X}_1) = \lambda u'(\mu\hat{X}_2)$ for gay couples (both members face the same uncertain survival probability $\lambda < 1$) and $u'(\mu\hat{X}_1) = u'(\mu\hat{X}_2)$ for lesbian couples (both members survive with certainty, i.e. their $\lambda = 1$) This can be written as:

$$\left[\frac{u'(\mu\hat{X}_1)}{u'(\mu\hat{X}_2)} \right]_{lesbian} = 1 > \left[\frac{u'(\mu\hat{X}_1)}{u'(\mu\hat{X}_2)} \right]_{hetero} > \left[\frac{u'(\mu\hat{X}_1)}{u'(\mu\hat{X}_2)} \right]_{gay} = \lambda \quad \text{with } \lambda < 1 \quad (3)$$

From equation (3), we get that: $\mu\hat{X}_1 > \mu\hat{X}_2$ and thus $\hat{X}_1 > \hat{X}_2$ for opposite-sex couples. The same holds for gay couples. However, from (3), we can assert that the difference between first period expenditure and second period expenditure is lower for heterosexual couples than for gay couples. This means that heterosexual couples save more than gay couples. Conversely, lesbian couples save

more than heterosexual couples, as the per capita consumption is the same in each period and the savings equal half of their total income.

In summary, households in which both members expect to live with certainty (lesbians) save more than households in which one member faces an uncertain survival probability (heterosexuals), who in turn save more than households in which both members face uncertain survival (gays). These predictions hold provided that the difference across types of couples stems from dissimilar survival probability (risk aversion) due to biological *gender* differences, other characteristics being equal or not affecting savings behavior (e.g., conditional on individual ages and incomes). The finding that households where women are present save more is consistent with the savings literature highlighting that women want to save more than men since they expect to live longer, and be widows (e.g. Browning et al., 2010; Browning 2000; Lundberg and Ward-Bratts, 2000).

The awareness that household members will be able to enjoy savings together in the future may give an additional incentive to couples to save more, weighing more the state of the world in which both members will survive in the next period. By introducing a multiplicative parameter $\alpha > 1$ in the utility of the second period, only when both partners (spouses) are alive, it can be shown that this “coincidence of life” encourages all types of couples to save more. Furthermore, for same-sex couples the incentive may be higher, since partners share the same gender and consequently would not experience widowhood, *ceteris paribus*.

We now extend our framework to take into account other couples’ characteristics affecting household savings which are likely to differ by sexual orientation.

2.2. Children

Children play an important role in family life, they represent the main household production output (Becker, 1991) and are associated with lower household savings as they are a costly consumption

good⁵ (Browning and Ejrnaes, 2009; Scholz and Seshadri, 2007; Browning and Lusardi, 1996). While these patterns clearly refer to heterosexual households, same-sex couples exhibit a very low fertility: an average of .36 children for lesbians and .10 for gays in the US in 2000, according to Carpenter and Gates (2008), Jepsen (2007), Oreffice (2009). In fact, they can have children only from (previous) heterosexual relationships, through artificial insemination (lesbians) or through adoption or “renting a womb”, although the last two options may not be legal across states and countries. We include children in our model of couples’ savings decisions, assuming that couples may derive utility from the public consumption good c (children), while incurring the expenditures related to childrearing (Browning et al., 2010). For simplicity, we assume that consumption of this additional good only occurs in the first period, and its price is set to unity.

The heterosexual couples’ maximization problem in the presence of children is as follows:

$$U = 2u(\mu X_1) + 2u_c(cX_1) + 2\lambda u(\mu X_2) + (1 - \lambda)u(X_2)$$

with $\mu \in [0.5 - 0.5c, 1 - c]$, $c > 0$ in the presence of children and $c = 0$ if no children, and the same intertemporal budget constraint as before, $X_2 = (2 - X_1)$. We thus assume the same kind of linear transformation from expenditure to personal consumption, with the per capita consumption of children equal to cX_1 for each member, as children are a public good. The first order condition becomes: $2\mu u'(\mu \hat{X}_1) + 2u'_c(c\hat{X}_1)c = 2\mu\lambda u'(\mu \hat{X}_2) + (1 - \lambda)u'(\hat{X}_2)$, yielding the following relationship between first and second period outcomes:

$$\frac{u'(\mu \hat{X}_1)}{u'(\mu \hat{X}_2)} = \lambda + \frac{(1 - \lambda)}{2\mu} \frac{u'(\hat{X}_2)}{u'(\mu \hat{X}_2)} - \frac{c}{\mu} \frac{u'_c(c\hat{X}_1)}{u'(\mu \hat{X}_2)} \quad (4)$$

Note that when the last term in (4) is zero (the couple has no children) the equation is the same as (1), so that we can write:

⁵Children may also represent a potential source of care-giving when parents are old. We do not model this aspect here, although we note that this source would generate a further incentive for the household to save less, as additional income would be available in the second period.

$$\left[\frac{u'(\mu\hat{X}_1)}{u'(\mu\hat{X}_2)} \right]_{children} < \left[\frac{u'(\mu\hat{X}_1)}{u'(\mu\hat{X}_2)} \right]_{no\ children} \quad (5)$$

One can see that $\mu\hat{X}_1 > \mu\hat{X}_2$ and thus $\hat{X}_1 > \hat{X}_2$ for heterosexual couples with and without children. Additionally, the difference between first period expenditure and second period expenditure is higher for opposite-sex couples with children than for those without. This means that heterosexual couples with children save less than those without, as it is found in the literature (Browning and Ejrnaes, 2009; Scholz and Seshadri, 2007; Browning and Lusardi, 1996).

Within this setting, we can now compare same-sex to opposite-sex couples' savings. For homosexual couples we have that $U = 2u(\mu X_1) + 2u_c(cX_1) + 2\lambda u(\mu X_2)$, so that the first order condition is $2\mu u'(\mu\hat{X}_1) + 2u_c'(c\hat{X}_1)c = 2\lambda\mu u'(\mu\hat{X}_2)$, with $\lambda = 1$ for lesbian couples and $\lambda < 1$ for gay couples. It follows that $\hat{X}_1 > \hat{X}_2$ for lesbian couples with children. Given that lesbian couples with no children were shown to save half of their income, and that lesbian couples with children spend more in the first period, we can assert that lesbian couples with children save less than those that do not have children. For gay couples as well the presence of children decreases savings:

$$\left[\frac{u'(\mu\hat{X}_1)}{u'(\mu\hat{X}_2)} \right]_{children} = \lambda - \frac{c}{\mu} \frac{u_c'(c\hat{X}_1)}{u'(\mu\hat{X}_2)} < \lambda = \left[\frac{u'(\mu\hat{X}_1)}{u'(\mu\hat{X}_2)} \right]_{no-children}$$

Several interesting implications emerge. First, heterosexual couples with children may save less than gay couples without children, not only than lesbian couples. This result comes from comparing equations (2) and (4). The formal condition under which this result holds is $\frac{1-\lambda}{2} u'(\hat{X}_2) < c u_c'(c\hat{X}_1)$, which intuitively means that the marginal utility associated with children is larger than the marginal utility of consumption as a widow, weighted by the probability of becoming a widow, which seems a realistic requirement (intertemporal trade-off) for couples who are willing to have children. Under these conditions, we would predict that gay couples would save

more than heterosexual couples, considering that the former are overwhelmingly childless and the latter are those having children.

Secondly, the presence of children decreases savings for all types of households. As such, the fact that homosexual couples have much fewer children than heterosexuals, implies that both lesbians and gays are likely to save more than heterosexual couples. Lesbians because they have higher survival rates (benchmark model) and fewer children than heterosexual couples, gays because they have much fewer children than heterosexual couples, in spite of facing lower survival rates (benchmark model).

2.3. Marriage versus Cohabitation

The lack of legal marriage may act as a precautionary motive encouraging cohabiting couples to save more, as married households in the US are found to be more committed and stable than cohabiting couples (e.g., Kurdek, 1998). Cohabitants may not be entitled to survivor's benefits or rights on the partner's pension, and the probability of becoming single is much higher, which may generate a lower willingness to consume public goods while in the relationship (Browning et al., 2010). We can incorporate variations in the level of commitment as changes in the extent of public consumption μ , assuming that the higher the commitment the higher the μ . While we cannot derive a general result without further assumptions on the utility functional form, we present some qualitative implications.

From equation (1) we notice that $\lambda < \frac{u'(\mu\hat{X}_1)}{u'(\mu\hat{X}_2)} < \lambda + \frac{(1-\lambda)}{2\mu}$. Note that for a higher value of

μ the upper limit in the expression above decreases, so that the ratio $\frac{u'(\mu\hat{X}_1)}{u'(\mu\hat{X}_2)}$ takes values on a narrower interval, and thus could be lower. Higher commitment, i.e. marriage rather than

cohabitation, may lead to lower savings.⁶ This observation is consistent with simulation results reported by Browning et al. (2010), where it is found that a higher degree of publicness in consumption decreases savings in the first period.

With these predictions in mind, we now turn to empirically investigating whether same-sex couples exhibit different savings patterns from heterosexual cohabiting and married couples, as homosexual couples share the same gender, are not married (by the year 2000, in the US no state had legalized same-sex marriage) and typically have very few children. These features represent relevant references for our analysis, as children have been found to be associated with lower household savings (Browning and Ejrnaes, 2009; Scholz and Seshadri, 2007), while there is mixed evidence on precautionary motives and the effect of marriage, with married individuals saving more than singles, and retirement being relevant for savings decisions (Browning and Lusardi, 1996; Lupton and Smith, 2003). Finally, as wives are typically younger than their husbands, and may be more risk averse, they exhibit stronger incentives to save as women live longer than men (Browning 2000; Browning and Lusardi, 1996; De Nardi et al., 2008).

3. Data Description and Empirical Specification

Estimation is carried out on US Census data for the year 2000, specifically its five-percent sample “5% IPUMS data” (1-in-20 national random sample of the population), which provides the most recent largest sample of gay and lesbian partners and their detailed demographic, labor and income information, along with standard samples of heterosexual individuals. Unmarried “heads” and “unmarried partners”, and a random sample (20 percent) of married “heads” and “spouses” were extracted from the Census using the variables “relationship to household head” and “marital status”.

⁶ If we assume a population of couples for whom $r = \frac{u'(\mu\hat{X}_1)}{u'(\mu\hat{X}_2)}$ takes values in the interval $\left[\lambda, \lambda + \frac{(1-\lambda)}{2\mu} \right]$ and is distributed according to a pdf function, then the average r is lower as μ increases.

Records in these files were subsequently matched on the household identification code “serial” to create a single observation for each couple. Using the variable “sex”, couples with the head and the partner sharing the same gender were then identified as same-sex couples, gay and lesbian, and those with opposite gender as heterosexual couples. Individuals with imputed values for sex, marital status, and relationship to household head were excluded from our main samples. This procedure is crucial to extract actual same-sex couples from the 2000 US Census. As documented in Black et al. (2006), Jepsen (2007), and in subsection 4.2 below, this method prevents heterosexual couples from being recorded as homosexuals, due to a recoding error in the 2000 Census. In the Census, gays and lesbians are identified by their cohabiting relationship, a household being recorded as a same-sex union if the “relationship to head” is specified as “unmarried partner”, so that single gays or lesbians cannot be recovered. This limitation represents a lesser concern here, because our analysis applies to couples. However, most economic studies on homosexuals use Census data, of 1990 or 2000. Others (e.g., Black et al., 2003, Blandford, 2003) use the General Social Survey (GSS) data, where single gays and lesbians can be identified. Nevertheless, the homosexual sample size is much smaller than in the Census data (around three hundred observations total), and sexual orientation in GSS is inferred from self-reported sexual activity, whereas self-reported sexual orientation (Census) is regarded as more relevant to study gay and lesbian partnerships (Carpenter and Gates, 2008).

Our main sample consists of gay and lesbian couples, and married men and women; heterosexual cohabiting couples are also considered, as additional comparison group. Dummy variables corresponding to these various types of couples are created and used to capture the potential differences in savings behavior. All individuals in our samples are not in school, not in the military, and not in a farm household. A couple consists of the head of the household and his/her unmarried partner, or spouse. A household is included only if both the head and the mate are actually present, while those where there are multiple mates, or more than two adults, are excluded. The age range varies from 60 to 80 year old for the heads of our elderly households for which we analyze their retirement and social security income pattern, and between 25 and 45 for the younger

households of home-owners who do not own their residence free and clear yet (and thus pay mortgages). We focus on white couples, even though including blacks does not alter our findings. Our elderly sample thus consists of approximately 405 observations of same-sex couples, 111,109 observations of married couples, and 7,863 of heterosexual cohabiting couples. Our young sample consists approximately of 2,054 observations of same-sex couples, 87,008 observations of married couples, and 14,994 of heterosexual cohabiting couples. These sample sizes are consistent with those of previous studies using Census data to analyze and compare homosexual to heterosexual households (Black, Sanders, Taylor, 2007; Jepsen and Jepsen, 2002; Jepsen, 2007; Oreffice, 2009).

We consider two alternative measures of savings as dependent variables, controlling for the demographic and socioeconomic characteristics of both partners (spouses), along with a dummy variable for sexual orientation. These are the sum of the retirement and social security income of the head and the partner (spouse), and the annual mortgage payments (amounts due for first mortgage, or first and second mortgage together, with or without property taxes and insurance payments) divided by the current value of the house in which the household lives, all expressed in contemporary dollars. These variables are believed to capture household savings, as retirement and social security income for the elderly is the result of household savings throughout the life cycle (Lee, 2001, Lillard and Weiss, 1997), while the ratio of mortgage payments to house value reflects the couple's capacity and willingness to save rather than consume (Wolff, 1998; Deaton and Paxson, 1994; Lin, et al., 2000; Hurst, et al., 1998).

The regressors are the age and the educational level, the latter defined as the number of completed years of schooling, of each partner (spouse); the number of household members or of each partner's own children living in the household; and a dummy variable for how recently the household moved in the current residence (5 years or less), as a proxy for the duration of the relationship. Unfortunately, the Census records only the number of children currently living with the head and the partner (spouse), so that this type of variable does not capture an individual's total

number of children, especially for our elderly sample⁷. We account for economic conditions controlling for the total individual incomes of both heads and partners (spouses) in 1990, creating an average individual income in 1990 by state, race, sexual orientation, cohabitation status, age (5-year brackets) and education (4 groups, high-school dropouts, high school graduates, some college, college and college plus), which we merge by these characteristics to our sample in year 2000. As our analysis concerns current retirement income and mortgage to house value by different types of households, we want to control for “lagged” income as a measure of wealth and income that an individual in a given reference group is supposed to have on average. The health status is not recorded by the US Census, however disability status along several dimension of impairment (ambulatory, cognitive, vision, independent living and work disabilities) is, and as such we construct and control for the corresponding dummy variables in our estimation of the elderly sample. State dummy variables are included to capture constant differences in retirement, health insurance plans and housing markets across geographical areas in the US, such as house prices and mortgage rates, and cultural attitudes toward homosexuals and the presence of legal provisions for homosexual couples, such as domestic partnerships and civil unions. Clustering at the metropolitan level is used (the PUMA area codes have been re-coded to make them unique across states). Observations are weighed with the Census individual weights, to make the sample representative of the US population and economy. For robustness checks purposes, data by individual age, race and gender on the expected number of years left to live in the year 2000 is merged to our samples from the National Vital Statistics Reports (CDC, 2002). We then use the absolute value difference of the expected years of the head and the partner (spouse) as additional control to account for the number of years a couple can expect to spend together. The smaller this difference, the longer the expected coincidence of life between partners, and the higher the incentive to save as more time is left for the couple to use their savings and enjoy public goods together. This measure may play a role as a

⁷ A record of the total number of children borne by a woman is available in the Census, but only for women and only until 1990.

saving motive especially for the elderly sample (De Nardi et al., 2009), and for homosexual couples, who share the same gender and thus tend to face more time together ahead of them.

Tables 1 and 2 present the descriptive statistics for the heads' and partners' (spouses') main variables in the elderly and young samples, separately by type of couple. On average, wives are younger, almost as educated as men, and their health is similar to their spouses. Sexual orientation and cohabiting status seem to matter for retirement income with elderly married couples owning approximately \$1,000 less in retirement and social security income than gay couples and \$1,000 more than lesbian ones. Moreover, cohabiting heterosexuals own \$4,700 less in retirement and social security income than their married counterparts. Also, across samples, the average number of children is highest for married couples, lower for cohabiting and lowest for lesbian and gay couples. Interesting features arise comparing homosexual to heterosexual homeowners. On average same-sex couples, especially gay ones, own slightly more expensive houses than heterosexual couples. The same pattern holds for the annual mortgage payments contributing to the variation in the ratio of annual mortgage to house value variable: within same-sex couples, lesbians exhibit a higher mortgage to house value ratio while within the heterosexual group, cohabiting couples pay more in mortgage relative to house value than married ones. Finally, in the same-sex samples, gays and lesbians on average have similar education levels, earned a similar income in 1990, and their ages are also comparable. However, within both gays and lesbian couples, heads own more income than their partners, and are slightly more educated and older.

[Table 1 about here]

[Table 2 about here]

4. Results

4.1 Main Findings

In Table 3 we present the results of several regressions where the dependent variable is the household retirement and social security income, and the specifications are run on our sample of elderly couples. We start by comparing all *homosexual* couples to *married* couples (column 1), testing whether gay couples are different from lesbian ones in column 2. We then compare *homosexual* to *heterosexual cohabiting* households (column 3). We finally estimate the role of cohabitation in heterosexual couples only (column 4).

[Table 3 about here]

All the specifications show that same-sex households save more than opposite-sex ones, controlling for the age, education and other socioeconomic characteristics of each partner (spouse). Specifically, homosexual couples own \$5,785 more annual retirement income than the average married couple (25% more than the average annual retirement income of married couples), and the comparison is statistically different. This evidence is consistent with our interpretation that homosexuals save more than heterosexual individuals since over their lifetime they have much fewer children⁸ (Browning and Ejrnaes, 2009; Scholz and Seshadri, 2007), and possibly a less binding relationship, since by the year 2000 no US state had legalized same-sex marriages. Married couples have been found to own more assets than single or divorced individuals, nevertheless our estimates suggest that they save less than same-sex couples.

Columns 3 and 4 report the same type of specifications as before, but now including heterosexual cohabiting couples, identified by an additional dummy variable so that the excluded category is married. One can see evidence of higher savings for cohabiting than married couples (column 4) and of even higher savings for same-sex than for opposite sex cohabiting households

⁸ The Census only reports the number of children living in the household, which does not reflect the actual number of children of elderly couples, so that our dummy variable for homosexuality would capture this fertility disparity.

(column 3). In particular, we find that homosexuals own \$3,776 more annual retirement income than the average heterosexual cohabiting couple (21% more than the average annual retirement income of heterosexual cohabiting couples), who in turn owns \$2,442 more income annually than the average married household (11% more than the average annual retirement income of married couples). This evidence illustrates that the lack of legal marriage cannot represent the main factor driving the disparity by sexual orientation. The fact that cohabiting couples regardless of their sexual orientation appear to save more than married ones suggests that lack of legal marriage encourages couples to save more (precautionary motive for less stability), but at the same time shows that cohabitation is not the main reason why we find that same-sex households save more than the corresponding heterosexual ones, and that other forces must be at play, for instance fertility. As to the other covariates, most parameter estimates are comparable to the literature. More educated partners (spouses) own more retirement income, as well as older couples, with age of head having a stronger impact than age of partner. Individuals with disability own lower income, and the number of household members decreases the available income for retirement.

We acknowledge that homosexual individuals may be characterized by different attitudes toward retirement and that in the US Census the children variable does not allow us to determine the total fertility of each individual but only the number of children currently residing in the household, which is very low in the elderly sample. However, the above empirical evidence fits well the predictions of our household savings model which incorporates differences in survival rates, commitment, and fertility to play a role in couples' savings decisions. We now turn to our sample of young couples between 25 and 45 years of age, for whom the number of children present is likely to reflect their actual fertility, and specifically to homeowners who do not own their residence free and clear yet.

[Table 4 about here]

Table 4 reports the same regression specifications as in Table 3, but now the dependent

variable is the ratio of mortgage payments to house value and additional controls for number of children and labor income of head and partner are included. All these specifications confirm the existence of a significant “savings” differential by sexual orientation and cohabiting status. Being homosexual significantly increases the ratio by 2.6 units, corresponding to about 4% of the average ratio in the sample (column 1). Column 2 highlights a difference between gay and lesbian couples in our young sample. Lesbians appear to save 5.5 units more than heterosexual married couples, while gay households save 5.3 units less. We interpret this disparity within our benchmark framework according to which two women may save more than one man and a woman, who in turn may save more than two men due to different survival rates and degree of risk aversion, controlling for number of children. Finally, education negatively affects this ratio, reflecting the fact that among young couples, the more educated are likely to have fewer savings as high education is costly and takes time to achieve; the age of the head is also negatively related to our ratio even though the impact is negligible, as it is the case for the head’s labor income and the number of children. Columns 3 and 4 report the same type of specifications as before, but now heterosexual cohabiting couples are also included. This evidence of higher savings for cohabiting than married couples (column 4) confirms our previous findings on the elderly sample, which illustrates once again the fact that the lack of legal marriage cannot represent the main factor driving the savings disparity by sexual orientation. Conversely, there does not seem to be any difference among same-sex cohabiting and opposite-sex cohabiting households (column 3), indicating that among those young couples who decided to be homeowners while cohabiting, sexual orientation may not play a role in mortgage payments if we control for fertility.

We now focus our attention to couples that do not have children, to further investigate the role of fertility in the homosexual savings differential. Table 5 shows that overall this homosexual differential disappears when comparing homosexual to heterosexual couples without children (column 1), lending support to our argument that the very low fertility of same-sex couples is the

main reason why homosexual couples save more. Furthermore, we find that lesbians save more than heterosexual married who save more than gays (column 2), consistently with the predictions of our theoretical model. As gay couples are formed by two men, who in general save less than women because of risk aversion and/or shorter life span (Browning et al., 2010), they may save less than heterosexual and lesbian households. These findings relate also to the previous results in Table 4 including all young couples, in that this disparity of gay and lesbians with respect to heterosexuals is smaller when the fertility channel is cut off. Indeed, in Table 5 the corresponding dummies exhibit a lower coefficient. Comparing these results to our estimates concerning the elderly sample (Table 3) suggests that the fertility differential among all these types of couples plays a more important role later in life, when the lifetime impact of children is felt, than in the savings decisions of young households.

[Table 5 about here]

Table 6 presents additional estimates of the homosexual differential for elderly households, using the same specification as in Table 3 but now also controlling for the absolute difference in expected lifetime between head and partner, and then restricting same-sex couples to never married homosexuals. The estimated coefficient for the dummy variable identifying same-sex households remains positive significant, with a similar magnitude to the corresponding one estimated in Table 3.

[Table 6 about here]

The point estimates in Columns 1 and 2 show that our main finding of higher savings associated to same-sex couples is robust to the inclusion of the absolute intra-household difference in expected lifetime, with a similar magnitude of about \$5,700 (column 1). This result reinforces our interpretation that homosexual couples save more than heterosexual ones not simply because they share the same gender and thus their future expected time together. Moreover, this lifetime

differential is estimated to be a significant determinant of savings, with its negative significant coefficient suggesting that the more far apart the partners are in terms of coincidence of future life, the lower are their savings. If instead partners could share their remaining lifetime together, they would have the incentive to save more to enjoy future consumption jointly. In the savings literature the fact that women tend to live longer than men has received a lot of attention (De Nardi, French, Bailey Jones, 2009; Browning and Lusardi, 1996), although a control for intra-household differences in expected lifetime is usually absent in these empirical studies. Interestingly, we do find a negative significant effect of age difference on savings, as predicted by household bargaining (Lundberg and Ward-Batts, 2000): the older the wife, the more bargaining power she has and the more she wants to save. Our contribution here is that we are also accounting for intra-household differences in expected lifetime together, which allows us to disentangle the bargaining power effect (age difference) from the influence that different life spans between partners (spouses) can have on their willingness to save for future joint consumption. In particular, the insignificant impact of the age difference that Lundberg and Ward-Batts (2000) find could be due to its capturing both lifetime differences and bargaining power. Our interpretation is reinforced by the fact that we do not find any impact of the age difference on retirement income in our subsample of same-sex couples (column 2). Homosexual partners share the same gender and bargaining power would not make the couple save more or less, since their gender-specific incentives and preferences for savings coincide. This is in stark contrast with heterosexual couples, where female spouses save more when they have more bargaining power because of gender-specific attitudes toward savings that differ from their male spouses' (Lundberg and Ward-Batts, 2000).

Focusing on homosexual partners who have never been heterosexually married allows us to exclude those who have shared some heterosexual life history with the married in terms of fertility and marital commitment. We find that the estimated homosexual savings differential is enhanced, by about \$3,000, emphasizing their very low fertility (columns 3 and 4). Since until 2002 no US

state legalized same-sex marriages, a previous marriage is heterosexual and we use the variable marital status to identifying heads or partners who are separated, divorced or widowed. As our sample is at least 60 years old and in the past infertility treatments were not available and adoption by same-sex couples was not allowed, these never married homosexuals are very unlikely to have children, which can explain the higher savings difference of this subgroup with respect to heterosexual married households.

This is the first analysis of homosexual couples' savings behavior, and our empirical evidence on retirement income and mortgage to house-value supports a homosexual-specific saving pattern, relatively to heterosexual married and cohabiting couples. Our theoretical framework encompassing the main channels driving savings decisions, along with our estimates of two separate measures of savings in the elderly and young samples, indicate that homosexuals' (lack of) children seems to be a very important factor keeping their savings higher than heterosexual married and cohabiting couples, while commitment and relationship stability can be ruled out as the main explanatory variable. However, we recognize that our data unavailability of a panel dimension and of direct consumption variables does not allow us to individually disentangle the various forces and characteristics driving this differential savings pattern.

4.2 Sensitivity Analysis

Our results are robust to controlling for age and education squared, presence of grandchildren, self-employment status. Exclusion of the observations associated with the top 1 or 5 percent of the distribution of our dependent variables does not alter our findings. We also perform our estimation changing the age thresholds, from 60 to 75 years old for the elderly sample, and from 30 to 45 years old for the young sample; here too, results yield the same pattern of associations between homosexuality and the retirement income and mortgage ratio. The same can be said when using the

log of the income variables, or alternative measures of the mortgage ratio including only first mortgages, or excluding the property tax and insurance payments.

Using house value as dependent variable for the specifications run in our elderly and young samples yields a distinctive pattern of results (columns 1 and 2 of Table 7). In both samples, now gay and lesbian couples exhibit a different behavior, with gay households owning more expensive houses than lesbian and married couples. Conversely, lesbians own cheaper houses than married couples. House value represents an important form of saving for old age, and a large component of household wealth (the largest for the elderly). Our estimated homosexual-specific house value differentials are in line with Jepsen and Jepsen (2009) and Leppel (2007). Using the same US Census 2000 data, they empirically tests home-ownership rates differentials by sexual orientation, and find that the homosexual households' rate of ownership is lower than for married but higher than for opposite-sex cohabiting couples. Jepsen and Jepsen (2009) also show that the house value is higher for gay couples than for married ones (although controlling for metropolitan area fixed effects makes their difference insignificant), whereas lesbian couples own houses of lower value than married ones. However, the authors do not provide any theoretical decision-making framework with which to interpret their findings, with no link to savings decisions. We show that this differential pattern across gays and lesbians holds also when controlling for metropolitan area fixed effects, and we are able to interpret these findings in terms of savings behavior. Our analysis and various estimates of couples' savings and of the homosexual-specific differential point to the fact that household savings, including house value, follow a different pattern from home-ownership rates, and do not exhibit evidence of discrimination.

[Table 7 about here]

Columns 3 and 4 report our main estimates of the homosexual savings differential, now including black couples in our samples of elderly and young households. The estimated coefficient for our indicator of same-sex couples is still positive significant in both samples, for retirement

income and mortgage to house value ratio, although the magnitudes of the estimated coefficients are lower than for whites only. Additionally, the dummy variable for black, while insignificant in the elderly sample, is very positive significant in the young sample, possibly due to racial discrimination in the mortgage market.

As to alternative explanations to our findings of higher savings for same-sex couples, we argue that the following phenomena cannot consistently explain our results, given our predictions on couples' savings and the corresponding evidence presented so far. The estimated same-sex couples' differential could be due to discrimination by sexual orientation in the savings and housing market, as there is evidence of discrimination in the labor market for gay workers and a premium for lesbians with respect to their heterosexual counterparts (e.g. Allegretto and Arthur, 2001, Black, Makar, Sanders, Taylor, 2003, Jepsen, 2007). However, discrimination would lead to lower savings by same-sex couples relatively to the non-discriminated opposite-sex couples, not to the positive differential we consistently find in our analysis. Retirement income on one hand, and mortgage to house value ratio on the other, would be lower as a consequence of adverse conditions in the credit, labor and pension plan market, and would likely exhibit a different pattern between gay and lesbian individuals, as it is the case for labor market discrimination. In particular, Jepsen and Jepsen (2009) find that homosexual households have the same probability to have a mortgage than heterosexual ones. Finally, we control for state fixed effects and cluster standard errors by metropolitan area, which should take into account geographic variation in cultural attitudes toward homosexuals.

Possible health differences between same-sex and opposite sex couples should not invalidate our estimated sexual orientation differential and its interpretation. In fact, the scant available evidence on the health status of homosexuals (no federal health survey includes a question on sexual orientation) points toward worse homosexual health, especially for young gay men mainly due to AIDS and STDs (Healthy People, 2010), even though the 2009 Massachusetts report on homosexual health shows that "the health of lesbian, gay people is comparable to that of

heterosexual respondents” (Landers, Gilsanz, 2009). Our main sample of elderly homosexual couples and our young couples aged 25 to 45 should not suffer from poorer health, also because the AIDS health differential is found to fade away after age 30 (Frisch, Bronnum-Hansen, 2009). Additionally, the supposed lower access to health care and insurance, and the higher exposure to viral or cancer diseases (Krehely, 2009) should have lead the homosexual population to save less and have less income available at retirement and for mortgage payments, which is exactly the opposite of what we find.

Very recently, Alexander, Davern and Stevenson (2010) argue that US Census IPUMS data are not appropriate to run age and sex-specific population estimates for individuals older than 65, especially due to missing old women. At the same time, they state that the data are accurate if grouped in one age category of 65 and above, and most importantly if the estimation does not focus on variables that vary by age. We believe that this pattern does not provide a plausible alternative explanation for our findings. Our main variable of interest is a dummy variable for sexual orientation which does not vary by age, and we focus on couples obtained by matching heads and partners (spouses), so that if women are missing, men would be missing as well and they would not be in our sample. Also, we consider one category of 60 and above, and also a younger age group which provides the same pattern of results.

Finally, there is a concern that the homosexual couples under analysis may not be same-sex households. The Census identifies same-sex partners by their cohabiting relationship with an unmarried individual of the same gender who records his/her “relationship to household head” as “unmarried partner”. Unfortunately, the 2000 Census modified the relationship to head from “spouse” to “unmarried partner”, and/or the marital status from married to unmarried, for couples with both mates of the same sex, without signaling the allocated values in the flag variable of relationship to head. As documented in Black et al. (2006), this procedure leads to consider several heterosexual married couples as same-sex couples who wrongly reported their sex or relationship to

head. To avoid misclassifying heterosexual couples as homosexual ones, Black et al. (2006) and Jepsen (2007) suggest that individuals with imputed values for “marital status”, “sex”, and “relationship to household head” are excluded from the ‘homosexual’ samples, using the corresponding “q” variables which flag allocated values. We follow this well-established procedure to ensure that the same-sex couples at stake are real homosexual partnerships, rather than heterosexuals misreporting their gender or relationship to head, although homosexuals who wrongly identify themselves as married are also dropped (by year 2000, no US state had legalized same-sex marriages). The concern that sentimentally un-related individuals voluntarily identify themselves as unmarried partners (rather than roommates) is minimal, given the stigma attached to homosexuality. However, all these instances of mis-reporting would work against our findings of significantly higher savings in same-sex couples, as the presence of heterosexual families in our homosexual sample would lead to a statistically insignificant differential. Older homosexuals may be more reluctant to identify themselves as such, so that our same-sex couples may be a subsample of the actual couples in the population. However, there is no reason why declaring to the Census to be in a homosexual partnership should be related to savings propensity. Finally, sexual orientation is inferred from self-reported data and under-reporting of homosexual status (identifying as “unmarried partner”) may be correlated with demographic characteristics such as education and income. At any rate, there is no reason why misreporting is more severe in the Census than in the other smaller data sets with information on homosexuals, such as the GSS.

5. Conclusions

We analyze same-sex household decision-making, documenting how the savings of gay and lesbian couples are higher than those of heterosexual ones. Using 2000 US Census data, we find that homosexuals own \$5,785 more annual retirement and social security income than the average married couple, who in turn saves \$2,442 less annually than the average heterosexual cohabiting

couple. In a simple two-period household savings model, we interpret our findings in terms of a differential effect of sexual orientation on household savings patterns, which may be due to the extremely low fertility that this demographic group exhibits. The fact that cohabiting couples, regardless of their sexual orientation, appear to save more than married ones suggests that lack of legal marriage encourages couples to save more (precautionary motive), but at the same time shows that cohabitation cannot represent the main reason why same-sex households save more than the corresponding heterosexual ones. Evidence from homeowners on the ratio of their mortgage payments relative to the value of their house is consistent with the existence of this savings differential by sexual orientation and cohabiting status, also for young households.

The role of sexual orientation in household savings choices had not yet been explored in the literature. This first study shows that a sizable demographic group in the population, and a relevant new household type, saves more than heterosexual households, presenting empirical evidence on retirement and social security income and homeownership supporting a homosexual-specific saving pattern, relatively to heterosexual married and cohabiting couples. Our analysis could be a useful tool in the economic understanding of this demographic group, and inform future policy decision-making targeted at household savings, the elderly, and homeowners.

References

1. Allegretto, S., Arthur, M.M. (2001), “An empirical analysis of homosexual/heterosexual male earnings differentials: unmarried and unequal?”, *Industrial and Labor Relations Review*, 54-3, 631-646
2. Alexander, J.T., Davern, M. and Stevenson, B. (2010), “Inaccurate Age and Sex Data in the Census PUMS Files: Evidence and Implications”, *NBER w.p.* 15703
3. Antecol, H., Steinberger, M. (2009), “Female labor supply differences by sexual orientation: a semi-parametric decomposition approach”, *IZA w.p.* # 4029.
4. Becker, G. (1991), “A Treatise on the Family”, *Harvard University Press*
5. Bertrand, M., Duflo, E., and Mullainathan, S. (2004), “How Much Should We Trust Differences-in-Differences Estimates? ”, *Quarterly Journal of Economics*, 119-1, 249-275
6. Black, D.A., Sanders, S.G., Taylor, L.J. (2007), “The Economics of lesbian and gay families”, *Journal of Economic Perspectives*, 21-2, 53-70
7. Black, D.A., Gates, G, Sanders, S.G., Taylor, L.J. (2006), “The measurement of same-sex unmarried partner couples in the 2000 US Census”, mimeo
8. Black, D.A., Makar, H., Sanders, S.G., Taylor, L.J. (2003), “The effects of sexual orientation on earnings”, *Industrial and Labor Relations Review*, 56-3, 449-469
9. Black, D.A., Gates, G, Sanders, S.G., Taylor, L.J. (2000), “Demographics of the gay and lesbian population in the US: evidence from available systematic data sources”, *Demography*, 37-2, 139-154
10. Blandford, J.M. (2003), “The Nexus of Sexual Orientation and Gender in the Determination of Earnings”, *Industrial and Labor Relations Review*, 56-4, 622-642
11. Blow, L., Browning, M., Ejrnaes, A., (2009), “Marriage and Consumption”, *RCenter for Applied Microeconometrics, University of Copenhagen*, w.p. 2009-07
12. Browning, M., Chiappori, P.-A., Weiss, Y., (2010), “Family Economics”, Cambridge

University Press, forthcoming

13. Browning, M., Lusardi, A., (1996), "Household saving: micro theory and micro facts", *Journal of Economic Literature*, 34, 1797-1855
14. Browning, M., Ejrnaes, A., (2009), "Consumption and Children", *Review of Economics and Statistics*, 91(1): 93-111
15. Browning, M. (2000), "The saving behavior of a two person household", *Scandinavian Journal of Economics*, 102-2, 235-251
16. Carpenter, C. and Gates, A.J. (2008), "Gay and Lesbian Partnership: Evidence from California," *Demography*, 45-3, pp. 573-590.
17. Chiappori, P.-A. (1988), "Rational Household Labor Supply", *Econometrica*, 56(1): 63-90
18. Deaton, A., Paxson, C. (1994), "Saving, growth, and aging in Taiwan", *Studies in the Economics of Aging*
19. De Nardi, French, Bailey Jones, (2009), "Life Expectancy and old age savings", *AER P&P*
20. Frisch, M., Bronnum-Hansen, H. (2009), "Mortality among men and women in same-sex marriage: a national cohort study of 8333 Danes", *Research and Practice, American Journal of Public Health*, 99-1, 133-137
21. Gay and Lesbian Medical Association and LGBT health experts (2010), "Healthy People 2010 Companion Document for Lesbian, Gay, Bisexual, and Transgender (LGBT) Health", Gay and Lesbian Medical Association
22. Hurst, E., Ching Luoh, M., Stafford, F. (1998), "The wealth dynamics of American families, 1984-1994", *Brookings papers on Economic activity*, 1, 267-337
23. Klawitter, M. (2008), "The effects of sexual orientation and marital status on how couples hold their money", *Review of Economics of the Household*, 6-4, 423-446
24. Krehely, J. (2009), "How to close the LGBT health disparities gap", Center for American Progress, 1-9
25. Kurdek, L.A. (1998), "Relationship outcomes and their predictors: longitudinal evidence

- from heterosexual married, gay cohabiting, and lesbian cohabiting couples”, *Journal of Marriage and the Family*, 60-3, 553-568
26. Jepsen, L. (2007), “Comparing the earnings of cohabiting lesbians, cohabiting heterosexual women, and married women: evidence from the 2000 Census”, *Industrial Relations: A Journal of Economy and Society*”, 46(4), pp.699-727
 27. Jepsen, C. and Jepsen, L. (2006), “The sexual division of labor within households: comparisons of couples to roommates”, *Eastern Economic Journal*, 32-2, 299-312
 28. Jepsen, L. and Jepsen, C. (2002), “An empirical analysis of the matching patterns of same-sex and opposite-sex couples”, *Demography*, 39-3, 435-453
 29. Jepsen, L. and Jepsen, C. (2009), “Does homeownership vary by sexual orientation?”, *regional Science and Urban Economics*, 39, 307-315
 30. Landers, S., Gilsanz, P. (2009), “The health of lesbian, gay, bisexual and transgender persons in Massachusetts”, Massachusetts Department of Public Health
 31. Lillard, L. A. and Wiess, Y. (1997), “Uncertain Health and Survival: Effect on End-of-Life Consumption”, *Journal of Business & Economic Statistics*, Vol. 15, No.2, pp. 254-268.
 32. Leppel, K. (2007), “Married and unmarried, opposite and same-sex couples: a decomposition approach”, *Journal of Housing Research*, 16-1, 61-81
 33. Lin, C., Chen, C., Lin, S. (2000), “Life cycle, mortgage payment, and forced savings”, *International real estate review*, 3-1, 109-141
 34. Lupton, J., Smith, J.P. (2003), “Marriage, assets, and savings”, *Marriage and the Economy*, Cambridge University Press
 35. Lundberg, S., Ward-Batts, J. (2000) "Saving for Retirement: Household Bargaining and Household Net Worth," w.p. 1414
 36. Oreffice, S. (2009), “Sexual orientation and household decision making. Same-sex couples balance of power and labor supply choices”, Instituto Valenciano de Investigaciones

Economicas w.p. A-D series 2009-08

37. Patterson, C.J. (2000), "Family relationships of lesbians and gay men", *Journal of Marriage and the Family*, 62, 1052-106
38. Scholz, J.K., Seshadri, A. (2007), "Children and household wealth", SSRN w.p. 1083829
39. Sells, R.L., Wells, J.A., Wypij, D. (1995), "The prevalence of homosexual behavior and attraction in the United States, the United Kingdom and France: Results of national population-based samples", *Archives of Sexual Behavior*, 24-3.
40. Smith, M., and Gates, (2001) "Gay and Lesbian Families in the United States: Same-Sex Unmarried Partner Households. A Preliminary Analysis of 2000 United States Census Data", *Human Rights Campaign*, Washington DC.
41. Wolff, E.N. (1998), "Recent trends in the size distribution of household wealth", *Journal of Economic Perspectives*, 12-3, 131-150
42. Zissimopoulos, Julie., Karney, Benjamin., Rauer, Amie. (2008), "Marital Histories and Economic Well-Being", RAND Working Paper WR No-645.

Table 1: Summary Statistics for Elderly Couples

Variable	Lesbian Couples				Gay Couples			
	Heads		Partners		Heads		Partners	
	mean	std. dev	mean	std. dev	mean	std. dev	mean	std. dev
Retirement & SS Income	21,938	24,890	21,938	24,890	24,057	36,114	24,057	36,114
Age	65.37	5.47	58.12	10.27	65.92	5.22	55.10	10.60
Education	14.52	2.89	14.86	2.93	15.18	2.81	14.26	2.41
Household Size	2.18	0.66	2.18	0.66	2.06	0.29	2.06	0.29
# of Children Present	0.09	0.33	0.00	0.00	0.04	0.21	0.02	0.19
Disability	0.09	0.29	0.06	0.23	0.05	0.23	0.05	0.21
Dummy Move	0.23	0.43	0.23	0.43	0.38	0.49	0.38	0.49
Total Income	40,081	45,662	34,399	35,312	67,617	79,109	37,337	54,391
Total Income 1990	59,952	39,828	39,349	21,063	63,688	32,101	35,676	16,146
Life Expectancy Diff	7.32	6.43	7.32	6.43	9.21	7.25	9.21	7.25
Number of observations*	141		141		264		264	

Variable	Heterosexual Cohabiting Couples				Heterosexual Married Couples			
	Male Mates		Female Mates		Husbands		Wives	
	mean	std. dev	mean	std. dev	mean	std. dev	mean	std. dev
Retirement & SS Income	18,183	21,974	18,183	21,974	22,860	25,108	22,860	25,108
Age	67.01	5.57	59.81	9.78	68.52	5.78	65.24	7.97
Education	12.45	2.96	12.58	2.20	12.81	2.92	12.60	2.17
Household Size	2.07	0.36	2.07	0.36	2.26	0.68	2.26	0.68
# of Children Present	0.05	0.28	0.07	0.33	0.179	0.480	0.179	0.480
Disability	0.10	0.30	0.09	0.29	0.10	0.30	0.09	0.29
Dummy Move	0.36	0.48	0.36	0.48	0.21	0.41	0.21	0.41
Total Income	36,674	49,054	26,373	34,271	45,172	55,910	16,047	25,396
Total Income 1990	40,261	21,598	24,453	12,900	50,100	22,391	15,109	7,057
Life Expectancy Diff	9.05	6.52	9.05	6.52	5.59	4.12	5.59	4.12
Number of observations*	7,863		7,863		111,109		111,109	

Data from the U.S. Census year 2000, five percent sample of the Public Use Microdata Set (PUMS).

Disability refers to mobility limiting disability.

Dummy Move In is equal to 1 if resident moved in the house in the last five years.

*For couples whose head is between 60 and 80 years of age.

Table 2: Summary Statistics for Young Couples

Variable	Lesbian Couples				Gay Couples			
	Heads		Partners		Heads		Partners	
	mean	std. dev	mean	std. dev	mean	std. dev	mean	std. dev
Mortgage/House Value**	72.97	31.94	72.97	31.94	67.92	36.21	67.92	36.21
House Value	184,065	147,216	184,065	147,216	251,011	206,174	251,011	206,174
Total Annual Mortgage	11,691	7,691	11,691	7,691	14,709	11,220	14,709	11,220
Age	38.64	3.73	37.89	4.02	38.73	3.87	37.70	4.01
Education	15.21	1.98	14.85	2.16	15.23	1.95	14.69	2.10
# of Children Present	0.33	0.72	0.07	0.31	0.06	0.37	0.00	0.08
Labor Income	47,947	47,730	39,529	42,754	62,884	65,516	43,920	46,920
Dummy Move	0.66	0.48	0.66	0.48	0.69	0.46	0.69	0.46
Total Income	54,427	52,846	44,637	47,549	73,429	71,278	49,276	50,374
Total Income 1990	35,739	16,128	28,764	12,732	36,512	17,645	28,819	13,219
Life Expectancy Diff	3.59	2.88	3.59	2.88	3.46	2.84	3.46	2.84
Number of observations*	1,037		1,037		1,017		1,017	

Variable	Heterosexual Cohabiting Couples				Heterosexual Married Couples			
	Male Mates		Female Mates		Husbands		Wives	
	mean	std. dev	mean	std. dev	mean	std. dev	mean	std. dev
Mortgage/House Value**	79.82	52.33	79.82	52.33	72.78	37.80	72.78	37.80
House Value	140,411	114,791	140,411	114,791	184,040	144,123	184,040	144,123
Total Annual Mortgage	9,468	6,648	9,468	6,648	11,649	7,877	11,649	7,877
Age	37.75	4.31	36.92	4.36	38.68	4.08	37.29	4.13
Education	13.36	1.73	13.37	1.94	14.15	2.02	14.00	2.03
# of Children Present	0.40	0.85	0.61	0.95	1.86	1.12	1.86	1.12
Labor Income	40,278	39,687	28,843	27,918	57,416	56,855	22,104	29,427
Dummy Move	0.63	0.48	0.63	0.48	0.50	0.50	0.50	0.50
Total Income	45,688	43,804	32,438	30,026	64,716	62,575	24,429	31,999
Total Income 1990	29,387	9,766	20,042	7,887	40,532	13,257	17,519	6,546
Life Expectancy Diff	5.71	3.58	5.71	3.58	5.72	2.69	5.72	2.69
Number of observations*	14,994		14,994		87,008		87,008	

Data from the U.S. Census year 2000, five percent sample of the Public Use Microdata Set (PUMS).

Dummy Move In is equal to 1 if resident moved in the house in the last five years.

The total annual mortgage is net of property taxes and insurance costs, and includes second mortgages.

*For couples between 25 and 45 years of age that own a home and are paying mortgage.

**Ratio of the total annual mortgage to house value times 1000.

Table 3: Effects of Being Homosexual versus Heterosexual Married and Cohabiting on Household Retirement and Social Security Income: Elderly Couples

	Homosexual & Heterosexual Married	Homosexual & Heterosexual Married	Homosexual & Heterosexual Cohabiting	Heterosexual Married & Cohabiting
	(1)	(2)	(3)	(4)
Dummy for Homosexual	5785.02*** (1859.28)	4715.35** (2132.96)	3775.83** (1827.96)	--
Dummy for Gay	--	1643.42 (3349.20)	--	--
Dummy for Cohabiting	--	--	--	2442.26*** (332.32)
Age of Head	775.33*** (19.93)	775.15*** (19.93)	828.40*** (59.85)	767.48*** (18.97)
Age of Partner	437.74*** (14.78)	437.98*** (14.84)	477.07*** (33.04)	456.43*** (12.79)
Education of Head	621.43*** (62.31)	621.41*** (62.31)	691.74*** (125.54)	645.81*** (58.78)
Education of Partner	1441.79*** (99.84)	1440.96*** (100.02)	1093.74*** (207.36)	1298.91*** (78.49)
Household Size	-629.65*** (113.71)	-629.14*** (114)	-804.05 (516)	-622.77*** (112)
Disability of Head	-1754.59*** (227.47)	-1754.02*** (227.50)	-1656.58** (646.56)	-1793.17*** (217.53)
Disability of Partner	-1144.91*** (249.99)	-1145.07*** (249.99)	131.34 (876.53)	-1070.06*** (241.66)
1990 Income of Head	0.176*** (0.01)	0.176*** (0.01)	0.040* (0.02)	0.163*** (0.01)
1990 Income of Partner	-0.254*** (0.03)	-0.254*** (0.04)	-0.05 (0.04)	-0.190*** (0.03)
Dummy Move In	633.71*** (208.25)	632.71*** (208.30)	225.61 (571.24)	593.80*** (195.65)
Number of Observations	111,514	111,514	8,268	118,972

Estimated coefficients, S.E. (in paranthesis) clustered by recoded PUMA.

* ; ** ; *** significant at 10 %, 5%, 1 %.

Regressions run with the covariates described in Section 3.

Table 4: Effects of Being Homosexual versus Heterosexual Married and Cohabiting on Ratio of Mortgage to House Value: Young Couples

	Homosexual & Heterosexual Married	Homosexual & Heterosexual Married	Homosexual & Heterosexual Cohabiting	Heterosexual Married & Cohabiting
	(1)	(2)	(3)	(4)
Dummy for Homosexual	2.594** (1.06)	5.444*** (1.27)	-0.70 (1.12)	--
Dummy for Gay	--	-5.345*** (1.80)	--	--
Dummy for Cohabiting	--	--	--	5.469*** (0.64)
Labor Income of Head	-0.00004*** (0.00)	-0.00004*** (0.00)	-0.00006*** (0.00)	-0.00004*** (0.00)
Labor Income of Partner	0.00001 (0.00)	0.00001* (0.00)	-0.00005*** (0.00)	0.00 (0.00)
No. Children Head	-1.09 (1.24)	-1.79 (1.27)	1.218** (0.58)	0.41 (0.37)
No. Children Partner	0.87 (1.25)	1.57 (1.27)	0.41 (0.55)	-0.55 (0.38)
Age of Head	-0.507*** (0.07)	-0.507*** (0.07)	-0.13 (0.14)	-0.475*** (0.08)
Age of Partner	-0.08 (0.05)	-0.08 (0.05)	-0.09 (0.14)	-0.07 (0.05)
Education of Head	-11.07*** (1.35)	-11.07*** (1.35)	-15.78*** (3.61)	-12.18*** (1.34)
Education of Partner	-2.44*** (0.81)	-2.44*** (0.81)	-4.183** (1.95)	-3.039*** (0.79)
1990 Income of Head	0.00 (0.00)	0.00 (0.00)	-0.00008* (0.00)	0.00004* (0.00)
1990 Income of Partner	-0.00015*** (0.00)	-0.00015*** (0.00)	-0.0001 (0.00)	-0.00022*** (0.00)
Dummy Move In	-1.409*** (0.31)	-1.405*** (0.31)	4.02*** (0.93)	-0.575* (0.30)
Number of observations	89,062	89,062	17,048	102,002

Estimated coefficients, S.E. (in paranthesis) clustered by recoded PUMA.

* ; ** ; *** significant at 10 % , 5% , 1 % .

Regressions run with the covariates described in Section 3.

Table 5: Effects of Being Homosexual versus Heterosexual Married and Cohabiting on Ratio of Mortgage to House Value: Young Couples Childless

	Homosexual & Heterosexual Married	Homosexual & Heterosexual Married	Homosexuals & Heterosexual Cohabiting	Heterosexual Married & Cohabiting
	(1)	(2)	(3)	(4)
Dummy for Homosexual	1.082 (1.27)	3.844** (1.51)	-0.183 (1.26)	--
Dummy for Gay	--	-4.829** (1.87)	--	--
Dummy for Cohabit	--	--	--	3.274*** (1.04)
Labor Income of Head	-0.00004*** (0.00)	-0.00004*** (0.00)	-0.00005*** (0.00)	-0.00004*** (0.00)
Labor Income of Partner	-0.00002** (0.00)	-0.00002** (0.00)	-0.00004*** (0.00)	-0.00003*** (0.00)
Age of Head	-0.416*** (0.13)	-0.412*** (0.13)	-0.361** (0.17)	-0.571*** (0.16)
Age of Partner	-0.13 (0.12)	-0.14 (0.12)	0.29 (0.18)	0.14 (0.12)
Education of Head	-19.036*** (3.15)	-19.033*** (3.15)	-18.930*** (4.70)	-20.097*** (3.12)
Education of Partner	-2.45 (2.85)	-2.42 (2.85)	-7.759** (3.33)	-4.627* (2.60)
1990 Income of Head	0.00001 (0.00)	0.00001 (0.00)	-0.00005 (0.00)	0.00008 (0.00)
1990 Income of Partner	-0.00003 (0.00)	-0.00002 (0.00)	-0.00012 (0.00)	-0.00025*** (0.00)
Dummy Move In	-0.75 (0.87)	-0.74 (0.87)	3.557*** (1.21)	1.530* (0.79)
Number of observations	13,109	13,109	8,291	17,944

Estimated coefficients, S.E. (in paranthesis) clustered by recoded PUMA.

* ; ** ; *** significant at 10 % , 5% , 1 % .

Regressions run with the covariates described in Section 3.

Table 6: Effects of Being Homosexual & Never Married Homosexual versus Heterosexual Married Accounting for Life Expectancy on Household Retirement and Social Security Income: Elderly Couples

	Homosexual & Heterosexual Married	Homosexual Only	Never-married Homosexual & Heterosexual
	(1)	(2)	(3)
Dummy for Homosexual	5689.56*** (1858.64)	--	8695.93*** (3165.58)
Life expectancy difference	-175.80*** (47.66)	-278.42 (393.24)	-181.44*** (47.85)
Age Difference	-322.54*** (34.61)	-56.36 (248.61)	-316.43*** (34.74)
Age of Head	1194.21*** (18.67)	1286.51*** (340.44)	1192.75*** (18.67)
Education of Head	609.05*** (62.27)	2681.95*** (806.96)	577.59*** (62.24)
Education of Partner	1468.08*** (99.81)	2181.82** (911.55)	1519.56*** (97.53)
Household Size	-612.04*** (113.75)	-2815.22 (1955.17)	-612.42*** (113.96)
Disability of Head	-1755.20*** (227.49)	1701.75 (5924.05)	-1772.81*** (227.84)
Disability of Partner	-1106.01*** (250.03)	762.15 (5868.79)	-1110.91*** (250.39)
1990 Income of Head	0.178*** (0.01)	0.00336 (0.07)	0.183*** (0.01)
1990 Income of Partner	-0.265*** (0.03)	-0.07219 (0.19)	-0.287*** (0.03)
Dummy Move In	651.52*** (208.42)	-2201.65 (3771.97)	662.32*** (208.51)
Number of observations	111,514	405	111,302

Estimated coefficients, S.E. (in paranthesis) clustered by recoded PUMA.

* ; ** ; *** significant at 10 % , 5% , 1 % .

Regressions run with the covariates described in Section 3.

Table 7: Effects of Being Homosexual versus Heterosexual Married on House Value and Retirement and Social Security Income: Elderly and Young Couples

<i>Dependent Variable</i>	<u>Young Sample</u>	<u>Elderly Sample</u>	<u>Elderly Sample (Blacks & Whites)</u>	<u>Young Sample (Blacks & Whites)</u>
	<u>House Value</u>	<u>House Value</u>	<u>Retirement & SS Income</u>	<u>Mortgage Ratio</u>
Dummy for Homosexual	-40950.16*** (4073.93)	-40022.63** (18070.98)	4717.46*** (1829.36)	1.880* (1.05)
Dummy for Gay	55230.03*** (6468.21)	72247.60** (29387.42)	--	--
Age of Head	886.20*** (191.81)	2274.18*** (149.79)	762.15*** (19.31)	-0.478*** (0.07)
Age of Partner	372.43** (145.20)	585.50*** (94.71)	449.89*** (13.94)	-0.07 (0.05)
Education of Head	-33422.47*** (5387.54)	2308.11*** (341.36)	664.85*** (54.53)	-10.56*** (1.32)
Education of Partner	-4808.14*** (1718.40)	1087.98* (629.17)	1333.36*** (90.35)	-2.604*** (0.81)
1990 Income of Head	0.706*** (0.09)	1.305*** (0.06)	0.167*** (0.01)	0.00002 (0.00)
1990 Income of Partner	1.789*** (0.18)	2.816*** (0.26)	-0.187*** (0.03)	-0.00009** (0.00)
Dummy Move In	36412.66*** (1030.91)	12689.38*** (1592.09)	552.68*** (201.79)	-1.675*** (0.31)
No. Children Head	36342.70*** (1031.28)	--	--	-1.556 (1.23)
Labor Income of Head	0.871*** (0.02)	--	--	-0.00004*** (0.00)
Household Size	--	2998.16*** (817.30)	-622.28*** (99.81)	--
Disability of Head	--	-8807.18*** (1307.34)	-1782.87*** (215.16)	--
Disability of Partner	--	-10178.02*** (1425.60)	-1009.22*** (240.68)	--
Dummy for Black Head	--	--	1958.15 (1245.01)	9.785*** (1.44)
Number of Observations	98,681	103,636	118,173	94,040

Estimated coefficients, S.E. (in paranthesis) clustered by recoded PUMA.

* ; ** ; *** significant at 10 % , 5% , 1 % .

Regressions run with the covariates described in Section 3.