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Intra-household inequality and tax planning of same-sex couples

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Abstract

In this paper, I present differences in income, intra-household inequality and tax planning between mixed and same-sex couples. By using unique administrative tax data, I find that household incomes of same-sex couples are significantly higher than those of heterosexual couples. While there is no difference in intra-household inequality between heterosexual couples and male same-sex couples, lesbian couples have significantly lower intra-couple income inequality. This is in line with previous research. When it comes to tax planning, there are major differences between heterosexual couples and homosexual couples. While tax planning in heterosexual couples often leads to a high marginal tax burden for the secondary earner, this is not the case for same-sex couples.

Keywords:

Economics of Gender, Household Income Gap, Sexual Orientation, Tax Planning

JEL Classification

D13, H24, H31, J12, J16

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1. Introduction

The study of the division of labor within households has always been one of the main questions in family economics. Recently, papers have focused on the influence of gender identity on income inequality and division of labor within the household (Bertrand et al. 2015, Lippmann et al. 2020, Zinovyeva and Tverdostup 2021). However, the question of specialization in households has been particularly examined for traditional family models, while sexual orientation and the associated gender composition of the couple has rarely been considered. In 2001, Germany was one of the first major industrialized countries to introduce registered life partnerships, a marriage-like institute for same-sex couples. According to economic literature, the analysis of the division of labor in couples and the associated labor supply depends on the bargaining power of the individual partners. This is particularly influenced by the outside options in the event of a divorce (Chiappori et al. 2017; Schaubert 2017; Goussé and Leturcq 2022). In Germany, registered life partnerships are treated the same as marriages when it comes to post-marital maintenance. This makes a comparison between these legal institutions possible. For this reason, general conclusions about the division of labor in the household depending on sexual orientation can be drawn from the German case. An analysis of specialization in same-sex couples also provides insight into how gender plays a role in the division of labor within the household. With that in mind, this work will examine whether same-sex couples (SSC) have different household income and intra-household inequality in comparison to heterosexual couples.

In Germany, the intra-household inequality of married couples and the related low level of employment among women is often associated with the high marginal tax burden of second earners caused by the spouse splitting (Bick and Fuchs-Schündeln 2018). Although there has been a discussion in Germany for many years about the connection between joint taxation and the division of labor within a married couple, there is little empirical evidence on the extent to which gender influences tax planning of jointly taxed couples. Therefore, I will address the research question to what extent tax planning of same-sex couples differs from that of mixed-sex couples. This also makes it possible to examine whether gender identity affects German high marginal income tax rate for secondary earners.

These research questions will be answered by a comparison of married heterosexual couples and registered life partnerships. By using unique administrative tax data, I am able to identify same-sex couples and analyze their income and tax planning behavior. The paper contributes to two kinds of literature. The first question tries to answer whether same-sex and mixed-sex couples have different inter- and intra-household earnings. There is little empirical evidence in Germany on this due to the low number of same-sex couples in survey data sets. In addition, the legislation on registered life partnerships and same-sex marriages has only changed in recent years. Ahmed et al. (2011) finds little difference between gay and heterosexual couples

with Swedish data, while lesbian couples have less income. Lesbian couples, on the other hand, have the lowest intra household inequality. Similar analyzes were carried out by Dilmaghani (2018) for Canada and Jepsen and Jepsen (2015) for the U.S. The paper by Moberg (2016) examines the income gap for lesbian couples after childbirth. She shows that gender composition plays a major role in the division of labor after entering parenthood.

There are no comparable studies for Germany due to a lack of data and difficulties to identify sexual orientation in microdata sets. The little empirical evidence on income according to sexual orientation there is, is based on the German microcensus (Humpert 2016) and the German Socio-Economic Panel (Kroh et al. 2017; de Vries et al. 2020; Fischer et al. 2021). The paper by Wieber and Holst (2015) aims to varify the study by Bertrand et al. (2015) on relative household income of heterosexual couples for Germany. They show that gender identity has an effect on labor supply of full-time working women in West Germany.

Second, it contributes to the question if gender identity affects tax planning of married couples in Germany, which is generating high marginal income tax rates for secondary earners. Stöwhase (2011) shows through a simulation analysis that more than 20% of households do not minimize the withholding tax. Buettner et al. (2019) show that tax planning of couples differ dependent on whether the wife or the husband is the primary earner. In principle, joint taxation and tax class choice are held responsible for the low level of female labor force participation in Germany. However, the marginal tax burden is also a result of the tax class choice. The aim of the present work is therefore to shed a better light on whether the choice of tax class is also influenced by gender identity, or whether it follows purely economic incentives.

I find that household incomes of same-sex couples are significantly higher than those of heterosexual couples. Heterosexual couples are also significantly more likely to be single-earner households. I find no differences in household inequality between heterosexual couples and male same-sex couples. Lesbian couples, on the other hand, have a relative income that is more than 14% higher. Previous studies have found similar results. When it comes to tax planning, I find big differences between heterosexual couples and homosexual couples. Homosexual couples are more likely (32% for lesbian and 21% for gay couples) to choose the tax class combination, which results in a lower marginal tax burden for second earners. Overall, after controlling for additional variables, the results are robust.

The paper is structured in the following way. Section 2 provides background information on income taxation of married couples and the law on registered life partnerships in Germany. Section 3 describes the data set and shows descriptive statistics. I present my empirical strategy in section 4, while I illustrate my empirical results in section 5. Section 6 concludes.

2. Institutional Background

Taxation of married couples in Germany

The so-called spouse splitting allows couples to file tax assessments together. The two incomes are added together, divided by two and taxed according to the income tax schedule. To get the couple's finale tax liability, the resulting amount is doubled. The German progressive income tax system therefore gives the married couple a tax advantage, which is particularly important if the income difference between the partners is very big or one of the partners is not working. This has long been the subject of criticism, as it promotes specialization within the couple and therefore creates negative incentives for second earners to increase their labor supply (Bach et al. 2011; Steiner and Wrohlich 2004).

Ultimately, spouse splitting also has an effect on the monthly deduction of wage tax for employed married couples. In Germany, the payroll tax is transferred monthly by the employer to the tax office. The exact amount of the tax depends on the selected tax class. Of the six different tax classes, three are relevant for married couples. An overview of the average tax burden by tax class can be found in figure 1. In tax class IV, both partners are taxed in the same way as an unmarried person in tax class I. In tax class III, the employee's basic allowance increases, which reduces the tax burden of one partner. But tax class III can only be chosen if the partner chooses tax class V. However, the partner in tax class V must transfer the basic allowance and child allowance to the other partner and thus has a significantly higher marginal tax burden [1] . In the following, tax class combination IV/IV is referred to as the "default option" and III/V as the "asymmetric treatment".

The tax class combination allows a married couple to minimize their monthly tax burden. However, the choice of tax class does not affect the couple's final income tax burden [2]. This is determined in the following year through income tax statement. The choice of tax class can therefore only optimize the tax prepayment during the year and thus influence how high the tax refund is in the following year [3]. Similar to splitting, the choice of tax class has a particular impact on couples with a large income difference. The income distribution within the couple therefore has a decisive influence on the choice of tax class. Figure 2 shows the different tax burdens of a couple depending on their relative income (second earner's share of household income). It can be seen that as the second earner's share of household income increases, so does the rate of return of the default option. From a value of 0.35, only small tax benefits (with a very egalitarian income

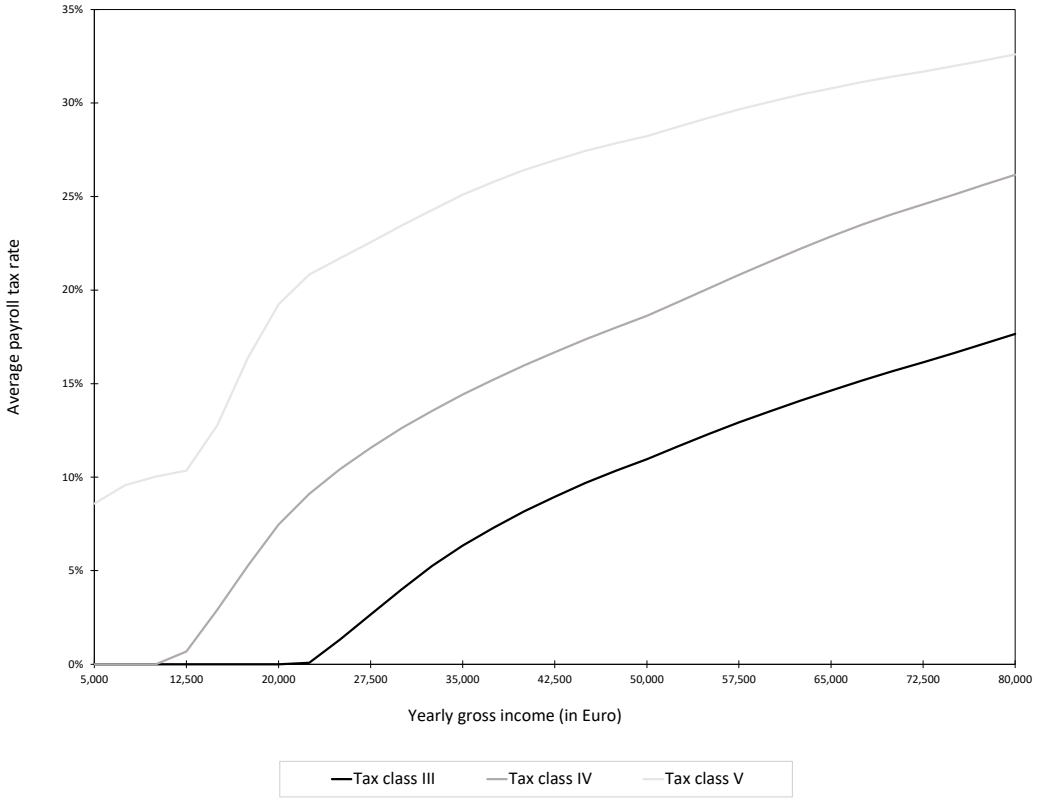
[1] Table 6 and 7 in the Appendix show more information on tax rate and derivation of taxable income.

[2] The tax class can influence the amount of earning replacement benefits (e.g. parental leave benefits), since the amount is calculated on the basis of monthly net income (Spangenberg et al. 2020).

[3] Since 2010 there has been an additional option for choosing a tax class. With the so-called factor method, both partners are assigned to tax class IV, but the tax office uses an individually calculated factor in the wage tax deduction to anticipate the splitting effect. This minimizes the wage tax deduction, but without causing high marginal tax rates for the second earner. Nevertheless, this option is hardly known and is therefore rarely used (Deutscher Bundestag 2015).

distribution even tax disadvantages) of the asymmetric treatment can be determined, while the marginal tax burden of the second earner is still significantly higher. For purely rational households, the choice of the tax

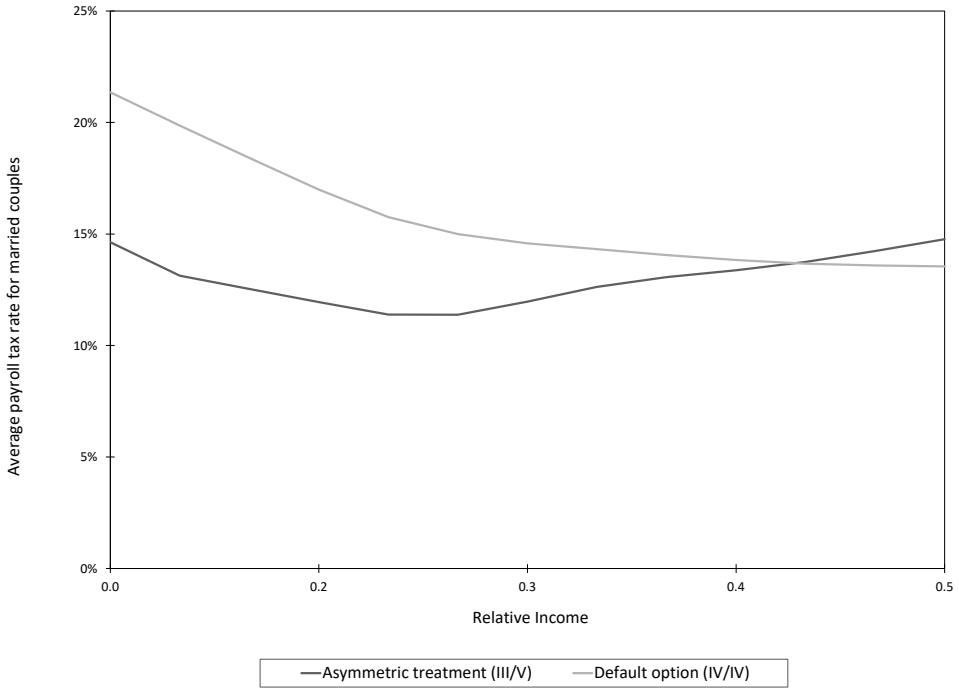
Figure 1: Average tax rate by tax class



Notes: The graph shows the average payroll tax rate for different incomes and tax classes. Own calculation based on "Programmablaufplan" for 2016 of the Federal Ministry of Finance (Bundesministerium der Finanzen 2015).

class combination would have a neutral effect. However, the splitting effect is anticipated by the asymmetric treatment. Tax class V leads to a high perceived tax burden for the second earner. Therefore, it is assumed that this high marginal tax burden reduces the labor supply of the second earner (Lembcke et al. 2021). In addition, each spouse's net monthly income can affect bargaining power and division of labor within the marriage. Due to the higher marginal tax burden, also in combination with so-called tax-free mini-jobs, one can assume that tax class V is partly responsible for Germany's low full-time employment rate for married women in international comparison. In its report, the Scientific Advisory Board at the Federal Ministry of Finance therefore recommends abolishing the asymmetric treatment (Wissenschaftlicher Beirat beim BMF 2018). According to Dorn et al. 2022, the abolition of the asymmetric option would improve economic efficiency.

Figure 2: Average tax rate for married couples with income of €65,000



Notes: The graph shows the average payroll tax rate for jointly assessed married couples with a gross income of €65,000. It is assumed that the entire income is employment income. Own calculation based on "Programmablaufplan" for 2016 of the Federal Ministry of Finance (Bundesministerium der Finanzen 2015).

Act on Registered Life Partnerships

In 2001, the German government implemented a law, which equalized traditional marriages and same-sex partnerships. The so-called Act on Registered Life Partnerships (German: *Lebenspartnerschaftsgesetz*) allowed registered partnerships by two persons of the same sex. Even though registered life partnerships were similar to traditional marriages, the legal status was not the same. While there was an obligation to pay post-marital maintenance, as in the case of civil marriages, joint adoption was not possible for registered life partnerships [4].

Until 2011, registered life partnerships were disadvantaged under income tax law compared to traditional marriages. These were denied the use of joint taxation and the choice of different tax class options. In 2013, the Federal Constitutional Court declared this unequal treatment to be incompatible with the general principle of equality in the constitution. Since then, registered life partnerships have a legal right to use spouse splitting and change tax classes (BVerfG 2013).

[4] Registered life partnerships were also treated the same as marriages in social law. This also means an entitlement to a widower's pension. In addition, the partner can also be insured with the statutory health insurance. After a series of court rulings, there was also legal equality in gift and inheritance tax and in pension entitlements. For an overview of the development of legislation and case law see Gürbüz (2016).

On October 1, 2017, the "Law introducing the right to marry people of the same sex" (German: *Gesetz zur Einführung des Rechts auf Eheschließung für Personen gleichen Geschlechts*) (Deutscher Bundestag 2017) came into force. This allowed people of the same sex to enter into a civil marriage. Registered life partnerships could be converted into a marriage upon application. With this law, new registered life partnerships are no longer possible.

3. Data and descriptive statistics

My analysis is based on the German Taxpayer Panel (TPP), which is provided by the German Federal Statistical Office (Destatis 2020). The data is based on individual tax returns, which are linked over the years by the tax identification number. I will use the 5% stratified random sample (2,076,712 taxpayers). In addition to tax-relevant variables, socio-economic characteristics such as religious affiliation, number of children, age and state of residence are also included. I restrict the dataset to the sample of married couples and couples in same-sex partnerships aged 25-64. Since the two legal institutions of marriage and registered life partnerships only differ in terms of adoption law, only childless couples are considered. In addition, households with negative income will be excluded. Same-sex partnerships can be identified by a specific variable indicating if the partnership is female or male. The variable is administratively collected by the tax authorities and has been included in the data set since 2013. For the analysis I use the cross-section of the year 2016. For the analysis of household tax planning, I use a sample of observations where both partners have positive income from employment. In addition, only households whose members have tax class III, IV and V are considered [5].

An advantage of the dataset is that it provides high-quality and detailed information about the income levels of each partner. This information is not available, for example, in the German microcensus, where registered life partnerships can also be identified. The calculation of relative household incomes with survey data could also be subject to errors. Slotwinski and Roth (2020) show that women in surveys often state their income as too low if it exceeds that of their partner. This misreporting can lead to an overestimation of the gender wage gap. Since this phenomenon is due to the male breadwinner norm and may therefore be less common in same-sex couples, a similar analysis using survey data would be highly biased. In addition, the dataset is also the only source which makes it possible to analyze tax planning of registered life partnerships, as it contains tax-relevant variables and at the same time a sufficient number of same-sex couples. A disadvantage of the dataset, however, is that characteristics that are not tax-relevant are not present, unlike in survey data. In particular, the missing information on nationality, education and industry could bias my results, as these

[5] The other tax classes (I, II) only apply to single households.

may affect income and tax planning.

Table 1 presents descriptive statistics separately for same-sex and mixed-sex couples. There are 172,071 observations in the sample. Same sex couples account for less than 1% of all observations. While there are 476 lesbian couples, the number of observations for male same-sex couples is 1,102 and thereby more than twice as large. Persons in same-sex couples are on average younger and are less likely to be members of a religious community. Same-sex couples are also more likely to live in West Germany. The average household income of same-sex couples is €90,359, which is significantly higher than that of mixed-sex couples, which is €67,704. However, the average household income of same-sex couples is driven by differences between male and female couples. While male couples have with €96,207 the highest household income of all groups, female couples' household income is with €81,182 significantly lower. All couples derive the majority of their gross income from employment. While mixed-sex and lesbian couples receive a similar proportion of their income from employment, same-sex men receive more self-employed and business income. On average, all groups have a similar level of income substitutes.

Table 1: Descriptive statistics: Means and SDs for heterosexual and homosexual households

	Heterosexuals	**Homosexuals**			**All couples**
		All	**Females**	**Males**	
Age Person A	54.02 (8.95)	46.34 (9.66)	46.38 (10.00)	46.31 (9.45)	53.96 (8.98)
Age Person B	51.94 (9.20)	45.62 (9.38)	46.26 (9.67)	45.22 (9.18)	51.90 (9.22)
Religion Person A	0.47 (0.50)	0.28 (0.45)	0.31 (0.46)	0.26 (0.44)	0.47 (0.50)
Religion Person B	0.53 (0.50)	0.31 (0.46)	0.33 (0.47)	0.30 (0.46)	0.53 (0.50)
Employment Income A	36,961 (45,551)	36,325 (43,014)	32,808 (30,782)	38,567 (49,134)	36,957 (45,533)
Employment Income B	19,977 (22,373)	35,492 (39,367)	35,225 (32,563)	35,662 (43,163)	20,089 (22,580)
Income Person A	45,369 (97,466)	47,744 (67,314)	40,607 (45,278)	52,293 (77,863)	45,386 (97,282)
Income Person B	22,335 (47,610)	42,614 (47,688)	40,576 (34,607)	43,914 (54,386)	22,481 (47,641)
Income substitutes A	642 (2,710)	514 (2,852)	644 (3,228)	431 (2,584)	641 (2,711)
Income substitutes B	390 (1,790)	430 (1,946)	361 (1,540)	474 (2,164)	390 (1,792)
Household Income	67,704 (112,344)	90,359 (82,861)	81,182 (58,724)	96,207 (94,666)	67,868 (112,175)
East Germany	0.22 (0.42)	0.20 (0.40)	0.18 (0.39)	0.21 (0.40)	0.22 (0.42)
No. of Observations	170,493	1,578	476	1,102	172,071

Notes: The table shows married couples and couples in same-sex partnerships aged 25-64 using sample weights. Households with negative income have been excluded. In heterosexual couples, person A represents the man and person B represents the woman. In the case of registered life partnerships, the order of the partners is determined according to the alphabetical order of the name. The religion variable represents a dummy, which takes the value 1 if the person is a member of a religious community and 0 otherwise. East Germany is a dummy indicating whether the place of residence is in East or West Germany. The amount for income substitutes includes sickness, unemployment, insolvency, parental and maternity benefits.

4. Empirical Strategy

To identify the differences in household income, relative household income and tax planning for same and different sex couples, I will estimate OLS models. Unlike other papers on this topic, I will make separate estimates of the difference in male couples (male same-sex couples vs. mixed sex couples) and female couples (female same-sex couples vs. mixed sex couples).

Income differentials between heterosexual and homosexual households

To identify the differences in household income, I will estimate according to Ahmed et al. (2011) the following equation:

$$HHIncome_i = \alpha_1 + \alpha_2 SSC_i + \alpha_3 X_i + \epsilon_i, \tag{1}$$

while $HHIncome_i$ is the labor income (agricultural and forestry income, income from employment, business income, self-employed income) of both partners in the household. SSC_i equals 1 if the couple is a same-sex partnership and 0 if not. X_i is the vector of covariates, which includes the age of both partners, the religion of both partners and state of residence. ϵ_i is the error term.

Income differentials within heterosexual and homosexual households

First, I will identify the differences in relative household income. Inspired by Bertrand et al. (2015), relative household income is defined as the share of the secondary earner on overall household income:

$$RelativeHHIncome = \frac{min(income^A, income^B)}{HHIncome} \tag{2}$$

$income^A$ is the income of person A and $income^B$ income of person B. Overall household income is defined as $HHIncome = income^A + income^B$. In addition, I calculate the income ratio between the two partners of the household. The income ratio takes the following form:

$$IncomeRatio = \frac{min(income^A, income^B)}{max(income^A, income^B)} \tag{3}$$

To identify the differences in income distribution within the household, I estimate the following equation:

$$Y_i = \beta_1 + \beta_2 SSC_i + \beta_3 X_i + \nu_i, \tag{4}$$

while Y_i are $RelativeHHIncome_i$, $IncomeRatio_i$ or $SingleEarner_i$, a dummy that takes the value 1 if the household is single-earner household and 0 otherwise. Control variables are the same as in equation (1). ν_i

is the error terms. In order to be able to interpret the coefficients correctly later, it must be taken into account that $RelativeHHIncome_i$ can take values between 0 and 0.5 while the $IncomeRatio_i$ can take values between 0 and 1.

Table 2: Income Inequality within Households

	Heterosexuals	**Homosexuals**			**All couples**
		All	**Females**	**Males**	
Relative Household Income	0.21 (0.18)	0.26 (0.17)	0.28 (0.17)	0.25 (0.17)	0.21 (0.18)
Income Ratio	0.34 (0.33)	0.42 (0.32)	0.46 (0.31)	0.40 (0.32)	0.34 (0.33)
Single-earner household	0.31 (0.46)	0.15 (0.35)	0.13 (0.34)	0.16 (0.36)	0.30 (0.46)
No. of Observations	170,493	1,578	476	1,102	172,071

Notes: The table shows married couples and couples in same-sex partnerships aged 25-64 using sample weights. Households with negative income have been excluded.

The different measures of income inequality within the couple are shown in Table 2. There are smaller income differences within same-sex couples compared to mixed-sex couples. The lowest income differences are within lesbian couples. However, the biggest differences are found in the proportion of single-earner households. While 31% of heterosexual households are single-earner households, it is only 15% of homosexual couples.

Tax planning differences between heterosexual and homosexual households

To analyze tax planning behavior, it is examined whether there are differences in the choice of the default option (IV/IV). I therefore estimate the following model:

$$TCC_i = \delta_1 + \delta_2 SSC_i + \delta_3 X_i + \delta_4 RelativeHHIncome_i + \delta_5 SubPaymentofTaxes_i + \theta_i, \tag{5}$$

while $TCC_i = 1$ if the couple takes the default option and 0 otherwise. In addition to the control variables used in X_i, there is also controlled for $RelativeHHIncome_i$. Besides, I also include $SubPaymentofTaxes_i$, which is equal to 1 if there has been a subsequent payment of taxes at the end of the year and 0 otherwise [6]. θ_i is the error term. Since the tax class affects the amount of income substitutes, I also control according to Buettner et al. (2019) for the share of income substitutes in individual gross income.

The descriptive statistics for the tax planning analysis are presented in Table 3. The subsample has 75,559 observations, of which 545 are same-sex couples. Differences in income compared to the previous sample

[6] The variable is 1 if assessed income taxes (*Festzusetzende Einkommensteuer*) are bigger than payroll taxes and 0 otherwise.

result in particular from the fact that this sub-sample only considers couples where both partners have positive income from employment. Since there are no single-earner households, the relative household income is significantly higher. The share income substitutes related to individual gross income is much larger for heterosexual couples. Considering the choice of tax class, there are enormous differences between the groups. 57% of mixed-sex couples take the default option (IV/IV). It is 86% for lesbian couples and 75% for gay couples. Homosexual couples are more likely to have a subsequent payment of taxes at the end of the year than heterosexual couples.

Table 3: Descriptive statistics of the subsample for tax planning analysis: Means and SDs for heterosexual and homosexual households

	Heterosexuals	**Homosexuals**			**All couples**
		All	**Females**	**Males**	
Age Person A	52.61 (9.45)	44.39 (9.49)	43.47 (9.40)	45.02 (9.51)	52.56 (9.48)
Age Person B	50.53 (9.64)	44.08 (9.03)	43.84 (9.16)	44.24 (8.96)	50.49 (9.65)
Religion Person A	0.49 (0.50)	0.30 (0.46)	0.34 (0.47)	0.28 (0.45)	0.49 (0.50)
Religion Person B	0.57 (0.49)	0.28 (0.45)	0.33 (0.47)	0.25 (0.44)	0.57 (0.49)
Income Person A	46,157 (64,633)	46,238 (39,643)	41,050 (26,590)	49,764 (46,173)	46,157 (64,501)
Income Person B	28,971 (41,659)	46,193 (39,851)	42,267 (31,858)	48,860 (44,320)	29,084 (41,671)
Household Income	75,128 (80,122)	92,431 (58,861)	83,317 (46,590)	98,624 (65,255)	75,241 (80,013)
Relative Income	0.32 (0.12)	0.34 (0.12)	0.35 (0.11)	0.33 (0.13)	0.32 (0.12)
Income substitutes A (%)	0.23 (0.14)	0.09 (0.11)	0.18 (1.65)	0.03 (0.19)	0.23 (0.13)
Income substitutes B (%)	0.20 (7.74)	0.22 (0.16)	0.04 (0.24)	0.01 (0.04)	0.20 (7.72)
Tax class choice	0.57 (0.50)	0.79 (0.41)	0.86 (0.35)	0.75 (0.43)	0.57 (0.49)
Sub. Payment Taxes	0.72 (0.45)	0.82 (0.38)	0.88 (0.33)	0.78 (0.41)	0.72 (0.45)
East Germany	0.24 (0.43)	0.20 (0.40)	0.18 (0.39)	0.21 (0.41)	0.24 (0.43)
No. of Observations	75,014	545	185	360	75,559

Notes: The table shows married couples and couples in same-sex partnerships aged 25-64 using sample weights. Households with negative income have been excluded. In this subsample for tax planning analysis, only couples were considered where both partners had positive income from employment. In heterosexual couples, person A represents the man and person B represents the woman. In the case of registered life partnerships, the order of the partners is determined according to the alphabetical order of the name. The religion variable represents a dummy, which takes the value 1 if the person is a member of a religious community and 0 otherwise. East Germany is a dummy indicating whether the place of residence is in East or West Germany. The amount for income substitutes includes sickness, unemployment, insolvency, parental and maternity benefits.

5. Estimation Results

Table 4 shows the regression results for differences in household income and various measurements for intra-household inequality. In addition to the coefficients, the %effect, the effect in relation to the average, is also

shown. Both same-sex female couples and male couples have higher household incomes than mixed-sex couples. In the case of lesbian couples, the average household income is around €7,840 higher (11.55%). The income of gay couples is on average about €21,159 higher (31.18%). In terms of income inequality within the couple, there are differences within the group of same-sex couples. For same-sex women, the relative household income is 3.05 pp higher (14.40%). The income ratio is 4.99 pp higher, which is approximately 14.54%. In addition, the probability of being a single-earner household is 9.53 pp (17.99%) lower. For same-sex male couples, the coefficients for relative income and income ratio are very small and not significant. Therefore, no difference in intra-couple income inequality between heterosexual and gay couples can be demonstrated. There are only differences with regard to the probability of being a single-earner household. Gay couples are 6.02 pp (11.37%) less likely to be a single-earner household.

The results on income inequality within the couple confirm the other literature on the topic. Jepsen and Jepsen (2015) find for the U.S. that gay male couples are similar to married couples in terms of hours worked and earning differentials, while lesbian couples show a lower earning differential. Ahmed et al. (2011), on the other hand, finds higher earnings inequality within gay couples, while I could not find any differences to heterosexual couples. They also find the lowest inequality among lesbian couples.

However, the study differs from other analyzes in one crucial respect. Registered life partnerships are equal in tax law and in post-marital maintenance. This equality should result in a division of labor closer to that of traditional marriages. Isaac (2018) finds labor supply responses, particularly among second earners, through federal same-sex marriage recognition in the U.S. Hansen et al. (2020) examines the labor supply effects due to same-sex legalization in different states in the U.S. They find a reduction in the labor supply among lesbian women, while gay men do not adjust their labor supply.

The regression results on the differences in tax planning behavior are shown in Table 5. Column (1) shows the results without the additional variables. The coefficient is positive and statistically significant. Lesbian couples are more likely to choose the default option with a probability of 21.38 pp (37.46%). The coefficient is reduced slightly to 18.17 pp (31.84%) due to the additionally controlling for subsequent payment of taxes and share of income substitutes, but is still positive and highly significant. A similar picture emerges for male same-sex couples. In the specification without the additional control variables (column 4), the probability of taking the default option is 12.65 pp higher (22.17%). After controlling for additional variables, the coefficient decreases slightly to 12.06 pp (21.14%). In all three specifications, the coefficients are highly significant.

One can only speculate about the reasons for the different tax planning behavior of heterosexual and homosexual couples. Stöwhase (2011) identifies four potential explanations why many couples do not choose the tax class combination that minimizes withholding (strategic choices, transaction costs, forced savings,

Pareto inefficiencies). However, it cannot be seen at first glance that these reasons differ between homosexual and heterosexual couples. Buettner et al. (2019), on the other hand, shows that the choice of tax class also depends on whether the man or the woman is the primary earner. In addition to the gender component, my results indicate that the gender composition of the couple also affects tax planning.

However, it also needs to be discussed to what extent the missing socioeconomic characteristics in my data set bias my estimate. According to Lengerer and Bohr (2019), same-sex couples have an above-average level of education. Working LGBTQI* people are also not equally represented in all branches (de Vries et al. 2020). Because education has a positive impact on income, my estimate of household income is probably upwards biased. In addition, the division of labor within households is affected by cultural background and nationality (Oreffice 2014). Tax planning is also strongly influenced by education and nationality (Bastani et al. 2020). In summary, it must therefore be assumed that my estimates for intra-household inequality and tax planning represent an upper bound.

Table 4: Estimation results of income and intra household inequality differentials between heterosexual and homosexual households

	female same-sex couples vs. mixed sex couples				male same-sex couples vs. mixed sex couples			
	Income	**Relative Income**	**Income Ratio**	**Single-Earner**	**Income**	**Relative Income**	**Income Ratio**	**Single-Earner**
SSC	7839.58***	0.0305***	0.0499***	-0.0953***	21159.03***	-0.0066	-0.0162	-0.0602***
	(2734.85)	(0.0010)	(0.0195)	(0.0210)	(2521.54)	(0.0086)	(0.0163)	(0.0182)
Age Person A	3376.84***	-0.0044***	-0.0105***	-0.0008	3453.80***	-0.0043***	-0.0103***	-0.0016
	(310.68)	(0.0011)	(0.0020)	(0.0026)	(307.55)	(0.0011)	(0.0020)	(0.0025)
Age Person A (squared)	-37.48***	0.0000	0.0000**	0.0001***	-38.09***	0.0000	0.0001**	0.0000***
	(2.89)	(0.0000)	(0.0000)	(0.0000)	(2.87)	(0.0000)	(0.0000)	(0.0000)
Age Person B	705.11***	0.01265***	0.0212***	-0.0304***	631.10**	0.0125***	0.0210***	-0.0296***
	(300.13)	(0.0010)	(0.0019)	(0.0025)	(296.83)	(0.0010)	(0.0018)	(0.0024)
Age Person B (squared)	-9.31 **	-0.0002***	-0.0003***	0.0004***	-8.71***	-0.0002***	-0.0003***	0.0004***
	(2.89)	(0.0000)	(0.0000)	(0.0000)	(2.86)	(0.0000)	(0.0000)	(0.0000)
Religion Person A	-7932.08***	-0.0047***	-0.0062**	0.0289***	-7963.57***	-0.0048***	-0.0063**	0.0291***
	(457.93)	(0.0017)	(0.0031)	(0.0044)	(457.74)	(0.0017)	(0.0031)	(0.0044)
Religion Person B	534.02	0.0089***	0.0121***	-0.0392***	545.90	0.0089***	0.0121***	-0.039
	(475.54)	(0.0018)	(0.0013)	(0.0045)	(475.28)	(0.0018)	(0.0032)	(0.0045)
constant	-9027.48***	0.1992***	0.4092***	0.6408***	-9215.96***	0.1988***	0.4084***	0.6440***
	(3413.63)	(0.0151)	(0.0282)	(0.0356)	(3413.71)	(0.0151)	(0.0281)	(0.0357)
%-Effect	11.55 %	14.40 %	14.54 %	17.99 %	31.18 %	3.09 %	4.72 %	11.37 %
No. of observations	170,969	170,969	170,969	170,969	171,595	171,595	171,595	171,595

Notes: For all estimations, sample weights have been used. State dummys are always included. Robust standard errors in parentheses.
Significance levels: $*$ 10%; $**$ 5%; $***$ 1%

Table 5: Estimation results of tax planning differentials between heterosexual and homosexual households

	female same-sex couples vs. mixed sex couples			male same-sex couples vs. mixed sex couples		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
SSC	0.2138***	0.1815***	0.1817***	0.1265***	0.1203***	0.1206***
	(0.0292)	(0.0284)	(0.0284)	(0.0269)	(0.0247)	(0.0247)
Relative Income	1.5394***	1.1677***	1.1750***	1.5404***	1.1689***	1.1762***
	(0.0170)	(0.0179)	(0.0179)	(0.0170)	(0.0179)	(0.0179)
Age Person A	-0.0028	-0.0058 *	-0.0056	-0.0023	-0.0053	-0.0052
	(0.0036)	(0.0035)	(0.0034)	(0.0036)	(0.0034)	(0.0034)
Age Person A (square)	-0.0000	0.0000	0.0000	-0.0000**	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Age Person B	-0.0077 **	-0.0056*	-0.0057*	-0.0083**	-0.0062*	-0.0063*
	(0.0035)	(0.0033)	(0.0033)	(0.0035)	(0.0033)	(0.0033)
Age Person B (square)	0.0001**	0.0001**	0.0001**	0.0000**	0.0001**	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Religion Person A	-0.0542***	-0.0568***	-0.0567***	-0.0549***	-0.0574***	-0.0572***
	(0.0060)	(0.0057)	(0.0057)	(0.0060)	(0.0057)	(0.0057)
Religion Person B	-0.0225***	-0.0183***	-0.0185***	-0.0221***	-0.01803***	-0.0182***
	(0.0061)	(0.0057)	(0.0057)	(0.0061)	(0.0057)	(0.0057)
Constant	0.4896***	0.3204***	0.3162***	0.4900***	0.3206***	0.3163***
	(0.0512)	(0.0491)	(0.0491)	(0.0512)	(0.0491)	(0.0491)
Sub. Payment Taxes		0.3446***	0.3439***		0.3447***	0.3440***
		(0.0049)	(0.0049)		(0.0049)	(0.0049)
Share Income Substitutes A			0.0005***			0.0005***
			(0.0002)			(0.0002)
Share Income Substitutes B			0.0012***			0.0012***
			(0.0004)			(0.0004)
%-Effect	37.46 %	31.80 %	31.84 %	22.17 %	21.08 %	21.14 %
No. of observations	75,199	75,199	75,199	75,374	75,374	75,374

Notes: The dependent variable is a dummy indicating whether both partners have tax class IV. For all estimations, sample weights have been used. State dummys are always included. Robust standard errors in parentheses. Significance levels: $*$ 10%; $**$ 5%; $***$ 1%

6. Conclusion

The present work has analyzed the differences in income, intra-household inequality and tax planning between mixed and same-sex couples. I find no difference in intra-household inequality between heterosexual couples and male same-sex couples, while lesbian couples have significantly lower intra-household income inequality. The results also show that heterosexual couples are significantly more likely to be single-earner

households. I also find that tax planning in heterosexual couples leads more often to a high marginal tax burden for the secondary earner. To the best of my knowledge, this analysis is the first to show that gender composition has an effect on tax planning.

Future research should further explore differences between primary and secondary earners, also depending on whether the man or the woman in heterosexual couples is the first earner. In addition, the effect of the non-linearity of the German tax system should be considered more closely. The relationship between gender and the division of labor in the household remains an important research question in economics. Studying the behavior of same-sex couples makes it possible to disentangle the influence of gender from the other mechanisms in family economics. Therefore, future research on the division of labor and taxation of the family should take these findings into account.

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Appendix

Table 6: Tax rate and taxable income

T	$T(Y)$
$0 - 8,652$	0
$8,653 - 13,669$	$(Y - 8,652) * [(993.62 * 10^{-8}) * (Y - 8,652) + 0.14]$
$13,670 - 53,665$	$(Y - 13,669) * [(225,4 * 10^{-8}) * (Y - 13,669) + 0.2397] + 952.48$
$53,666 - 254,446$	$0.42 * Y - 8,394.14$
$254,447 - \infty$	$0.45 * Y - 16,027.52$

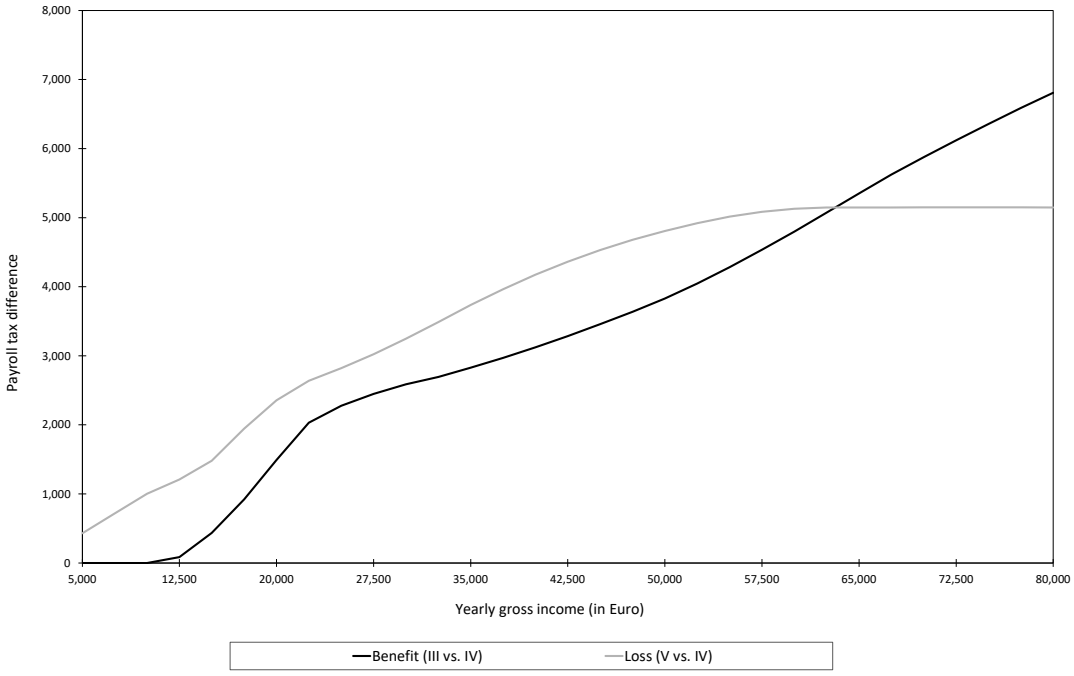
Notes: The table shows the standard tax function $T(Y)$ for the year 2016, while Y represents the taxable income. In the case of tax class III, Y is replaced by $Y/2$ and the tax payment by $2T(Y/2)$. The tariff in tax class V is based on $max[2(T(1.25 * Y) - T(0.75 * Y)), 0.16Y]$. For more information see §39b EStG 2016 and Buettner et al. (2019).

Table 7: Derivation of taxable income

Tax class	**III**	**IV**	**V**
Gross income			
− Standard deduction for pensions	€102	€102	€102
(Versorgungsbezüge-Pauschbetrag §9a I EStG)			
− Standard deduction for employees	€1,000	€1,000	€1,000
(Arbeitnehmer-Pauschbetrag §9a EStG)			
− Standard deduction for special expenes	€72	€36	–
(Sonderausgaben-Pauschbetrag §10c EStG)			
− Provisional lump sum	yes ×2	yes	yes
(Vorsorgepauschale)			
= Taxable income			

Notes: Source: §39b EStG 2016

Figure 3: Additional tax burden in case of tax class change



Notes: The graph shows additional tax burden/benefit in case of tax class change. Own calculation based on "Programmablaufplan" for 2016 of the Federal Ministry of Finance (Bundesministerium der Finanzen 2015).