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Nadia Myohl

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Till Taxes Keep Us Apart? The Impact of the Marriage Tax on the Marriage Rate

Abstract

Married couples often face a different tax burden than cohabitating couples with the same income. I study the effect of joint income taxation of married couples on the marriage rate in Switzerland, where tax differentials between married and cohabitating couples vary considerably across cantons. I construct a dataset containing sociodemographic and -economic variables on every individual living in Switzerland, and use household-level information to identify cohabitating couples. Using a simulated instrumental variable approach, I find a negative impact of joint income taxation on the marriage rate for couples married between 2012 and 2019. The effect is driven by households without children and from the lower end of the income distribution.

JEL-Codes: H240, H310, J120.

Keywords: income taxation, marriage penalty, taxation of married couples.

Nadia Myohl
SEW-HSG
University of St.Gallen
Varnbüelstrasse 14
Switzerland - 9000 St.Gallen
nadia.myohl@unisg.ch

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1 Introduction

Joint income taxation of married couples and the resulting marriage tax[1] can have important behavioral implications. In particular, the marriage tax can impact a couple's decision to marry, depending on whether it presents in the form of a marriage penalty or subsidy[2]. One country where joint income taxation is practiced is Switzerland. This is an interesting case to study due to its strong federal structure: The majority of income taxes are paid to the cantons and municipalities, which leads to considerable differences across cantons in the tax system in general, and the tax burden in particular. The marriage tax can be quite substantial depending on the couple's income and their place of residence[3].

Previous literature has shown that an increase in the income marriage tax decreases the marriage rate in the United States both on an individual (Fisher, 2013, Alm and Whittington, 1999) and aggregate level (Alm and Whittington, 1995). This research is related to Alm et al. (1999), who show that the marriage penalty is higher for couples with equal within-household income distribution, while marriage is advantageous for those with dissimilar earnings. In addition, Baker et al. (2004) show the positive impact of the removal of a marriage tax in the Canadian survivor's pension system on the re-marriage rate of widows. A second strand of the literature analyzes the impact of the marriage tax on the timing of marriage. Fink (2020) shows that couples with very unequal within-household income distributions prepone their marriage to an earlier year in Germany, as they can take advantage of a marriage subsidy. Frazier and McKeehan (2018) and Alm and Whittington (1997) show the opposite for the US, where couples are more likely to delay their marriage to the first quarter of a new year when the marriage tax increases, as it tends to present as a marriage penalty.

This paper analyzes the impact of the marriage tax on the marriage rate exploiting the considerable sub-national variation in the marriage tax in Switzerland. I use individual-level administrative data on the living and income situation of the universe of the Swiss

[1] I define the marriage tax as the difference between a couple's tax burden when evaluated jointly and when evaluated individually, as a percentage of net joint income.

[2] i.e. paying more or less, respectively, when married compared to when simply cohabitating. The terms cohabitating and unmarried are used interchangeably in this paper.

[3] For example, take a couple with two children living in the city of Geneva in 2019, where each individual earns CHF 125'000 a year. They would pay CHF 11'531 more taxes when being married than when simply cohabitating. This is assuming that one individual claims both children for tax purposes. (ESTV, 2021b)

population, and identify cohabitating couples using household-level information. To identify the causal impact of the marriage tax on the marriage rate, I use simulated instrumental variables, where the actual marriage tax a couple faces is instrumented by the average marriage tax a random sample of couples would face in the same canton. This approach deals with a potential omitted variable bias due to unobserved variables jointly impacting the explanatory and outcome variables, i.e. marriage tax and status, respectively. I also provide descriptive evidence on the current status of the marriage tax across Switzerland.

Descriptive evidence shows considerable variation of the marriage tax across income, within-household income distribution and municipalities. Childless and single-earner households tend to experience a marriage subsidy, while those in the medium to upper end of the overall income distribution and with more equal within-household income distributions tend to be financially penalized by marriage. Additionally, using a subsample of couples who got married between 2012 and 2019, I find that an increase in the marriage tax as a percentage of net joint income by 1 percentage point (pp) decreases the probability that a couple is married by 10.6%. Among all couples, I observe the strongest behavioral impact on couples without children living in the same household and at the lower end of the overall income distribution. The results are driven by couples who (would) experience a marriage subsidy.

The remainder of this paper is organized as follows: I describe the swiss tax system in section 2 and present the data and sample selection as well as descriptive evidence in section 3. Section 4 discusses the empirical strategy and results. Section 5 concludes.

2 The Swiss Tax System

Switzerland raises direct taxes on income and wealth of both individuals and companies, as well as indirect taxes on consumer goods such as value added, petroleum and tobacco. This paper focuses on the income tax paid by individuals, which is described in more detail in the following sections.

2.1 Taxation of Natural Persons

Individuals pay both income and wealth taxes in Switzerland. Since wealth is per default considered to be the property of both spouses for married couples and couples in a registered partnership[4], it is taxed jointly. Individuals pay income tax on their income from employment, wealth (movable and non-movable) and replacement income (pensions, unemployment insurance, etc.) (ESTV, 2018). In what follows, I will focus on the income tax from employment only, as wealth data is not easily available. The relative tax burden on wealth is small[5] and, unlike income, relatively easy to hide (see also Brülhart et al. (Forthcoming)).

Any individual living and working in Switzerland needs to pay taxes on her income. Income taxes are levied on three levels: the federal, cantonal and municipal level.[6] The tax is paid in the canton and municipality of main residence, i.e. a person living in the city of Zurich and working in Basel would pay income tax to the federal government, the canton of Zurich and the city of Zurich, even though the place of employment is Basel. Income that is generated through usage of property or businesses, however, is taxed in the municipality and canton where the property or business is located (so-called limited taxation). The direct income tax at the federal level is relatively small due to federalism and the considerable amount of public expenditures on the cantonal and municipal level. The revenue from individual income taxation is the biggest source of tax revenue across all levels of government (2015: 38.8%), of which around 20% went to the federal government, 47% to the cantons and 33% to the municipalities (ESTV, 2018). Tax schedules differ across cantons, while within cantons tax rates also differ across municipalities. Cantons present a tariff schedule each year from which a simple income tax is calculated depending on an individual's taxable income. The final tax owed to the canton and municipality is then determined by applying the current cantonal and municipal tax rates, which are usually quoted in percentage or a multiple of the simple income tax. The federal direct income tax

[4] Registered partnerships are only open to same-sex couples in Switzerland (same-sex marriage comes into effect in July 2022). From a tax perspective, registered partners are treated the same as married couples and can be seen as equivalent. This paper only focuses on opposite sex couples.

[5] In 2015, wealth tax amounted to 3.62% and income taxation of natural persons to 38.8% of the overall tax revenue in Switzerland (Brülhart et al., Forthcoming, ESTV, 2018).

[6] The reformed, catholic and roman-catholic churches also raise an individual tax on income and wealth. However, the tax burden on these is relatively small and I refrain from including it, meaning that I assume that all individuals are not members of a church and therefore not subject to church taxation.

is determined similarly.

Swiss nationals and individuals with a long-term residence permit (C-permit) pay taxes by submitting a tax declaration in the calendar year after the respective tax year. They submit information on their income and wealth in the concerned year, but also have the option of making deductions for expenditures. The most common deductions are for work-related expenditures, commuting (by train or by car), children, donations and insurance payments. Most deductions are either fixed or capped. The tax office then issues a tax bill based on the tax declaration. Foreign residents with residence permits other than a C-permit are taxed at the source. Their tax contributions are directly deducted from their monthly paycheck and transferred to the resident canton. The size of the tax depends on their income level, marital status and age. It is calculated using assumptions about the wealth of these residents, based on similar individuals who submit a tax declaration (ESTV, 2019).

2.2 Joint Income Taxation of Married Couples

Switzerland follows the concept of joint (family) taxation. Married couples are therefore taxed jointly for both their income and their wealth. In addition, any non-employment income generated by children under the age of 18 is also included in the joint taxation.[7] The federal government and the cantons aim to take the marriage tax into account by either applying different tax rates for married couples, or by splitting the income (ESTV, 2019). Table 1 gives an overview of the procedure in each canton, where "Double" stands for separate tax rates for married couples, and "Splitting" stands for a splitting of the overall income, where the divisor represents the amount by which the overall income is divided to determine the relevant tax rate. Three cantons apply the single tariff to the joint income of married couples, but allow for large deductions or a tax rebate on the final tax bill.

For the income tax owed to the federal government, there are different tariffs for singles, married couples and families (in the form of an additional deduction from the tax). All cantons except for Vaud allow for child deductions. Depending on the canton, these deductions

[7] Children are taxed separately for income generated through employment, however. Since this income is generally very small and falls below the threshold for taxation, this income is negligible. The canton of Ticino does not tax the income generated through employment of children at all, unless they are self-employed.

Table 1: Overview Joint Taxation

Canton	Type	Divisor	Canton	Type	Divisor
Zurich	Double	-	Schaffhausen	Splitting	1.9
Bern	Double	-	Appenzell Ausserrhoden	Double	-
Lucerne	Double	-	Appenzell Innerrhoden	Splitting	2
Uri	Deduction	-	St. Gallen	Splitting	2
Schwyz	Splitting	1.9	Graubünden	Splitting	1.9
Obwalden	Deduction	-	Aargau	Splitting	2
Nidwalden	Splitting	1.85	Thurgau	Splitting	2
Glarus	Splitting	1.6	Ticino	Double	-
Zug	Double	-	Vaud	Splitting	varies
Fribourg	Splitting	2	Valais	Tax rebate	-
Solothurn	Splitting	1.9	Neuchatel	Splitting	1.81
Basel-Stadt	Double	-	Geneva	Splitting	2
Basel-Land	Splitting	2	Jura	Double	-

NOTE: Splitting is based on the following concept: The joint income of married couples is divided by the divisor, the resulting income level is then used to obtain the tax rate which is applied to the joint income. Vaud uses a variable divisor which depends on the size of the family (so-called consumption units): The divisor is 1 for singles, 1.8 for married couples, 1.3 for singles with underaged children plus 0.5 per underaged child. The cantons of Uri, Obwalden and Valais aim to take into account the marriage tax through deductions from the income or the final tax. Source: ESTV (2019)

can be progressive in the number of children or not. Most cantons and the federal goverment have introduced an indexation of the tax tariffs, rebates and/or deductions based on the development of the inflation during the respective tax period (ESTV, 2018).

Nevertheless, a marriage tax can arise due to different reasons: In case of splitting factors lower than 2, it is evident that the taxable income is higher under joint than individual taxation. Similarly, this is the case for cantons applying a double tariff, where the two tariffs do not co-move. However, even in cases where the splitting factor is equal to two, it is possible that a marriage tax exists due to the non-linearity of the swiss tax system, as it is progressive in income. Table 2 presents examples of the marriage tax for different types of couples and income levels for three selected cities: Zurich, Berne and Geneva. A dual-earner couple with two children and high income in Geneva (Panel D), which employs a splitting factor of 2, pays considerably more when married compared to when unmarried, but the same couple with low income receives a marriage subsidy. This is due to the progressivity

Table 2: Marriage Tax for Hypothetical Couples

	Income 100 000			Income 250 000		
	Married	Unmarried	Tax	Married	Unmarried	Tax
Panel A: Single-Earner, No Children						
Zurich	8912	12667	-3755	48798	58385	-9587
Berne	12884	17051	-4167	59571	67562	-7991
Geneva	9697	17882	-8185	59528	70968	-11440
Panel B: Single-Earner, Two Children						
Zurich	4763	5269	-506	41912	43030	-1118
Berne	8502	9138	-636	52515	53840	-1325
Geneva	3673	4770	-1097	51044	52862	-1818
Panel C: Dual-Earner, No Children						
Zurich	7493	6948	545	44437	36998	7439
Berne	12000	11810	190	55101	48076	7025
Geneva	9105	9062	43	56404	51080	5324
Panel D: Dual-Earner, Two Children						
Zurich	3828	3805	23	37552	27964	9588
Berne	8015	7069	946	48045	38341	9704
Geneva	3447	4556	-1109	47920	36389	11531

NOTE: Example of Marriage Tax for different gross income levels and varying types of couples for selected municipalities. Columns (1) and (4) show the tax burden when evaluated jointly (i.e., as a married couple), columns (2) and (5) when evaluated individually (i.e., as an unmarried couple) and columns (3) and (6) is the difference. A positive value of the marriage tax indicates a marriage penalty and a negative value a marriage subsidy. Panels A and B contain single-earner households with or without children, where one individual earns 100% of overall household income. Panels C and D contain dual-earner households with or without children, where each individual earns 50% of overall household income.

of the tax code. Conversely, single-earner couples without children tend to profit financially from marriage from an income tax perspective (Panel A).

3 Data and Descriptive Evidence

3.1 Datasets and Sources

I obtain four different datasets from three different sources: The Swiss Federal Statistical Office (FSO), the Swiss Federal Tax Administration (ESTV) and the Central Compensations Office (CCO).

Population and Households Statistics (STATPOP). I obtain both the individual-level and household-level datasets from the Population and Households Statistics (STATPOP) of the FSO. Individual-level data is available since 2010 and is a stock dataset, containing demographic variables such as age, gender, marital status, residence status and parents on each individual living in Switzerland[8]. It also contains a household identifier (ID), which allows me to obtain further information on who this person lives with by combining it with the household-level dataset (available since 2012). It is therefore possible to locate unmarried couples who are living together, but due to their marital status are not filing taxes jointly. Additionally, the household-level dataset contains information on the household age group and gender composition, as well as the number of children.

Income. I receive information on the gross income of each employed individual in Switzerland by combining the STATPOP dataset with the individual social security accounts (AHV) from the CCO. It includes the exact income based on which the social security contributions are calculated over the course of a year. Since contributions to the AHV are not topcoded in Switzerland, I can see the actual income and there is no distortion at the top. However, this only includes income through legal earnings from employment, i.e. income from capital is not included.

Tax data. Income tax data is on municipal- and cantonal-level and can be downloaded from the website of the ESTV. This dataset contains the tax schedule for each canton-year pair, as well as within each canton the tax rate of each municipality. It also includes the different tax tariffs depending on the income level, which can vary with marital status in cantons that apply different tax rates (the "Double" cantons in Table 1), as well as deductions which can be made from net joint income. I obtain the same information for the federal income tax (ESTV, 2021a).

Municipal data. Municipal data is from the FSO and includes both demographic (population density, sex ratio) and socio-economic (social assistance rate) variables on municipal level (FSO, 2021).

[8] See Table 3 for an exhaustive list of variables used in the regression analysis.

3.2 Datahandling and Sample Selection

I merge the STATPOP and income datasets on an individual-year level such that each individual shows up only once per year. I then add the remaining two datasets based on the municipal and cantonal identifiers, which are registered in the STATPOP data for each observation.

In order to estimate the joint taxation of income on the marriage, I need to identify two groups of individuals in the overall data set: married and unmarried couples. Identification of married couples is simple enough, as the marriage status of each individual as well as the ID of their spouse is registered in the STATPOP dataset. I therefore include anyone in my analysis who is married during the sample period and who is living with their spouse. I identify unmarried couples living together by employing an algorithm which is described in detail in Appendix A. To treat both types of couples the same, I drop married couples if their age difference is more than 12 years (which is done as part of the algorithm for unmarried couples, see step 5 in Appendix A). In addition, I limit my analysis to couples where both are in working age (18–65 for men and 18–64 for women) and drop those where at least one individual is self-employed. This is necessary, as the AHV income data is not reliable when it comes to the self-employed. Finally, I drop couples whose' gross joint income is zero, as they do not pay any income tax. As the entire analysis is done at couple level, I reduce the dataset to one observation per couple-year pair and assign each couple an ID which depends on both individuals' personal IDs. Divorced and widowed individuals are not part of the married dataset, but they may show up in the unmarried dataset if they are living together with a new partner.

The income as reported from the CCO is the gross income of individuals, i.e. the income based on which the social security contributions are calculated. For taxes, however, net income is relevant. I therefore deduct from the gross income the social security contributions: old-age insurance, unemployment insurance, accident insurance. Switzerland's pension system relies on a three-pillar approach such that in addition to the old age insurance, individuals also save through a pension fund. I subtract the *mandatory* contributions to the pension fund system, which are dependent on age and income level to reach the net

income. As mentioned in section 2.1, it is possible to further deduct certain expenditures from the net income for tax purposes. I apply the most common deductions, which are dependent on work status and/or observable without further knowledge to the net joint income before applying the tax calculator: Deductions for children, secondary earner, work-related expenditures, as well as personal deductions based on marital status. The latter two are calculated as a percentage of income with minimum and maximum values in most cantons and on the federal level. As deductions for children above the age of 18 are dependent on the child's work status (i.e. is she still in school/university or already earning her own income) in most cantons, I limit the child deductions to children below the age of 18 living in the same household. While this might overestimate the taxable income in some cases, this should not influence the results too much as the magnitude of these deductions is limited and generally not very large for adult children.

To analyze the effect of the marriage tax, I calculate for each couple the tax burden under joint taxation and under individual taxation. I do this by applying the tax code and rate of the respective year in the couple's canton and municipality of residence, as well as the respective tax code and rate of the federal income tax to the taxable income, i.e. net income after deductions for expenditures[9]. The couple then faces a marriage tax, tax^m, which is the difference between the tax burden under joint and individual taxation as a percentage of net joint income:

$$tax^m = \frac{tax_{joint} - tax_{individual}}{Y_{joint}} * 100$$

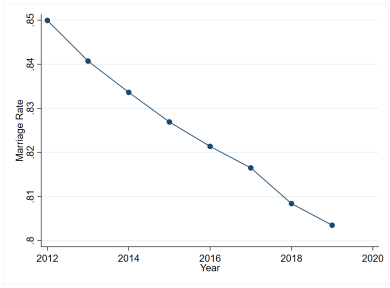
where $tax_{individual} = tax^{female} + tax^{male}$ is the sum of the tax burden based on each individual's separate taxable income. tax_{joint} is the tax burden based on the joint taxable income and Y_{joint} is the couple's net joint income. A negative value of tax^m indicates a marriage subsidy, and a positive value a marriage penalty.

3.3 Descriptive Evidence

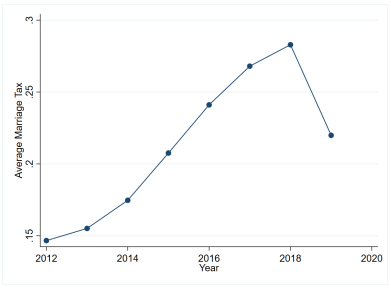
I briefly describe the current state of marriage in Switzerland in general, and the marriage tax in particular in Figure 1. While the marriage rate has decreased by roughly 4pp over

[9] I calculate the taxable income on cantonal and federal level separately for each couple, as different deductions apply.

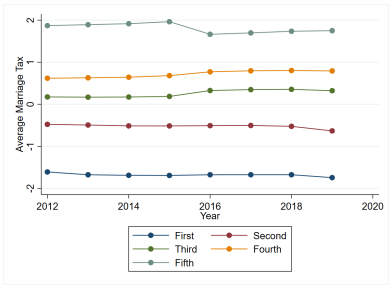
FIG. 1: Marriage Tax in Switzerland



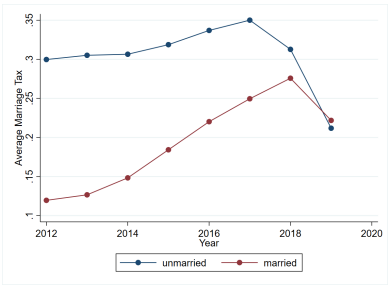
(a) Marriage Rate



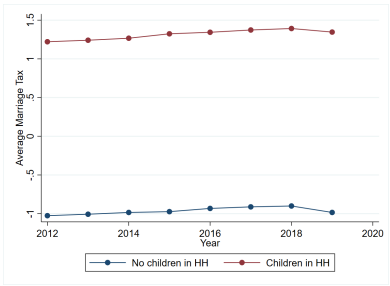
(b) Marriage Tax



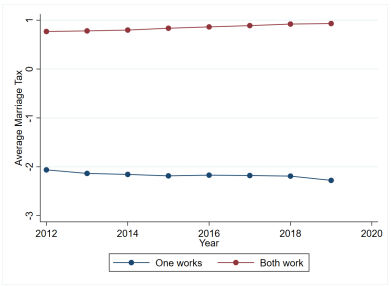
(c) Income Quintile



(d) Marriage Status



(e) Child Status



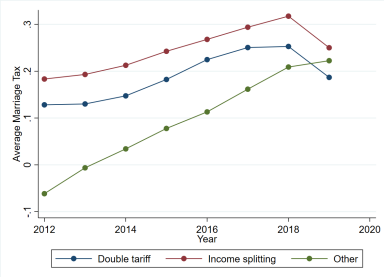
(f) Work Status

NOTE: Development of marriage rate (panel (a)) and average marriage tax in % of net joint income over the sample period. A negative value indicates a marriage subsidy (i.e. less taxes paid when married compared to when single) and a positive value indicates a marriage penalty.

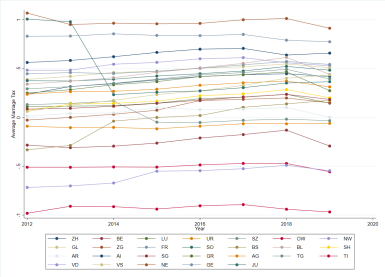
the analyzed time period (Panel (a)), the average marriage tax has risen (Panel (b)). Panel (c) shows that while couples from the first and second income quintile[10] mostly experience a marriage subsidy, those from the middle to upper half of the income distribution face a marriage penalty. Households with children face a marriage penalty, while those without children face a marriage subsidy (Panel (e)) and so do single earner households (Panel (f)).

[10] The income quintiles are as follows: 1−77 199 CHF (First), 77 200−109 525 CHF (Second), 109 526−137 796 CHF (Third), 137 797 − 179 463 CHF (Fourth), 179 464 − 206 960 219 CHF (Fifth)

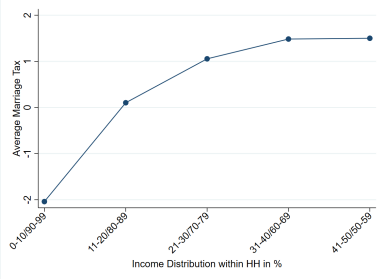
FIG. 2: Marriage Tax in Switzerland (cont.)



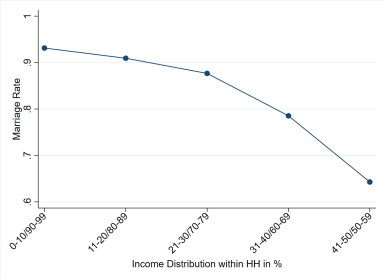
(a) By Tax System



(b) By Canton



(c) By within-HH distribution



(d) Marriage Rate by within-HH distribution

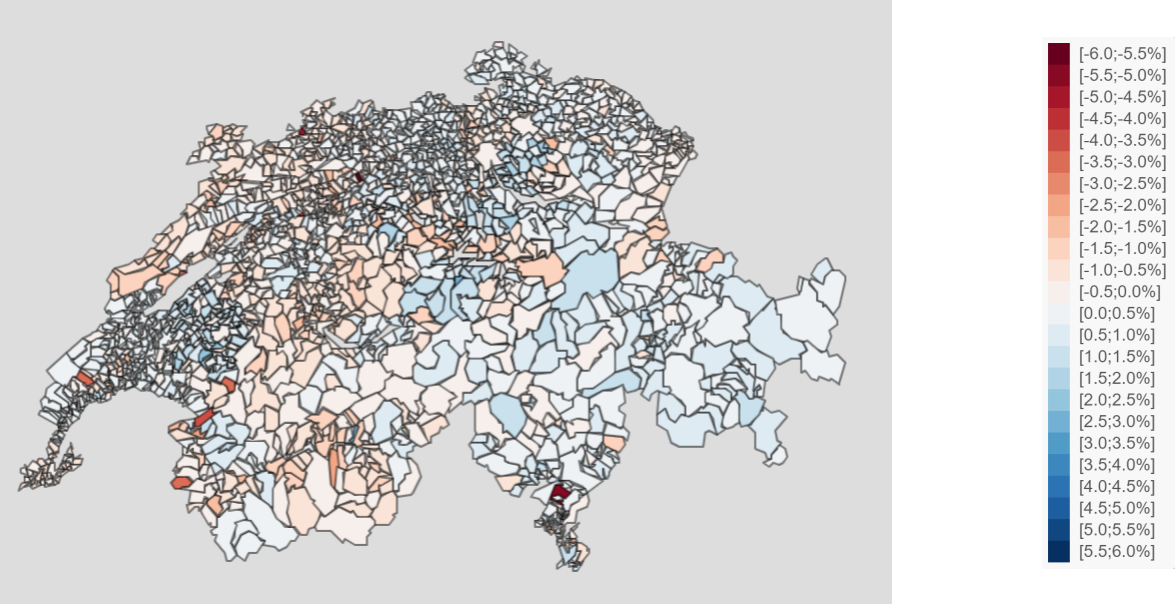
NOTE: Marriage rate (panel (d)) and average marriage tax in % of net joint income by subgroups and within household income distribution. A negative value indicates a marriage subsidy (i.e. less taxes paid when married compared to when single) and a positive value indicates a marriage penalty.

Finally, the average marriage tax for unmarried and married couples has converged over the analyzed time period, as it has risen more for the married than the unmarried couples (Panel (d)).

Panel (a) in Figure 2 shows that while they develop similarly over time, the average marriage tax is roughly 0.7pp higher in cantons with an income splitting system than those which apply a double tariff. The marriage tax has remained the same in most cantons, with the exception of a large reduction in the canton of Jura (JU) due to a change in the applicable child deductions (Panel (b)). Panels (c-d) show the average marriage tax and marriage rate by within household income distribution, where households are clustered in five distribution bins[11] with the most equal distribution on the right and the most unequal distribution on the left of the graph. While the average marriage tax rises the more equal the within household

[11] The bins are $0/100 - 10/90\%$, $11/89 - 20/80\%$, $21/79 - 30/70\%$, $31/69 - 40/60\%$ and $41/59 - 50/50\%$.

FIG. 3: Marriage Tax across Municipalities



NOTE: Average marriage tax across Swiss municipalities. A negative value (in red) indicates a marriage subsidy (i.e. less taxes paid when married compared to when single) and a positive value (in blue) indicates a marriage penalty. The average marriage tax per municipality is averaged over all years (2012 – 2019).

income distribution, the marriage rate declines the more equal a household is.

As previously mentioned, the Swiss tax system depends heavily on the specific cantonal tax schedules in general, and the applied tax rates in the municipalitites, in particular. As a result, there is considerable variation in the marriage tax couples face across municipalities. Figure 3 presents the average marriage tax paid by *married* couples per municipality in Switzerland in the form of a heatmap. It is evident that there is quite some variation across municipalities in the magnitude and direction of the marriage tax. While the average marriage tax is small in most municipalities, with the majority of municipalities showing an average marriage tax of $+/-0.5\%$, it can be as low as -5.78% and as high as 2.98%. Note that this is a purely descriptive result, meaning that the differences may arise due to compositional effects of certain types of couples choosing to move into specific municipalities in addition to the differences in the tax schedules and rates.

4 Marriage Rate

Section 3.3 shows substantial variation in the marriage tax across type of couples, age, income levels and within-household income distribution, as well as across cantons and municipalities. In what follows, I will analyze whether the marriage tax has behavioral implications for couples by estimating whether the marriage tax has a causal impact on the marriage rate.

4.1 Empirical Strategy

Recall from section 3.2 the definition of the marriage tax:

$$tax^m = \frac{tax_{joint} - tax_{individual}}{Y_{joint}} * 100 \tag{1}$$

where a negative value of tax^m indicates a marriage subsidy, and a positive value a marriage penalty. The straightforward approach to analyzing the impact of the marriage tax on the marriage rate is to estimate the following linear probability model:

$$y_{ict} = \beta * tax^m_{ict} + \gamma X_{ict} + \delta Z_{mt} + \alpha_i + \zeta_c + \eta_t + \varepsilon_{ict} \tag{2}$$

where y_{ict} is a binary outcome variable for couple[12] i living in canton c at time t, indicating whether a couple is married or not. The coefficient of interest is β, which shows the effect of the marriage tax on the marriage rate. I include a vector of couple-level controls X_{ict} which could potentially affect the marriage decision: age and age squared (per person), age difference, net income and net income squared, nationality, years in municipality, number of children in the household. Z_{mt} is a vector of municipal-level controls that can influence the local marriage and labor market: population density, sex ratio and social assistance rate. α_i, ζ_c and η_t are couple, canton and time fixed effects, respectively. ε_{ict} denotes the error term.

As Fisher (2013) points out, it is possible that both the marriage tax a couple faces and

[12] The estimation is done on couple-level for the following reason: Income taxes are not directly deducted from the salary in Switzerland. Rather, individuals (couples, if married) submit a tax declaration in the year after the relevant tax year, based on which the income tax owed per individual (couple) is calculated. It can therefore be assumed that it is not necessarily clear to most couples who pays which percentage of the overall tax burden, as the tax is not directly deducted from the salary. In addition, I only include couples (both unmarried and married), therefore the estimation on an individual and couple level should yield the same results.

the decision to get married are jointly influenced by unobserved characteristics. Equation (2) therefore suffers from omitted variable bias. In order to eliminate this bias, I use a simulated instrumental variable approach to estimate the causal effect. This type of instrument has been used extensively in the literature on the elasticity of taxable income, where it is better known as the grouping instrumental variable (Blundell et al., 1998, Gruber and Saez, 2002, Weber, 2014). The underlying idea is to use the institutional characteristics which are a strong predictor of the size of the endogenous regressor (here tax schedule in canton of residence) to create an exogenous variable which does not suffer from this omitted variable bias (see also Currie and Gruber (1996) for a discussion of this approach). Specifically, I estimate the following first stage:

$$tax^m_{ict} = \xi * avg(tax^m_{ct}) + \gamma X_{ict} + \delta Z_{mt} + \alpha_i + \zeta_c + \eta_t + \mu_{ict} \tag{3}$$

where the instrument is the average marriage tax per canton as predicted by the tax schedule, $avg(tax^m_{ct})$. I simulate the marriage tax a random sample of 1 000 couples[13] faces in each canton-year pair by applying the respective tax code for each hypothetical couple in each canton and year[14]. I use the cantonal tax rate and the population-weighted average municipal tax rate per canton and year to estimate the actual tax burden under joint- and individual taxation per hypothetical couple. I then average the marriage tax as a percentage of net joint income over each canton-year pair[15] and merge this as an instrument to each observation in the initial dataset on a yearly basis. See Appendix B for a detailed discussion of the instrument construction and validity.

To estimate the impact of the marriage tax on the marriage rate at the time of marriage, I only include couples who get married during the sample period, i.e., between 2012 and 2019. Including couples who get married before would not add anything to the variable of interest besides biasing it downward, as for them there is no variation in the left-hand side variable. The same is true for couples who never get married. Nevertheless, I also present results when adding those who remain unmarried in 2019 to those who get married after

[13] sampled from the 2012 data
[14] I therefore get $1000 * 26 * 8 = 208\,000$ initial observations.
[15] $26 * 8 = 208$ final observations

Table 3: Descriptive Statistics: Married between 2012 and 2019

	Unmarried		Married		Total	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Couple-level						
Marriage Rate					0.815	(0.388)
Marriage Tax	1214.379	(2787.491)	1483.113	(3429.383)	1433.446	(3321.747)
Marriage Tax in % of Net Joint Income	0.509	(2.020)	0.667	(2.332)	0.638	(2.279)
Age difference	3.167	(2.724)	3.577	(2.957)	3.501	(2.919)
Both Work	0.962	(0.192)	0.802	(0.399)	0.831	(0.375)
Both Swiss	0.821	(0.384)	0.511	(0.500)	0.568	(0.495)
One Swiss	0.178	(0.382)	0.303	(0.459)	0.280	(0.449)
Both Foreigner	0.002	(0.040)	0.186	(0.389)	0.152	(0.359)
Net Joint Income	134 742.578	(60 220.583)	121 522.531	(133 568.083)	123 965.860	(123 449.359)
Number of Children in HH	0.212	(0.561)	0.935	(0.914)	0.802	(0.904)
Years in Municipality	3.245	(5.156)	4.011	(4.904)	3.869	(4.961)
Women						
Age	30.620	(6.856)	33.909	(7.704)	33.301	(7.661)
Swiss	0.913	(0.282)	0.656	(0.475)	0.704	(0.457)
Permit C	0.044	(0.204)	0.136	(0.342)	0.119	(0.323)
Permit B	0.042	(0.200)	0.201	(0.401)	0.172	(0.377)
Other permit	0.002	(0.048)	0.007	(0.082)	0.006	(0.077)
Net Income	56 964.918	(31 094.482)	40 666.497	(39 283.483)	43 678.771	(38 427.808)
Number of own Children in HH	0.194	(0.520)	0.935	(0.914)	0.798	(0.902)
Men						
Age	32.664	(7.178)	36.133	(7.987)	35.492	(7.959)
Swiss	0.907	(0.291)	0.668	(0.471)	0.712	(0.453)
Permit C	0.064	(0.244)	0.173	(0.378)	0.153	(0.360)
Permit B	0.028	(0.166)	0.153	(0.360)	0.130	(0.337)
Other permit	0.001	(0.036)	0.005	(0.074)	0.005	(0.068)
Net Income	77 777.660	(45 915.338)	80 856.034	(125 207.430)	80 287.089	(114 763.066)
Number of own Children in HH	0.155	(0.460)	0.935	(0.914)	0.791	(0.901)
Municipal-level						
Sex Ratio (Men per woman)	0.990	(0.026)	0.989	(0.026)	0.990	(0.026)
Inhabitants per km^2	1371.899	(1705.754)	1681.075	(2284.336)	1623.934	(2192.240)
Social Assistance Rate	3.035	(2.098)	3.307	(2.268)	3.256	(2.240)
Observations	265 186		1 169 648		1 434 834	

Note: Standard deviations in parentheses. Descriptive Statistics for the baseline sample, which includes working-age couples who get married between 2012 and 2019.

2012, as well as when using the entire sample as robustness checks in section 4.3.

Table 3 presents descriptive statistics for the baseline sample both by marriage status and in total. The marriage rate within the sample is 81.5% and the average marriage tax is 1 433 CHF, or 0.63% of net joint income. This value is slightly larger for couples which are actually married than those who are still unmarried. Both men and women in unmarried couples are more likely to work and be swiss nationals than in married couples, and they also tend to have a larger income, driven by a larger female income. In addition unmarried couples tend to have fewer children and be younger than their married counterparts. The municipal-level control variables are similar across the two types of couples.

I conduct a heterogeneity analysis based on a couple's overall income level, within-household income distribution, and type of couple (age, child status). Section 3.3 showed that there are differences in the tax regimes across cantons, which could be mirrored in the

impact of the marriage tax on the marriage rate. I therefore estimate equations (2) and (3) by taking into account these different types of joint taxation through interaction terms. Finally, I presents results when considering the type of marriage tax, i.e. whether couples (would) pay a penalty or receive a subsidy.

4.2 Results

Table 4 presents the results from estimating equations (2) and (3) using simulated instruments. The sample only contains those couples who are getting married during the sample period, i.e., between 2012 and 2019. I therefore only analyze the effect of the marriage tax on the marriage rate at the time of marriage. This circumvents a potential downward bias due to the inclusion of couples who were married decades before my sample period, when other (now unobserved) factors may have influenced the decision to get married and the marriage tax may have been very different. I present results with alternative samples in section 4.3 and the first stage and reduced form results in Appendix C. The marriage tax is measured in percent of net joint income. A 1pp increase in the marriage tax leads to a 10.6% decrease in the probability that a couple is married in a given year. As all couples in the sample are getting married at some point during the sample period, one can also think of this effect as a delay in marriage. The control variables influence the probability to be married as expected: Age, children, income, and the sex ratio in a municipality positively influence the probability to get married, while couples where at least one has Swiss nationality are less likely to get married. Columns (4) and (5) show that it is imperative to consider cantonal- and time variation by including canton- and time fixed effects, respectively.

Section 3.3 has shown that the marriage tax can vary considerably both across type of couple and geographically. At the same time, couples may react differently to the marriage tax when it comes to the decision to get married depending on their characteristics. I therefore present the differential impact by couple- and geographical characteristics in Figure 4. It plots the point estimate and the 95% confidence interval of the interaction coefficient between the marriage tax and different indicators: income quintile, child status, age group, within household income distributions, type of joint taxation and type of marriage tax. All controls and fixed effects from the baseline estimation in column (5) of Table 4, as well as

Table 4: Marriage Rate

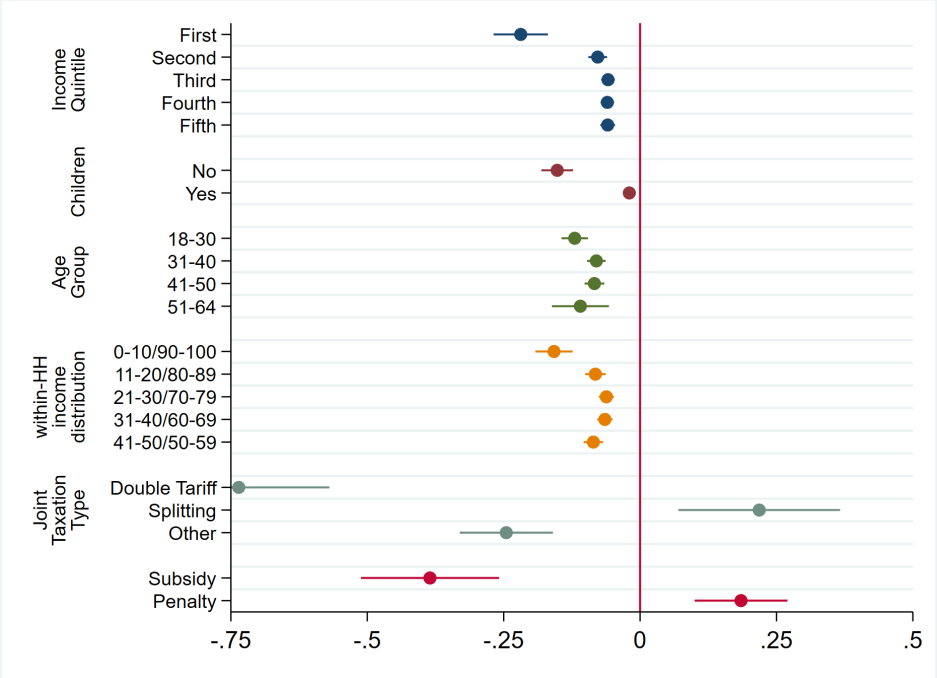
	(1)	(2)	(3)	(4)	(5)
Marriage Tax	−0.009***	−0.007***	−0.022***	−0.179***	−0.106***
	(0.001)	(0.001)	(0.003)	(0.013)	(0.011)
Age		0.007***	0.048***	0.095***	0.039
		(0.000)	(0.013)	(0.015)	(0.025)
Age^2		−0.000***	−0.000***	−0.001***	−0.001***
		(0.000)	(0.000)	(0.000)	(0.000)
Age male		0.016***	0.115***	0.133***	0.093***
		(0.000)	(0.013)	(0.015)	(0.026)
Age male^2		−0.000***	−0.001***	−0.001***	−0.001***
		(0.000)	(0.000)	(0.000)	(0.000)
Age difference		−0.003***	−0.067***	−0.064***	−0.042
		(0.000)	(0.014)	(0.015)	(0.024)
Both Swiss		−0.224***	−0.398***	−0.365***	−0.357***
		(0.001)	(0.003)	(0.006)	(0.004)
One Swiss		−0.066***	−0.194***	−0.149***	−0.155***
		(0.001)	(0.002)	(0.006)	(0.004)
Years in Municipality		0.003***	−0.002***	0.001***	0.000
		(0.000)	(0.000)	(0.000)	(0.000)
Net joint income		−0.000***	0.000	0.001***	0.001***
		(0.000)	(0.000)	(0.000)	(0.000)
Net joint income^2		1.700×10^{-9}***	-9.440×10^{-11}	-9.060×10^{-9}***	-5.050×10^{-9}***
		(1.420×10^{-10})	(1.690×10^{-10})	(1.220×10^{-9})	(8.210×10^{-10})
Number of children in HH		0.119***	0.021***	0.100***	0.064***
		(0.001)	(0.002)	(0.007)	(0.006)
Sex Ratio		0.263***	1.216***	9.523***	2.475***
		(0.014)	(0.053)	(0.226)	(0.235)
Inhabitants per km^2		0.000***	−0.000***	−0.000***	−0.000***
		(0.000)	(0.000)	(0.000)	(0.000)
Social Assistance Rate		0.002***	0.000	0.001	−0.001**
		(0.000)	(0.000)	(0.001)	(0.000)
Constant	0.821***	0.052**			
	(0.001)	(0.017)			
Observations	1 434 834	1 434 834	1 396 649	1 396 649	1 396 649
Individual FE	no	no	yes	yes	yes
Canton FE	no	no	no	yes	yes
Time FE	no	no	no	no	yes
Kleibergen-Paap F Statistic	49 756.800	41 534.300	3880.900	515.000	531.900

Note: Robust standard errors in parentheses(*** p<0.01, ** p<0.05, * p<0.1). The sample includes couples who get married between 2012 and 2019. First Stage and reduced form results are reported in Appendix C. Column (1) presents the raw regression, while columns (2—4) gradually add controls, individual- and canton fixed effects. Column (5) presents the baseline including all controls, individual-, canton- and time fixed effects.

the base effects of the indicators are included. The coefficients in Figure 4 therefore show the impact of the marriage tax by subgroup. When considering couples from different income quintiles, we can see that those in the second to fifth income quintile react very similarly to an increase in the marriage tax. Their probability to be married is $5.9 - 7.8\%$ lower when the marriage tax increases by 1pp, while those in the first income quintile are 21.9% less likely to be married.

As shown in section 3.3, couples without children in the same household tend to experience a marriage subsidy. As evident in Figure 4, this group also reacts much stronger to an increase in the marriage tax, being 15.2% less likely married when the marriage tax increases by 1pp. In fact, the probability that a couple with children is married is only reduced by very little when the marriage tax increases, indicating that other factors than the marriage tax are much more important in this group when deciding to be married or not. While there

FIG. 4: Mechanisms: Impact by Couple- and Geographical Characteristics



Note: The sample contains all couples who get married between 2012 and 2019. The figure presents the point estimate as well as the 95% confidence interval when interacting the variable of interest, marriage tax, with different dummy indicators. All controls as well as base effects are included in the regressions, such that the reported estimates represent the impact of the marriage tax by subgroup. The estimation results are reported in Appendix C.

is little overall variation across different age groups, those in the youngest (18—30 years old) and oldest (51—64 years old) age groups react stronger to an increase in the marriage tax. This is likely due to the fact that these couples are similar in their characteristics as the couples without children in the same household. Interestingly, the analysis by within household income distribution also shows that those who should in theory profit the most — couples with the most unequal distributions — are those who react the strongest to a change in the marriage tax. It points to the possibility that a reduction in the size of the marriage subsidy, i.e. a reduction in the amount a couple can save with the marriage, is a stronger incentive than the punishment, i.e. an increase in the marriage penalty. This is confirmed when looking at the last group of estimates, which divide the impact by whether couples face a marriage penalty or subsidy.

I expect individuals to be more aware of the marriage tax in cantons that apply income splitting than those that apply a double tariff, i.e. that the marriage tax is more salient in the former cantons. It should be easier for individuals to estimate the effect of getting married on their tax burden if they simply have to add up their income, split it by the divisor and then apply the same tax rate as if they were single, than if they have to apply a completely separate tariff. However, Figure 4 shows the exact opposite. Couples living in cantons with an income splitting approach are more likely to get married when their marriage tax increases, while those living in double tariff cantons react as the baseline, albeit with a much larger magnitude. One explanation for this result could be that there are time-varying differences in these types of cantons which are not captured by the canton fixed effects.

4.3 Robustness Checks

I present robustness checks in Table 5 where I vary the sample used for the estimation. Column (1) presents the baseline results from Table 4. I additionally include all unmarried couples in column (2). This sample therefore also includes couples who as of 2019 still remain unmarried. Column (3) presents the results when using the full sample, i.e., everyone in the sample who is married irrespective of marriage date, as well as the unmarried. As expected, the results show the same sign with smaller magnitude the more couples are included. The impact of the marriage tax on the marriage tax decreases by roughly 9pp when moving

Table 5: Robustness Check: Sample Variation

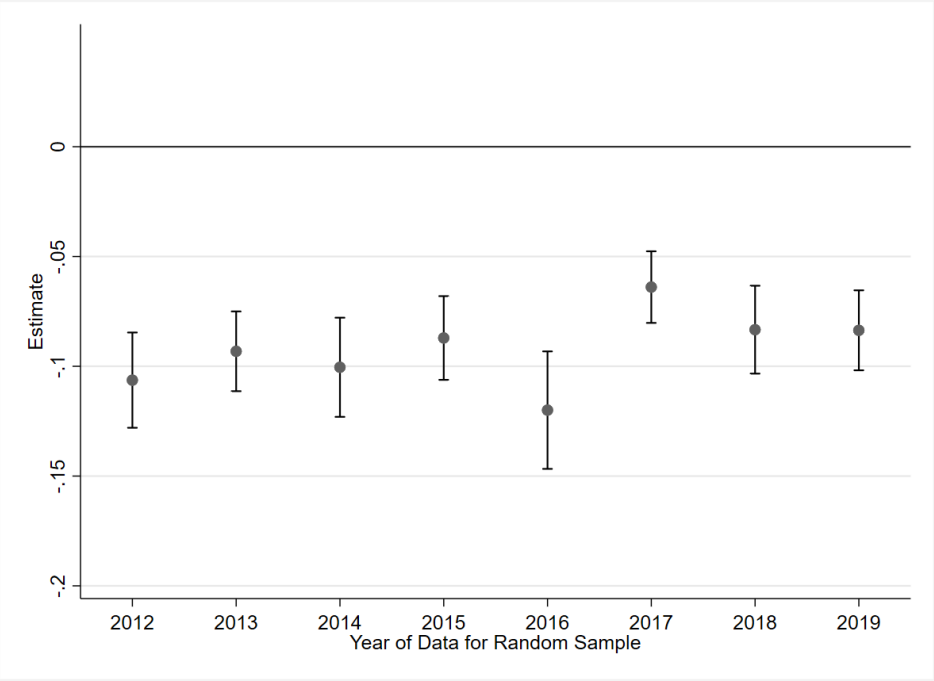
	(1) Baseline	(2) Baseline with Never Married	(3) Full Sample	(4) Swiss or Permit C
Marriage Tax	−0.106***	−0.057***	−0.016***	−0.042*
	(0.011)	(0.009)	(0.001)	(0.017)
Observations	1 396 649	2 465 367	7 993 474	1 030 292
Individual FE	yes	yes	yes	yes
Canton FE	yes	yes	yes	yes
Time FE	yes	yes	yes	yes
Controls	yes	yes	yes	yes
Kleibergen-Paap F Statistic	531.900	470.300	7699.100	282.600

Note: Robust standard errors in parentheses(*** p<0.01, ** p<0.05, * p<0.1). Columns (1) presents the baseline results from Table 4. Column (2) additionally includes all unmarried couples (i.e., those who never get married during the sample period). Column (3) includes all married and unmarried couples, including those who get married before 2012. Column (4) is a subsample of the baseline which only includes individuals with Swiss nationality or a C-permit. First stage and reduced form results are reported in Appendix C.

from the baseline sample in column (1) to the full sample in column (3). This is likely due to the fact that including couples who got married a long time ago biases the results downward as other factors may have played a role when these couples made the decision to get married. Additionally, their income may have changed considerably since then, and with it the marriage tax they face. These results, however, confirm the baseline results and underline the importance of measuring the marriage tax at the time when the marriage decision is made. Column (4) only includes couples who submit a tax declaration, i.e. Swiss nationals and foreigners with a C-permit. The magnitude of the effect is roughly half the baseline effect.

One concern may be that only sampling couples from the 2012 dataset is not a suitable choice for an instrument as the couples may change over time. I therefore estimate the baseline IV regressions using different versions of the instruments, where for each version I draw the random sample from the data of a different year. Figure 5 plots the point estimate and the 95% confidence interval for each version. The estimates are very similar to each other, with all results being significantly different from zero.

FIG. 5: Robustness Check: Sampling from Different Years



Note: The figure plots the point estimates and the 95% confidence interval of the baseline regression when using different versions of the instrument. For each estimate the random sample used for the construction of the instrument is drawn from the dataset of a different year, with 2012 being the baseline result as reported in Table 4.

5 Conclusion

Joint income taxation of married couples can change the tax burden a couple faces when getting married. This paper has shown that the marriage tax varies considerably in Switzerland across couple characteristics and municipalities. Empirical results using local variation and simulated instruments show that an increase in the marriage tax by 1pp decreases the probability that a couple is married by 10.6%. This is mainly driven by couples without children living in the same household, as well as couples who are located at the lower end of the income distribution and experience a marriage subsidy.

From a policy perspective, my analysis shows that couples do react to the tax system in Switzerland when it comes to the decision to get married. Policymakers should consider the distortionary effects of joint income taxation on the marriage rate, especially due to its importance for social- and intra-household insurance, as well as intra-household labor

allocation. Joint income taxation can also affect the labor market due to its impact on the marginal tax rate of the secondary earner. Further research should consider the labor market implications of joint income taxation in Switzerland.

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Appendix

A Sample Selection

To identify the unmarried couples in the STATPOP dataset I employ the following algorithm:

1. Select only households without married couples.

2. Keep private households and those where the oldest person is at least 16 years old.

3. Drop individuals below the age of 18.

4. Keep only households with adults of opposite sex.

5. Drop individuals if their registered father or mother ID is the same as the ID of another remaining household member (adult children living with their parents) or if a registered child ID is the same as the ID of another household member (parents living with an adult child and the child's partner)[16].

5.1. Repeat the previous step to take care of three generation households.

6. Drop individuals if they have the same father or mother ID as another household member (to rule out siblings)[17].

7. Keep only households if the number of the remaining household members is equal to two (to rule out remaining shared apartments as well as single individuals).

8. Keep only households if the remaining individuals are of opposite sex.

The remaining individuals should then be unmarried couples who are living together, but are taxed individually. It is possible that the remaining dataset includes individuals who are of the opposite sex, but simply roommates and not a couple. However, I assume the share of these living arrangements to be relatively small.

[16] I identify possible partners as having a maximum age difference of 12 years (the 95^{th} percentile of the age difference among married couples in the dataset). If two potential couples are living together (i.e. a mother living with her adult daughter, her partner and the partner's adult son together), I assume the parents to be the couple and drop the children.

[17] This function is conservative: if the parents are unknown, individuals are assumed to be siblings

B Simulated Instruments

The simulated instrument is based on a random sample of 1 000 couples from the 2012 dataset and is constructed as follows:

1. Randomly choose 1 000 couples from the 2012 dataset
2. Append such that each couple appears 8*26 (years*cantons) times
3. Calculate tax burden under joint and individual taxation for each couple using population-weighted average municipal tax rate per canton
4. Take average per canton-year pair, which is the simulated instrument

Instrument Exogeneity There is no reason why the simulated marriage tax should influence a couple's decision to get married other than through the direct impact it has on the marriage tax this couple faces (exclusion restriction). At the same time it is save to assume that the actual marriage tax and the simulated marriage tax are highly correlated, as they both depend heavily on the tax system a couple faces, which varies across cantons. Additionally, there is no reason why the marriage decision should influence the simulated marriage tax (no reverse causality between the dependent variable and the instrument).

Instrument Relevance As stated above, the simulated marriage tax and the actual marriage tax are highly correlated as they both depend mainly on the tax system. The first stage results reported in Appendix C show a high correlation between the marriage tax and the simulated marriage tax.

Comparison to grouping IV Note that in the grouping IV literature it is common to additionally construct separate instruments based on cohort-specific trends, i.e. age and education level. I abstain from this as education level is not known in my group and does not influence the marriage tax except for its potential influence on the income level. I further do not create age cohorts, as during my sample period all individuals face the same tax schedules irrespective of their age. Unlike in the traditional use of the grouping instrumental variable (see the literature on the elasticity of taxable income: Blundell et al. (1998), Gruber and Saez (2002), Weber (2014)), where individuals from different age-education cohorts face

different income shocks due to tax reforms, I am interested in the marriage tax couples face *given* their actual income. Creating age-education cohorts therefore does not improve the instruments' relevance. Using other variables such as income, within-household income distribution or whether children are present to create cohorts would invalidate the instrumental variable approach, as these are choice variables, which directly influence the income level. Constructing cohorts based on these variables would therefore make the instrument suffer from the same omitted variable bias as the marriage tax.

Sampling Concerns Using the 2012 data as a base year may be an issue if the characteristics across individuals and couples change drastically over the years. Table 6 therefore presents descriptive statistics of the full dataset by year. Note that the column labelled "Total" shows the average over all years[18]. The characteristics of the couples do not change drastically over the years, especially the number of children in the household as well as the work status remains relatively stable. The net joint income rises from 2012 to 2019 by approximately CHF 5 000, but this should not be a major issue for the simulated instruments construction, especially as the marriage tax is measured as a percentage of joint income and therefore inflation is not an issue. In fact, the robustness check in Figure 5 shows that the results are robust to a variation in the data used for the random sample.

[18] Due to a lack of space, I am only presenting a selection of the variables in this Table, however, the conclusions apply to all variables.

Table 6: Descriptive Statistics By Year

	2012	2013	2014	2015	2016	2017	2018	2019	Total
Couple-level									
Marriage Tax	731.500	761.500	803.100	860.100	951.300	1001.300	1045.700	1013.800	902.300
	(3347.600)	(3379.900)	(3427.500)	(3471.400)	(3679.100)	(3716.600)	(3773.400)	(3828.800)	(3594.600)
Marriage Tax in % of Net Joint Income	0.147	0.155	0.175	0.208	0.241	0.268	0.283	0.220	0.214
	(2.467)	(2.475)	(2.482)	(2.494)	(2.480)	(2.484)	(2.496)	(2.551)	(2.493)
Married	0.850	0.841	0.834	0.827	0.821	0.816	0.808	0.803	0.824
	(0.357)	(0.366)	(0.372)	(0.378)	(0.383)	(0.387)	(0.394)	(0.397)	(0.381)
Both work	0.780	0.785	0.789	0.792	0.795	0.798	0.795	0.778	0.789
	(0.414)	(0.411)	(0.408)	(0.406)	(0.404)	(0.402)	(0.404)	(0.415)	(0.408)
Net joint income	122 309.000	123 329.700	124 635.100	125 435.700	130 258.400	131 341.600	131 773.300	130 880.000	127 685.600
	(111 944.900)	(118 294.700)	(133 069.400)	(121 259.800)	(108 804.000)	(219 217.300)	(121 640.000)	(164 586.600)	(142 759.200)
Number of Children in HH	0.944	0.934	0.930	0.928	0.930	0.931	0.930	0.933	0.932
	(1.071)	(1.069)	(1.068)	(1.065)	(1.063)	(1.061)	(1.061)	(1.063)	(1.065)
Years in Municipality	11.800	11.850	11.820	11.790	11.740	11.770	11.780	11.990	11.820
	(11.320)	(11.330)	(11.250)	(11.180)	(11.110)	(11.080)	(11.030)	(11.060)	(11.160)
Women									
Age	41.920	42.100	42.240	42.330	42.410	42.540	42.740	43.010	42.430
	(10.780)	(10.810)	(10.830)	(10.830)	(10.830)	(10.820)	(10.810)	(10.760)	(10.810)
Swiss	0.840	0.834	0.827	0.822	0.816	0.813	0.810	0.811	0.821
	(0.367)	(0.372)	(0.378)	(0.383)	(0.387)	(0.390)	(0.392)	(0.392)	(0.383)
Net Income	34 966.600	35 862.800	36 659.600	37 482.600	38 643.800	39 380.200	40 248.000	40 770.600	38 117.000
	(34 187.700)	(35 842.000)	(36 155.000)	(38 407.900)	(40 310.900)	(51 611.600)	(40 139.200)	(42 241.700)	(40 401.800)
Men									
Age	44.160	44.340	44.470	44.550	44.620	44.750	44.930	45.200	44.650
	(10.850)	(10.890)	(10.910)	(10.920)	(10.920)	(10.930)	(10.910)	(10.870)	(10.910)
Swiss	0.834	0.828	0.822	0.818	0.813	0.810	0.809	0.810	0.818
	(0.372)	(0.377)	(0.383)	(0.386)	(0.390)	(0.392)	(0.393)	(0.392)	(0.386)
Net Income	87 342.400	87 466.900	87 975.500	87 953.200	91 614.600	91 961.400	91 525.300	90 109.400	89 568.600
	(106 275.000)	(112 454.300)	(126 965.800)	(114 358.300)	(99 111.900)	(187 615.500)	(113 650.300)	(158 207.600)	(131 364.500)
Municipal-level									
Sex Ratio (Men per Woman)	0.983	0.985	0.987	0.990	0.990	0.991	0.991	0.992	0.989
	(0.027)	(0.027)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
Inhabitants per km^2	1344.400	1353.100	1377.000	1400.700	1418.700	1431.700	1453.800	1441.000	1404.700
	(1874.500)	(1901.700)	(1939.500)	(1978.700)	(1999.900)	(2020.400)	(2039.100)	(2037.300)	(1978.400)
Social Assistance Rate	2.991	3.053	3.077	3.088	3.151	3.178	3.088	3.010	3.080
	(2.293)	(2.278)	(2.232)	(2.218)	(2.237)	(2.247)	(2.165)	(2.135)	(2.224)

Note: Standard Deviations in parentheses. Selected descriptive Statistics are presented for working age couples only, i.e. where the woman is between 18 and 64 years old and the man is between 18 and 65 years old.

C Tables

Table 7: First Stage & Reduced Form of Table 4

	(1)	(2)	(3)	(4)	(5)
First Stage: Marriage Tax					
Simulated Marriage Tax	1.005***	1.047***	1.017***	0.975***	0.986***
	(0.005)	(0.005)	(0.016)	(0.043)	(0.043)
Reduced Form: Marriage Rate					
Simulated Marriage Tax	−0.013***	−0.018***	−0.022***	−0.174***	−0.105***
	(0.001)	(0.001)	(0.003)	(0.010)	(0.010)
Observations	1 434 834	1 434 834	1 396 649	1 396 649	1 396 649
Individual FE	no	no	yes	yes	yes
Canton FE	no	no	no	yes	yes
Time FE	no	no	no	no	yes
Controls	no	yes	yes	yes	yes

Note: Robust standard errors in parentheses(*** p<0.01, ** p<0.05, * p<0.1). First stage and reduced form results for the baseline sample as presented in Table 4. Columns (2–5) include the full set of controls as presented in Table 4.

Table 8: First Stage & Reduced Form of Table 5

	(1) Baseline	(2) Baseline with Never Married	(3) Full Sample	(4) Swiss or Permit C
First Stage: Marriage Tax				
Simulated Marriage Tax	0.986***	0.716***	1.073***	0.686***
	(0.043)	(0.033)	(0.012)	(0.041)
Reduced Form: Marriage Rate				
Simulated Marriage Tax	−0.105***	−0.041***	−0.017***	−0.029*
	(0.010)	(0.006)	(0.001)	(0.014)
Observations	1 396 649	2 465 367	7 993 474	1 030 292
Individual FE	yes	yes	yes	yes
Canton FE	yes	yes	yes	yes
Time FE	yes	yes	yes	yes
Controls	yes	yes	yes	yes

Note: Robust standard errors in parentheses(*** p<0.01, ** p<0.05, * p<0.1). First stage and reduced form results for Table 5. Column (1) includes the baseline sample. Column (2) additionally includes all unmarried couples (i.e., those who never get married during the sample period). Column (3) includes all married and unmarried couples, including those who get married before 2012. Column (4) is a subsample of the baseline which only includes individuals with Swiss nationality or a C-permit. All specifications include all controls as well as individual-, canton- and time fixed effects.

Table 9: Heterogenous Effects: Couple Characteristics

	(1) Income Quintile	(2) Children	(3) Age Group	(4) within HH distribution
1^{st} quintile	−0.219***			
	(0.025)			
2^{nd} quintile	−0.078***			
	(0.009)			
3^{rd} quintile	−0.059***			
	(0.006)			
4^{th} quintile	−0.060***			
	(0.006)			
5^{th} quintile	−0.059***			
	(0.007)			
No Children		−0.152***		
		(0.015)		
Children		−0.020***		
		(0.003)		
$18-30$ years old			−0.120***	
			(0.012)	
$31-40$ years old			−0.080***	
			(0.009)	
$41-50$ years old			−0.084***	
			(0.009)	
$51-65$ years old			−0.109***	
			(0.027)	
0-10/90-100				−0.158***
				(0.017)
11-20/80-89				−0.082***
				(0.010)
21-30/70-79				−0.062***
				(0.007)
31-40/60-69				−0.065***
				(0.007)
41-50/50-59				−0.086***
				(0.009)
Observations	1 396 649	1 396 649	1 396 649	1 396 649
Kleibergen-Paap F Statistic	60.680	221.700	109.600	123.000
Individual FE	yes	yes	yes	yes
Canton FE	yes	yes	yes	yes
Time FE	yes	yes	yes	yes
Controls	yes	yes	yes	yes

Note: Robust standard errors in parentheses(*** p<0.01, ** p<0.05, * p<0.1). The sample contains all couples who get married between 2012 and 2019. Results show the interaction effect between the mentioned dummy indicator and the marriage tax as presented in Figure 4. Column (1) distinguishes by income quintile, column (2) by child status, column (3) by age and column (4) by within household income distribution.

Table 10: Heterogenous Effects: Type of Joint Taxation & Marriage Tax

	(1) Type of Joint Taxation	(2) Penalty/Subsidy
Double Tariff	−0.736***	
	(0.085)	
Splitting	0.218**	
	(0.076)	
Other	−0.245***	
	(0.044)	
Subsidy		−0.385***
		(0.065)
Penalty		0.185***
		(0.043)
Observations	1 396 649	1 396 649
Kleibergen-Paap F Statistic	19.770	24.320
Individual FE	yes	yes
Canton FE	yes	yes
Time FE	yes	yes
Controls	yes	yes

Note: Robust standard errors in parentheses(*** p<0.01, ** p<0.05, * p<0.1). The sample contains all couples who get married between 2012 and 2019. Results show the interaction effect between the mentioned dummy indicator and the marriage tax as presented in Figure 4. Column (1) distinguishes by type of joint taxation and column (2) by marriage penalty/subsidy.