

Withheld from Working More?

Withholding Taxes and the Labor Supply of Married Women

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Abstract

Can the complexity of income tax systems impact labor supply decisions? We study this question in the context of withholding taxes paid by married couples in Germany. In a first step, we document with the help of a survey that less than 20 % of the interviewed married individuals understand that withholding taxes are tax prepayments which are fully credited against the final income tax and, therefore, do not determine the income tax burden. Making use of a reform that decreased the withholding tax burden for some married women more than for others, while inducing no differences in income taxes, allows us to then estimate the elasticity of labor income with respect to the withholding tax. In line with our survey findings, we show that women adjust their labor supply following a change in withholding taxes. Given that within married couples in Germany secondary earners typically pay higher (monthly) withholding tax rates than primary earners, our results suggest that the high withholding tax burden of married women in Germany contributes to their low labor supply. The results also highlight that governments should be aware that overwithholding results in an overestimation of the actual income tax and thus distorts labor supply incentives.

JEL Classification: H21, H31, J16, J20, K34

Keywords: Withholding Taxes, Income Taxation, Gender, Labor Supply

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1 Introduction

Most countries use third-party withholding to collect income taxes during the year. Typically, employers withhold monthly prepayments to income taxes which are then fully credited against the final income tax liabilities of their employees. This provides governments with a constant income stream during the year and increases tax compliance (Bagchi and Dušek, 2021; Slemrod, 2019). However, withholding tax rates do not necessarily reflect true effective income tax rates. Often, there is over-withholding as many taxpayers pay higher withholding taxes than actual income taxes (Engström et al., 2015; Gelman et al., 2022; Hauck and Wallossek, 2022). In this case, a lump-sum tax refund is paid to employees by the government after the end of the tax year. Conversely, in the case of under-withholding, employees must make an additional lump-sum tax payment to the government. This interlinkage between withholding taxes and income taxes makes it more complex to understand the income tax system. As a consequence, the design of withholding taxes can distort labor supply when individuals use their monthly take-home pay to infer their income tax burden.

It is difficult to study the effects of withholding taxes, as they are typically a function of the income tax. Therefore, it is usually not possible to use reforms of the income tax system to draw conclusions regarding the role of withholding taxes. However, the German income tax system offers an institutional setting that allows investigating the effects of a reform of withholding taxes on labor supply. We illustrate the core feature of the institutional setting in Figure 1 which displays average withholding tax rates by gender and labor income in Germany. Conditional on labor income, married women pay, on average, higher withholding tax rates than married men. This is the consequence of the German withholding tax system that allows couples to shift parts of the withholding tax burden from one partner to the other by choosing certain withholding tax classes (*“Lohnsteuerklassen”*). As a consequence of the choice of withholding tax classes, couples with identical income structures can end up paying different withholding taxes. Importantly, the decision on withholding tax classes does not affect the final income tax rate. However, a married couple can minimize its joint withholding tax burden by shifting some part of the withholding tax burden from the spouse with higher labor income, i.e. the primary wage earner, to the spouse with lower labor income, i.e. the secondary wage earner. This explains the pattern in Figure 1: Married women are typically the

secondary wage earner and hence face, on average, a higher withholding tax rate conditional on labor income.

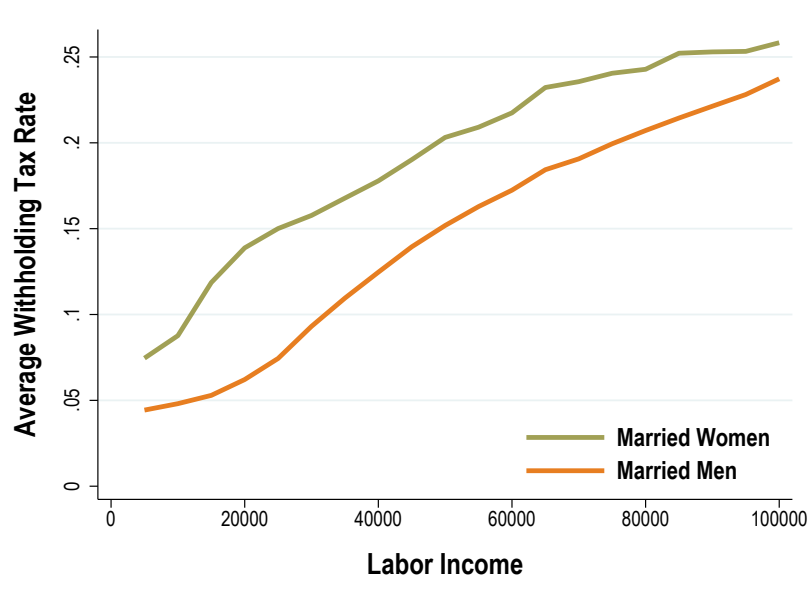


Figure 1: Average Withholding Tax Rate by Gender

Notes: The figure displays the average realized withholding tax rate by gender for married couples in Germany for annual labor income levels of up to 100,000 €. Calculations are based on a 10 % sample of income tax returns in 2010. The figure illustrates that through the choice of withholding tax classes (“*Lohnsteuerklassen*”), married couples shift a substantial share of the withholding tax burden from men to women.

Given a fixed income tax schedule, these differences in withholding tax rates should have no real effects.¹ If individuals react strongly to withholding taxes, this suggests that withholding taxes are misunderstood and used as a proxy for income taxes. This could be due to the larger salience of withholding taxes compared to income taxes. While withholding taxes are directly observed on the monthly payslip, the actual income taxes can only be inferred after receiving the final income tax statement.² Withholding taxes could therefore constitute a central cornerstone in understanding how people learn about the tax rates they face.

To measure knowledge about withholding taxes in the German population, we conducted a pre-registered online survey. We find that more than 80 % of the surveyed married and

¹This holds in a unitary household model and in the absence of interest rates and liquidity constraints. Shapiro and Slemrod, 1993 find that the financial situation of households is not correlated with the propensity to consume withholding tax savings.

²We find in our survey that in only 37 % of the married couples who file a joint tax declaration both spouses actually take part in preparing the tax declaration. This indicates that many individuals do not invest much time in understanding the final income tax statement.

employed individuals wrongly think that the choice of withholding tax classes affects the final income tax burden. This suggests that individuals with the same income tax burden, but with differing withholding tax rates, might perceive their income tax burden differently and consequently make different labor supply decisions. Additionally, we investigate the impact of the system of withholding tax classes on the organization of household finances. As seen in Figure 1, couples often choose withholding tax classes that shift parts of the withholding tax burden from men to women. For only about 40 % of these couples, we monitor patterns that are consistent with compensating these women, i.e. the husband making a relatively larger monetary transfer to his wife, or to a shared bank account, than vice versa. If women are not compensated for the unequal distribution of the withholding tax burden, the observed pattern of assignment of withholding tax classes lowers their own disposable net income. Hence, they might overestimate their individual income tax burden, which can decrease their incentives to work and potentially also affect their bargaining power within the couple.

Motivated by these findings, we investigate empirically whether withholding taxes impact labor income. The German context in which withholding taxes depend on the choice of withholding tax classes provides us with a good setting. To deal with the fact that withholding tax classes are not exogenously assigned, we exploit a reform in Germany in 2010 that reduced the withholding tax burden more for some married women than for others to identify the effect of withholding taxes causally. Using administrative data stemming from tax declarations obtained through a 5 % sample of the German Taxpayer Panel, we apply a Diff-in-Diff approach with a continuous treatment intensity. This allows us to study the effect of withholding taxes on the decisions of individuals and households. For married women, we estimate an elasticity of labor income with respect to the net of withholding tax of about 0.07 using a static DiD. Applying a dynamic DiD, we find that the estimate increases monotonically after the first post-reform year until it reaches 0.14 in the last year of our sample period, the seventh post-reform year. We attribute this lagged response to the reform to the fact that taxpayers first have to realize that their monthly net wage has changed and then recognize the persistence of this change before they can be expected to change their labor supply decision. Moreover, it might also take time to adapt one's labor supply, possibly after negotiations with one's employer or a change of employer.

Related Literature. In this paper, we provide the first real-world evidence on the effects of withholding taxes on labor supply.³ Previous evidence comes from a laboratory experiment by Becker, Fookien, and Steinhoff (2019). Their paper studies the hypothesis that taxpayers have false perceptions of net labor income due to withholding taxes. Using treatments with different levels of withholding tax rates, they design their experiment in a way that these withholding tax rates and the corresponding adjustments of lump-sum payments should not influence the behavior of rational agents.⁴ Contrary to standard economic theory, the authors, however, find that people describing themselves as money-motivated significantly reduce their effort when facing higher withholding tax rates.

Our paper contributes to the existing literature on the complexity of tax systems. Undoubtedly, the interlinkage between withholding tax and income tax and particularly the possibility to choose withholding tax classes add complexity for taxpayers. This complexity might impact their decision-making. Using an experimental setting, Abeler and Jäger (2015) find that taxpayers subject to more complex tax systems do not react to new taxes sufficiently. This shows that the complexity of tax systems can induce taxpayers to make irrational decisions. It is therefore relevant that, as well documented, an overwhelming majority of taxpayers do not understand how income taxation works. For example, many individuals do not know which tax rates apply to them personally, and they do not understand the difference between marginal and average tax rates (Gideon, 2017; Rees-Jones and Taubinsky, 2020). However, the literature on income taxation finds large elasticities of taxable income with respect to the income tax, which shows that people react to the amount of taxes they have to pay (Gruber and Saez, 2002; Neisser, 2021; Saez, Slemrod, and Giertz, 2012). People thus respond to income taxes even though they do not have a good understanding of them due to, e.g., mental or time constraints. This poses the question which heuristics individuals use to determine their response to income taxation. Throughout this paper, we document that withholding taxes serve as one of these heuristics in a complex system of income taxation.

³Buettner, Erbe, and Grimm (2019) show how the choice of withholding tax classes depends on spouses' labor income but they do not study the effect of withholding tax class choice on labor income.

⁴Here, they model a world without interest rates and liquidity constraints which do not perfectly fit the real economy. Positive interest rates might give an incentive to have a low withholding tax rate because interest can be earned between paying the withholding tax and having to pay additional tax payments. Liquidity constraints might also give an incentive to have a low withholding rate to not run out of money during the year.

Other research finds that taxpayers act on more salient parts of a tax system. Using a field experiment in a grocery store, Chetty, Looney, and Kroft (2009) find that, although consumers are aware of which tax rate they have to add, consumers' demand for goods is higher when sales taxes are not added to the price tag.⁵ As linear commodity prices are relatively simple to understand and calculate, the authors take that as an indication for the hypothesis that behavioral responses of taxpayers could be very different from those predicted by standard economic theory in cases of more complex taxes such as income taxes.

It has already been shown in the literature that withholding taxes substantially impact real-world decisions other than labor supply decisions. Shapiro and Slemrod, 1993 document with the help of a survey that almost half of their sample planned to increase consumption as a reaction to a federal US tax reform in 1992 that decreased withholding taxes without changing the eventual tax liabilities. Feldman (2010) confirms that finding by showing that the reform decreased contributions to retirement saving accounts, likely through the channel of an increase in consumption. The behavioral reaction is particularly surprising as the US withholding tax system allows households to adapt their withholding taxes to an exact dollar amount, so households could have changed their withholding tax rate at any time to better reflect their income tax rate. This would have allowed them to increase consumption during the year.

Until today, most households are overwithheld in the US (Gelman et al. (2022)). Consequently, there are numerous attempts in the literature to rationalize why households accept overwithholding even though they could escape it. It has been shown that active overwithholding decisions could be a tool of households to deal with limited self-control (Neumark, 1995; Thaler, 1994) and income uncertainty (Gelman et al., 2022; Highfill, Thorson, and Weber, 1998; Jones, 2012). Our results suggest that these types of behavior can have detrimental effects on labor supply.

The particularities of the German institutional setting allow us to also contribute to the literature on the determinants of the gender earnings gap which is particularly pronounced in Germany. As previously shown in Figure 1, married women pay, conditional on labor income, higher withholding tax rates than married men. Therefore, we argue that, given our estimates, a reduction of withholding tax payments for married women in Germany might increase labor

⁵Feldman and Ruffle (2015) arrive at a very similar finding.

supply and thus labor income of married women. The existing system of withholding tax classes for married couples might then be an additional contributing factor to the gender gap in labor supply in Germany. We therefore contribute to a discussion of how to optimally design a tax system while creating the smallest possible detrimental incentives for labor supply of women and keeping states' budgets stable.

Previous literature has shown that labor supply of women can be detrimentally affected by the design of tax systems. This holds true in particular for systems with joint taxation of married couples, in which marginal and average tax rates of secondary earners are increased, while those of primary earners are decreased. LaLumia (2008) studies the effects of the United States turning from an individual taxation scheme to joint taxation of married couples in 1948. She estimates that the reform decreased the employment likelihood of highly-educated married women by about two percentage points. Examining the 1971 abolishment of joint taxation of married couples in Sweden using register panel data, Selin (2014) finds that employment rose significantly more for wives of high-income earners after the reform. This is in line with expectation because this is the group that profited most from joint taxation so that joint taxation should have kept their labor supply substantially lower than it would have been without it. Bick and Fuchs-Schündeln (2017), based on Bick and Fuchs-Schündeln (2018), look at the United States and 13 European countries with joint taxation of married couples. They estimate that changing to a system of individual taxation while keeping government revenue constant would increase hours worked by women by more than 70 hours per year in ten of these countries. As an example, they calculate benefits of 113 annual hours for the United States and of even 280 annual hours for Germany.

Outline. The rest of the paper is structured as follows: Section 2 presents in detail the institutional setting and the results from our survey, thereafter Section 3 presents the data and the sample selection, and Section 4 explains our empirical strategy. Section 5 discusses the results and Section 6 concludes.

2 Institutional Setting

In this section, we first provide necessary context for our study by explaining the German joint taxation system and subsequently the German withholding tax system for married couples. Thereafter, we describe the reform of withholding taxes that we use to identify causal effects. Finally, we shed more light on the understanding of withholding taxes among married couples in Germany by presenting the results from our survey.

2.1 Income Taxation of Married Couples

Married couples in Germany have two different options when it comes to filing their income taxes. They can choose to either file their income taxes separately, as if they were still single, or to file their income taxes jointly. By choosing the latter, couples can potentially benefit from joint taxation benefits.⁶ Joint income taxation works such that the individual income tax schedule is applied to half the joint taxable income of each couple and then the resulting tax burden is doubled. Due to the progressivity of the German income tax system, this creates joint taxation benefits for couples with differing marginal income tax rates. Put differently, for a fixed household income, a couple receives more joint taxation benefits the more unequal the intrahousehold distribution of income.

We illustrate this feature in Figure 2a, where we plot the joint taxation benefit of a couple with an household income of 80,000 € against the female share in the household income. If both spouses contribute equally to the household income, there are no benefits from joint taxation. If, however, one partner for example contributes 80 % to the household income, opting for joint taxation will save the couple around 2,000 € in yearly income taxes.

As a side effect of this joint taxation system, the secondary earner within the couple faces, in the presence of joint taxation benefits, a higher marginal income tax rate under joint income taxation than under separate income taxation. Figure 2b shows that as soon as the partner income exceeds the own income, an individual is confronted with substantially higher marginal income tax rates. The marginal tax rate for an individual with an own income of 24,000 € is

⁶In fact, for the vast majority of couples choosing joint taxation is at least weakly better than choosing separate taxation. Only couples in which one partner has a significant amount of income replacement payments can be better off by choosing separate taxation. The reason for that is that those payments, while not being taxable, can increase the marginal tax rate of the couple (“Progressionsvorbehalt”).

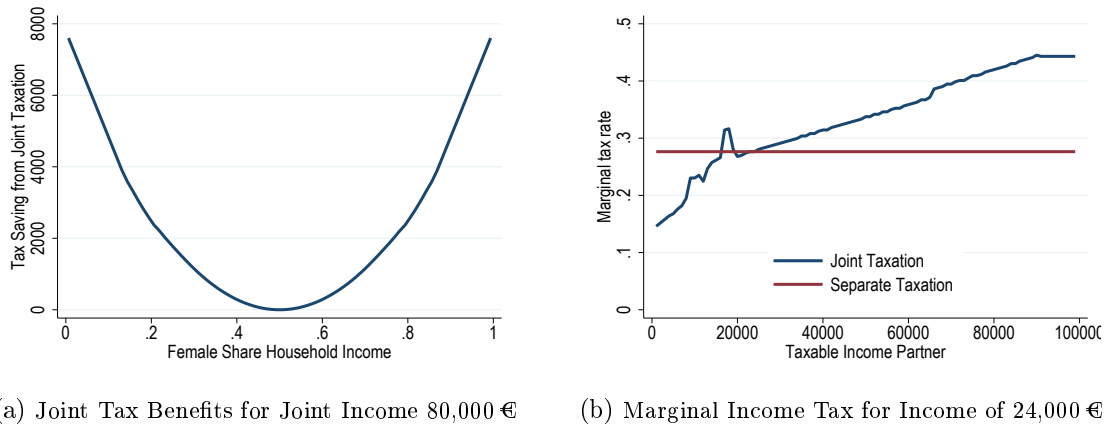


Figure 2: Joint Income Taxation

Notes: The figure illustrates the system of joint income taxation in Germany. Panel (a) plots the joint taxation benefits depending on the intra-household income distribution for a household with joint income of 80,000 €. Panel (b) shows the marginal income tax rate depending on the income of the partner for an individual earning 24,000 € under both joint and separate taxation. In this example, we assume that both spouses contribute to public health care, to the public pension system and claim no further deductions.

27.5% under separate taxation, but increases to approximately 35% under joint taxation if their spouse has an income of 60,000 €.

2.2 Withholding Taxes of Married Couples

The German government wants to enable couples to profit from the joint taxation advantage already during the year. Therefore, couples have the choice to reduce their withholding tax burden.⁷ Married couples can influence the sum of their monthly withholding tax payments and the allocation of the withholding taxes to the spouses. They can effectively choose between three different withholding tax schedules.⁸ These withholding tax schedules assign

⁷As all developed countries, Germany levies withholding taxes, which are prepayments to the final income tax and which are withheld at source by employers on behalf of their employees. Usually, the withholding taxes are deducted from the monthly paycheck and then credited against the income tax liability at the end of the tax year.

⁸In our analysis, we leave out the fourth, least commonly chosen withholding tax schedule. This withholding tax schedule is called "IV with factor" and was introduced in 2010 with the goal to mitigate the negative effects of the men-/women-favoring withholding tax schedules, while still enabling couples to profit from the advantage of joint taxation during the year. To do so, the tax office takes into account the past income of both spouses and calculates the exact advantage of joint taxation for both spouses individually. Thereby, the tax office can set the withholding tax for both individuals at a level that allows the household to profit from the advantage of joint taxation during the year while not shifting the withholding tax burden from one partner to the other. There are no official statistics on the use of "IV with factor". Official government agencies estimate, however, that even 10 years after its introduction less than 1% of the couples are using this schedule. We observe "IV with factor" as "IV" in the data.

each partner a certain withholding tax class, which determines the personal withholding tax payments.

Symmetric Schedule. After marriage, each couple in which both spouses receive labor income gets assigned the same “default” withholding tax schedule, which we will call the symmetric schedule. This withholding tax schedule is symmetric since it assigns each spouse the same withholding tax class “IV”. In this withholding tax class, the monthly withholding tax payments are calculated as if the individual was single, only taking into account the own individual income. Hence, for a couple without joint taxation benefits, the withholding tax would be the same as the income tax. If a couple realizes joint taxation benefits, the paid income tax of both spouses will exceed their final income tax liability and the couple will receive a tax refund after filing an income tax return. We illustrate this in Figure 3 for a couple in which the husband earns 50,000 € and the wife earns 30,000 €. Being in the symmetric withholding tax schedule causes the couple to receive the joint taxation benefits of 288 € as a lump sum tax refund after filing their income taxes.

To avoid this overpayment of withholding taxes during the year, a couple can decide to switch from the “default” symmetric schedule to a withholding tax schedule that aims at reducing the monthly withholding tax payments to account for the joint taxation benefits.⁹

Men-/ and Women-favoring Schedule. The most popular alternative withholding tax schedules are the men-/women-favoring withholding tax schedules. In those schedules, one spouse is assigned the favorable withholding tax class (“III”), while the other spouse is assigned the unfavorable withholding tax class (“V”). This assignment to favorable and unfavorable withholding tax classes effectively attributes the personal tax exemption of the spouse in “V” to the spouse in “III”. This leads to a lower withholding tax burden for the spouse in “III” as compared to being in withholding tax class “IV”, while increasing the withholding tax burden of the spouse in “V”. The second column in Figure 3 shows that, in the presence of joint taxation benefits, this decreases the joint withholding tax payments during the year if the primary earner is assigned to “III”. Choosing the men-favoring schedule shifts the timing of

⁹Switching away from the symmetric schedule requires the stated consent of both spouses. For switching back, however, unilateral action suffices. The only exception are couples in which only one spouse earns labor income. Those couples are automatically assigned the men-/women-favoring withholding tax schedule.

the realization of the joint taxation benefit for the couple forwards and eliminates the lump-sum tax refund at the end of the year. In this concrete example, it even leads to the household paying too little in withholding taxes during the year which obliges them (in absence of other deductions) to make an additional tax payment at the end of the year.

Conversely, if this couple had chosen the women-favoring schedule, which in this case puts the primary earner into the unfavorable withholding tax class and the secondary earner into the favorable withholding tax class, they would have paid even higher withholding taxes than under the “default” symmetric schedule and would have received an even larger tax refund at the end of the year. However, this misallocation of favorable and unfavorable withholding tax classes rarely happens.

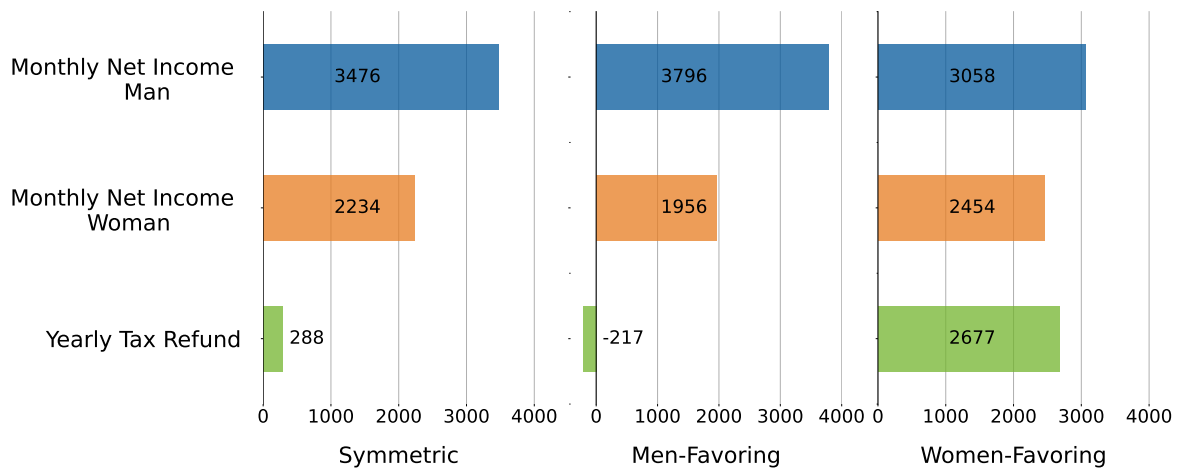


Figure 3: Example illustrating the different withholding tax schedules

Notes: The figure illustrates how the different withholding tax schedules affect the monthly net incomes of both spouses and the yearly tax refund in the year 2022. Net incomes are calculated for a household in which the husband earns 50,000 € and the wife earns 30,000 €. The assessed yearly income tax burden of the household is 11,181 € under the assumption that the couple claims no additional deductions. The figure shows how the different withholding tax schedules shift the withholding tax burden from one partner to the other and how they can affect the yearly refund from the final income tax.

Effect on Tax Rates. The shift of withholding tax burden from the primary to the secondary earner cannot only reduce the joint withholding tax burden, but also has large effects on the withholding taxes paid by each spouse. The left hand side of Figure 4 displays the average withholding tax rate by withholding tax class. Being in the unfavorable withholding tax class leads to a much higher and being in the favorable withholding tax class to a much lower average withholding tax rate compared to the default withholding tax class. An individual

earning 4,000 € monthly gross income pays on average around 20 % in withholding taxes in the default withholding tax class. The average withholding tax burden of the same individual increases to around 30 % when being in the unfavorable withholding tax class and reduces to around 10 % when being in the favorable withholding tax class. Similarly, the marginal withholding tax rate is also affected by the different withholding tax classes. We depict the marginal withholding tax rate by withholding tax class in Figure C.2.

Choice of the Different Schedules. The right hand side of Figure 4 shows the frequency with which the different withholding tax schedules are chosen and which withholding tax class they allocate to each spouse. More than 50% of the couples pick the men-favoring schedule that shifts the withholding tax burden from men to women, approximately 40% stick with the symmetric schedule. Only 5% of the couples pick the women-favoring schedule with lower withholding tax rates for women than for men.

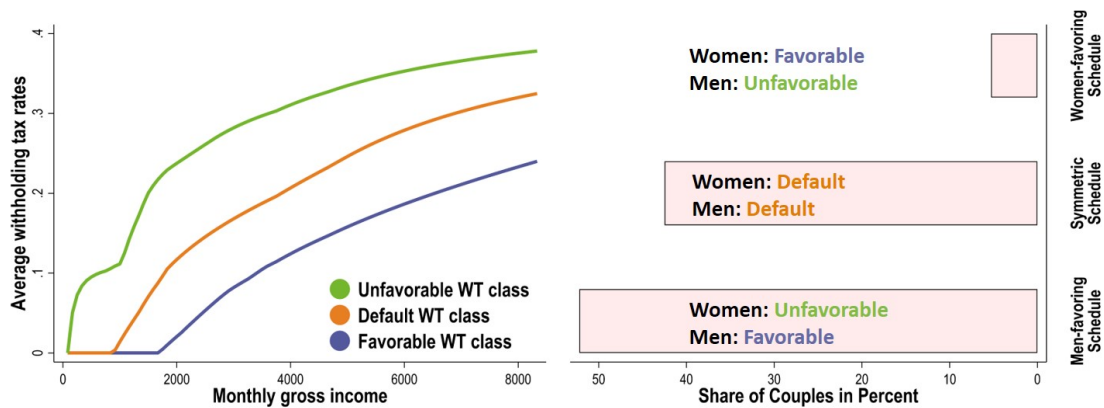


Figure 4: Illustration of different withholding tax schedules

Notes: The figure illustrates the frequency and implications of the different withholding tax schedules. On the left-hand side, the average withholding tax rate by withholding tax class is shown. Compared to the default withholding tax class, being in the unfavorable withholding tax class leads to a much higher and being in the favorable withholding tax class to a much lower average withholding tax rate. On the right-hand side, the possible withholding tax schedules and their frequency are shown. More than 50 % of couples choose the men-favoring schedule, in which the man is assigned the favorable withholding tax class and the woman the unfavorable withholding tax class. Around 40 % of couples choose the symmetric schedule, which keeps both spouses in the default withholding tax class. Finally, only around 5 % of the couples choose the women-favoring schedule.

While the different choices of withholding tax schedules that we have discussed here have strong effects on the amounts of withholding tax payments, they do not affect the final income tax burden of the couple. Couples cannot decrease their final income tax burden by choosing a

certain withholding tax schedule, but can only change the timing of the income tax payments throughout the year.¹⁰

2.3 Withholding Tax Reform of 2010

Background. For identification, we make use of a German tax reform in 2010 that enabled taxpayers to deduct a much larger share of their contributions to health care insurance. As everyone in Germany is forced to hold health insurance, it decreased the income tax burden for all taxpayers. Conditional on income, the reform of the income tax was identical for everyone independent of the withholding tax schedule. Furthermore, as the contributions to health care insurance are automatically taken into account in the calculation of the withholding tax, the reform was equivalent to a cut in withholding taxes for all taxpayers. Crucial for the identification of causal effects in our setting is that the reform, in addition, introduced that social security contributions are now taken into account for the calculation of withholding taxes for taxpayers in the unfavorable withholding tax class. Previously, they were only considered for taxpayers in the other withholding tax classes. This has the effect that the reform reduced the withholding tax - but only the withholding tax - for taxpayers in the unfavorable withholding tax class substantially more than for taxpayers in the other withholding tax classes.

Reform Effect. Figure 5 shows how annual withholding taxes changed from 2009 to 2010 by withholding tax class and annual gross labor income. For spouses in the favorable withholding tax class, the reform decreased the withholding tax burden by up to 800 €¹⁰. However, there was almost no change, and if then a slight increase, in withholding taxes for annual gross labor incomes lower than 32,000 €. For the symmetric withholding tax class, the reform decreased the withholding tax burden by up to even 1,200 € with a substantially smaller cut for lower incomes. In contrast, women in the unfavorable withholding tax class profited from a cut by up to 3,000 € with even a considerable reduction in withholding taxes for low incomes. In other years, such substantial year-to-year changes have not occurred. Figure C.3 shows this for the years between 2006 and 2016 and for an annual individual income of 25,000 € which is an income with many observations and where a lot of our variation is concentrated (see Figure

¹⁰Of course, taking into account discount rates and liquidity constraints, couples can actually have benefits from delaying their income tax payments.

A.2).¹¹ The described reform is the only substantial reform in withholding taxes during our sample period.

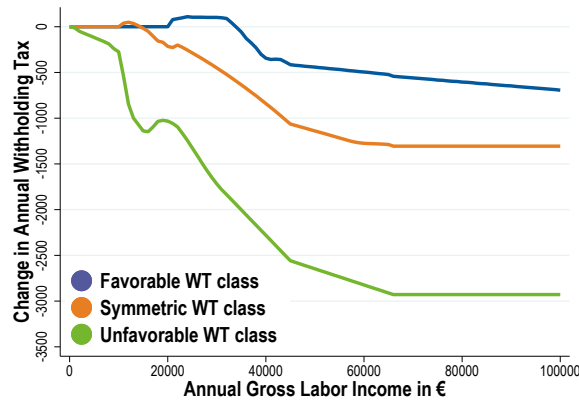


Figure 5: Effects of the 2010 Reform on Withholding Taxes by Withholding Tax Class

Notes: The figure plots the effect of the withholding tax reform 2010 on withholding tax payments depending on the withholding tax class. It illustrates the absolute change in the annual withholding tax payments caused by the reform.

Anticipation and Salience. The reform, which was passed into law half a year before its onset, was arguably non-salient in the sense that it was unknown to agents that there was a reform that changed withholding taxes depending on the withholding tax class a given taxpayer is in. There was no public debate about this part of the reform, just about the reform decreasing eventual income taxes, and there is no indication that people were made aware of the connection of the reform to withholding tax classes. This assessment is corroborated by looking at Google Trends for relevant terms. No striking movements are visible around the dates of reform announcement and introduction. This means that couples are then not expected to have either changed their withholding tax schedules around the reform date in response or adjusted their labor supply already prior to the reform. Furthermore, the reform's non-salience means that spouses in the unfavorable withholding tax class might be unaware that their eventual income tax liability, regardless of it being perceived individually or jointly with their spouse, was not changed to the same extent. The only feature concerning withholding taxes that was

¹¹The pattern is essentially the same for annual individual incomes of 15,000 €, 30,000 €, 50,000 € and 70,000 €.

indeed salient is that they ended up getting more money after withholding taxes every month, i.e., a higher net income on their payslips.¹²

2.4 Survey: Exploring the Understanding of Withholding Taxes

In this paper, we argue that the lack of understanding of withholding taxes can affect labor supply decisions. To underpin our argument, we conducted a pre-registered online survey (n=506) to be filled out by married couples living in Germany.¹³ In this survey, we asked the participants directly about their understanding of withholding taxes in Germany and tried to identify channels through which a misunderstanding of withholding taxes can affect labor supply.

We focus in this section on the core results, Appendix B provides an in-detail description of the survey and discusses additional results.

Understanding of Withholding Taxes. The most important information we want to elicit is whether married individuals understand the withholding tax system. We focus on two essential aspects by investigating (1) whether they know that withholding taxes do not affect a married couple’s joint final income tax burden and (2) whether they understand that withholding taxes, however, affect their monthly payslip.

First, we elicit whether our survey participants know that withholding taxes, and thus the choice of withholding tax schedules, do not affect a married couple’s joint final income tax burden. We do so by creating a realistic example of labor incomes of two spouses (one spouse earning 60,000 € per year, the other one 30,000 €) and then ask the survey participants to select the withholding tax schedule which results in the lowest final income tax burden of the couple.¹⁴ We ask this question once at the beginning of the survey and again towards the end after the respondents have received extensive information about the withholding tax system. As discussed in Section 2.2, irrespective of the choice of the withholding tax schedule, the final income tax burden of the couple is the same. We find that only around 16 % of the

¹²What they eventually also see is that they get lower tax refunds or have to pay higher additional tax payments in the upcoming year but it remains unclear whether they would connect this to the change on their payslip, particularly because tax refunds or additional tax payments occur jointly to the married couples.

¹³We have pre-registered our survey at the Open Science Foundation.

¹⁴See Question D7 in Appendix B.2 for the exact wording of the question.

surveyed individuals know about the irrelevance of the withholding tax schedule for the final income tax burden at the beginning of our survey. In Figure B.1, we document that there exists heterogeneity in this knowledge across subgroups. Men (20 %) are better informed than women (13 %), while the knowledge is largely independent of the respondents' withholding tax classes, even though men are over-represented in the favorable withholding tax class as compared to the unfavorable one.

Second, we document whether the individuals know that and how they can influence the amount of withholding taxes they have to pay every month with the help of withholding tax schedules - so whether they know that and how they can impact the size of monthly wage transfers from their employers while keeping their gross labor income constant.¹⁵ We document that among all respondents, we classify 61 % (63 % of men, 60 % of women) as knowledgeable. In Figure B.2, we illustrate that this knowledge about the interlinkage between withholding tax classes and the monthly payslip is homogenous across subgroups.

Combining the two knowledge questions, we find that 48 % of all respondents know that and how withholding tax classes change withholding taxes but not that withholding taxes are tax prepayments and have no impact on the final income tax burden. This is a remarkable finding as it implies that a large share of married couples in Germany might fall for the fallacy that they can save income taxes by choosing a certain withholding tax schedule.

Couples who know that the partner in the favorable withholding tax class is subject to lower withholding tax rates and the partner in the unfavorable one is subject to higher withholding tax rates (compared to the symmetric schedule and to individual taxation) might then strategically assign their primary earner to the favorable and their secondary earner to the unfavorable class (corresponding to the men- oder women-favoring withholding tax schedule). This then distorts the relative intra-household distribution of labor income as paid out by the employers.

Organization of Household Finances. However, we cannot draw definite conclusions about the impact of the choice of withholding tax schedules on the eventual intra-household distribution of labor income without knowing more about potential money transfers between spouses. Sophisticated couples could make transfers from the spouse in the favorable withhold-

¹⁵See Question D10 in Appendix B.2 for the exact wording of the question.

ing tax class to the spouse in the unfavorable withholding tax class and thereby re-establish the "default" relative intra-household earnings. To learn more about the organization of household finances we asked in detail whether and how couples use shared bank accounts, onto which bank account they let their employers transfer their wage payments, and whether and how they transfer (parts of) these wage payments to another bank account.¹⁶

Broadly, we classify couples into three groups with respect to their usage of bank accounts and the destinations of the wage payments from their monthly payslips: Couples without a shared bank account, couples with a shared bank account who get both their wages directly transferred to that account, and couples with a shared bank account where both spouses get their wages directly transferred to their own bank account. As explained above, these categorizations are of particular relevance for couples that picked the men-favoring or women-favoring schedule. As we focus on couples in the men-favoring schedule in our main analysis with administrative data, we also concentrate on these here.

If a couple does not have a shared bank account, it is very likely that the distortion of the relative intra-household distribution of labor income remains largely unchanged as this couple is less likely to have established a compensatory sharing rule. We find that 47 % of the respondents in the men-favoring schedule do not have a shared bank account.¹⁷ On the other hand, 32 % of all couples in the men-favoring withholding tax schedule have a shared bank account on which both spouses get their wages directly transferred to (26 % when not conditioning on the withholding tax schedule). For these households, the above-described distortion of the relative intra-household distribution of labor income appears rather unproblematic.¹⁸ When all of a couple's labor income is transferred to a shared account, the choice of the men-favoring schedule likely does not directly impact the consumption opportunities of women, as they can probably use the money on the shared bank account for their private consumption.

However, for the 16 % of the couples in the men-favoring withholding tax schedule that have a shared bank account but receive their wage incomes to each spouse's personal bank account,

¹⁶See Question D16 in Appendix B.2 for the exact wording of the questions.

¹⁷When considering couples irrespective of their withholding tax schedules, 45 % of the respondents state to not have a shared bank account.

¹⁸This also applies to another 3 % of the couples in the men-favoring schedule where the husband's wage income gets directly transferred to either his wife's account or the shared account and the wife's wage income gets directly transferred to her own account.

this is less clear.¹⁹ In these cases, the money from the respective personal bank account can be seen as typically designated for the account holder's individual consumption while both partners transfer a share of their personal income to the shared bank account. We further examine in exploratory fashion whether women are in these cases compensated for the higher withholding taxes they have to pay. Couples that take into account the redistributive consequences of the men-favoring schedule should have established a transfer rule that requires the husband to transfer a larger part of his income to the shared bank account than his wife. We find that only 38% of all couples in the men-favoring schedule that have a shared bank account but receive their wage incomes to each spouse's personal bank account make use of such a rule. This means that even among couples in the men-favoring schedule with a shared bank account, 21% do not seem to account for the distortion effects of being in the men-favoring schedule. Thus, we can monitor a counteracting strategy for only 42% of all couples in the men-favoring schedule (those with a shared bank account who either already get their wages directly transferred accordingly or do compensatory payments from the husband to the wife afterwards). For the majority of couples in the men-favoring schedule, however, relative intra-household earnings are distorted in favor of the husband. Furthermore, married women's disposable net income, given constant income taxes, is lowered. This might lead them to overestimate their individual income tax burden, which can detrimentally affect their bargaining power within the household and decrease their work incentives.

Filing of Taxes. The frequent absence of compensatory behavior of couples in the commonly chosen men-favoring schedule raises the question why these women seem to accept being made worse off. One potential explanation is that women have a lower understanding of the withholding and income tax system than men. As documented in Figure B.1, women less often than men know that withholding taxes do not have an influence on the final income tax burden. This gender gap in knowledge about the tax system could be linked to the amount

¹⁹This applies even more to another 2% of the couples in the men-favoring schedule where the husband's wage income gets directly transferred to his own account while the wife's wage income gets directly transferred to either the husband's account or the shared account.

of time and effort spent dealing with it. We asked respondents about their tax filing behavior and concentrate on those who file their income tax declaration jointly as a married couple.²⁰ Indeed, we find that among these respondents, 56 % of men but only 37 % of women state that they usually do the majority of the tax declaration alone. This difference in tax filing behavior is driven by couples in the men-favoring withholding tax schedule. Of all men in the men-favoring withholding tax schedule, 65 % do the tax declaration mostly alone, while this only applies to 35 % of the women in that schedule. In the symmetric schedule, however, the gender difference is much lower with 50 % of the men and 46 % of the women claiming to do the tax declaration mostly alone, respectively. This shows that a more gender-equal exposure to the income tax system correlates with a less distortive distribution of withholding taxes. Moreover, we see that those respondents that do most of the tax declaration alone also exhibit a larger knowledge about the absence of influence of withholding taxes on the final income tax burden at the beginning of the survey. For women, knowledge increases from 10 % to 17 % when they are dealing with the tax declaration mostly alone, for men from 16 % to 25 %.

Gender Norms. Another potential reason for the frequent shifting of tax burden from husbands to wives could be gender norms. As Buettner, Erbe, and Grimm (2019) show with administrative tax records, German married couples more often choose the men-favoring withholding tax schedule when the husband earns more than the wife than choosing the women-favoring schedule when the wife earns more than the husband. They also more often choose the men-favoring schedule when the wife earns more than the husband than they choose the women-favoring schedule when the husband earns more than the wife. This phenomenon could be attributed to a gender norm that prescribes the husband to be the main breadwinner (Bertrand, Kamenica, and Pan, 2015). Couples with such a norm should then be more likely to choose the men-favoring withholding tax schedule.

We thus asked the respondents three questions with seven ordered answer options each to elicit their norms regarding gender roles in households.²¹ From the answers to these questions, we

²⁰This applies to 82 % of our respondents. A joint tax declaration has to be signed by both spouses but no other participation in filing the declaration is needed. See Question D17 in Appendix B.2 for the exact wording of the question.

²¹See Question D18 in Appendix B.2 for the exact wording of the questions. All three questions have been asked in this form in previous waves of the German Socio-Economic Panel (SOEP).

created a standardized index of the traditionality of gender norms where a higher value means that the respondent wants to have a larger role for husbands than for wives with regards to decision-making in the household and market work.

As shown in Figure B.3, respondents with more traditional gender norms are indeed rather in the men-favoring than in the symmetric withholding tax schedule. This holds true for both men and women.

3 Data and Sample

Our study is based on a 5 % sample of extensive administrative tax records from the German Taxpayer Panel. In the first subsection, we describe this data source. In the second subsection, we describe how we construct our estimation sample and summarize basic socio-demographic characteristics of our sample.

3.1 German Taxpayer Panel

The German Taxpayer Panel (TPP) is an administrative dataset that contains information on the population of taxpayers in Germany for the years 2001 to 2018. It includes information on various characteristics such as income, gender, age, number and age of children, withholding tax class and other tax-related information. The TPP consists of a total of around 63 million records for individuals for whom tax information is available for at least two years. Due to its large size, the data is primarily offered as a sample through research data centers. The waves of the TPP for the years 2001 to 2011 were created from the annual income tax statistics, which include data from the tax returns of about 27 million German taxpayers who filed their income taxes. Starting in 2012, the annual federal statistics on wages and income tax replaced the income tax statistics that had been used previously, and the TPP has been continued using data from this statistic. As a result, from 2013 on, the TPP also includes data on about 12 million taxpayers who did not file their income taxes but who did pay withholding taxes. However, due to the late availability we do not consider those taxpayers in our analysis.

3.2 Sample Selection and Characteristics

In our analysis, we focus on dual-earner married couples in the two most common withholding tax schedules: the men-favoring and the symmetric schedule.²² We do so for two reasons. First, as shown in Section 2.2, the vast majority of couples, around 95 %, has chosen either the men-favoring or symmetric schedule. Second, we deem the couples in those two schedules to be more comparable. In most of the couples in the women-favoring schedule, only the woman is earning labor income. Hence, these couples are very different to the couples in the other two schedules.

For the men-favoring and symmetric schedules, we keep couples in which both spouses received labor income in 2009, the year before the aforementioned withholding tax reform was implemented.²³ This restriction ensures that these individuals are actually treated at the time of the reform. Moreover, we focus on couples in which both spouses are between 20 and 60 years old.²⁴ To ensure that labor income is the main source of income, we exclude couples in which, in the year 2009, at least one spouse received income of more than 1,000 € from self-employment.

Financial Crisis. The withholding tax reform of 2010, which we use for our identification, partially coincides with the financial crisis in Germany. We see in our data that couples in the men-favoring schedule experienced more extreme variations in labor income during the crisis years. Therefore, to make the couples in the two schedules more comparable, we exclude couples which were especially affected by the crisis. We do so by excluding couples in which at least one spouse received unemployment benefits or short-time work compensation in 2009 and by removing all couples in which at least one spouse had a change in annual labor income of more than 25 % from one year to the next during the pre-reform years.

Unbalanced vs Balanced Panel. Our final estimation sample consists of 23,233 couples. We call this sample unbalanced since we allow the couples to not necessarily show up in each

²²At the time of the reform, same-sex couples were not yet allowed to benefit from joint taxation and were not allowed to choose their withholding tax classes. Thus, our sample contains only opposite-sex couples.

²³We exclude individuals earning less than 5,400 € per year. This condition excludes individuals in marginal employment, who earn at most 450 € per month.

²⁴We want to abstract from early retirement decisions and thus do not consider income at older ages.

year of the sample period. This happens if a couple does not file their income taxes in a given year or if they violate one of our sample restrictions in a given year. For robustness, we also construct a balanced sample. In the balanced sample, we only consider couples for which the following is true in every year in the sample period: The couple files its income taxes and does not violate our sample restrictions. We end up with 11,039 couples in the balanced sample.

Descriptive Statistics. Table 1 displays descriptive statistics of basic socio-demographic characteristics for the unbalanced sample in the year 2009. The descriptive statistics for the balanced sample are similar and can be found in Table C.1 in the Appendix. The results show that couples picking the men-favoring schedule have higher male income and lower female income than couples picking the symmetric schedule. Accordingly, for couples in the symmetric schedule, women earn 46 % of household income, while they earn only 29 % in households who picked the men-favoring schedule. This is not surprising as for couples with a man as the main earner, picking the men-favoring choice minimizes the withholding tax burden for the household. The table reveals that households in the two schedules are also different with respect to other observables. Specifically, couples in the men-favoring schedule are more likely to be Catholic and less likely to live in Eastern Germany.

All in all, the descriptives strongly suggest that the two groups are different in observable socio-demographic characteristics. However, using a Difference-in-Differences approach we do not rely on the two groups having the same observable characteristics. We discuss which assumptions we need for our identification and potential threats arising from the different sample composition extensively in the next section.

Table 1: Descriptive Statistics for the Year 2009

	Men-Favoring	Symmetric
Income Wife	19949.01 (8909.25)	33411.34 (13820.28)
Income Husband	49192.86 (17347.79)	39399.81 (15881.09)
Female Income Share	0.29 (0.09)	0.46 (0.11)
Age Wife	46.9 (5.83)	47.1 (6.44)
Age Husband	49.16 (5.98)	49.11 (6.41)
Eastern Germany	0.07 (0.26)	0.34 (0.47)
Has a Child	0.53 (0.5)	0.24 (0.43)
Number of Children	1.21 (0.94)	0.64 (0.82)
Catholic Wife	0.39 (0.49)	0.22 (0.42)
Catholic Husband	0.37 (0.48)	0.2 (0.4)
Public Servant Wife	0.12 (0.32)	0.14 (0.34)
Public Servant Husband	0.22 (0.42)	0.18 (0.38)
N	11366	11867

Notes: The table displays descriptive statistics for the year 2009 for the unbalanced panel for couples who picked either the men-favoring or symmetric withholding tax schedule. They are calculated based on the sample restrictions outlined in Section 3.2. Specifically, we focus on households with dual earners in 2009, in which both partners have received no unemployment benefits and short-time work compensations in 2009, are between 20 and 60 years old in 2009, have no income from self-employment of more than 1,000 € in 2009 and whose incomes were stable between 2006 and 2009, i.e. the income for both household members fluctuated by less than 25 % from one year to the other.

Determinants of Schedule Choice. To further clarify which characteristics of a couple are correlated with the choice of the men-favoring schedule compared to the choice of the symmetric schedule, we regress the choice of the withholding tax schedule on various characteristics of the couple in Table 2. A few characteristics stand out. First, living in the former East of Germany is associated with a 20 percentage points lower probability of choosing the men-favoring schedule. Since we also control for the female income share, this cannot be

driven by the fact that the earning differences within couples are lower in the East due to the historically higher labor market participation of women. We suspect that more egalitarian gender norms (Boelmann, Raute, and Schönberg, 2021; Campa and Serafinelli, 2019) and lower historical institutional exposure in the East due to the take-over of West German institutions as late as 1990 lead couples to choose the men-favoring schedule less often. Second, the higher the female income share, the less likely the couple chooses the men-favoring schedule. A 1 percentage point increase in the female income share is associated with a 1.8 percentage point decrease in the choice of the men-favoring schedule. This is intuitive since the more the man earns relative to the woman in a couple, the higher the gains in terms of withholding tax payments from choosing the men-favoring schedule. Finally, having children also significantly increases the likelihood of choosing the men-favoring schedule. The first child increases the likelihood by around 15 percentage points and every further child by another 6 percentage points. This shows that in many couples the man is likely considered the main breadwinner as soon as the couple is having children, mirroring the stylized fact that the birth of the first child is a fundamental event in explaining the persistence gender inequality in earnings (Kleven et al., 2019).

Table 2: Explanatory Variables for the Choice of Withholding Tax Schedules

	Choice of Men-Favoring Schedule
Eastern Germany	-0.227*** (0.007)
Female Income Share	-0.018*** (0.001)
Income Wife (1000 Euro)	-0.005*** (0.00)
Income Husband (1000 Euro)	-0.0 (0.00)
Has a Child	0.093*** (0.008)
Number of Children	0.065*** (0.004)
Catholic Wife	0.011 (0.007)
Catholic Husband	0.026*** (0.007)
Age Wife	0.002** (0.001)
Age Husband	0.005*** (0.001)
Constant	0.928*** (0.035)
N	23233.0
Adj. R^2	0.491

Notes: The table displays which characteristics of a couple are predictive for the choice of the men-favoring schedule instead of the symmetric schedule. The coefficients stem from the regression of a dummy indicating the men-favoring schedule on various characteristics of couples in the year 2009, just before the withholding tax reform, using the unbalanced sample. Heteroscedasticity-robust standard errors are displayed in brackets. The regression also includes commuting days, commuting distance and a public servant dummy as regressors. As they have no explanatory power and for better readability, we do not display these regressors in this table. The full regression results including all regressors can be found in Table C.2.

Taken together, this evidence illustrates that we should potentially control for these characteristics in our analysis.

4 Empirical Strategy

The goal of this paper is to study the effect of withholding taxes on labor supply. Identification of this effect would be straightforward if withholding tax schedules were exogenously assigned

to each couple. However, since, as shown before in Table 2, the choice of withholding tax schedules is highly endogenous, simply comparing the outcomes of individuals in the different withholding tax schedules can potentially lead to a biased estimate of the effect of withholding taxes on labor supply.

We circumvent this problem by making use of a withholding tax reform in 2010 in Germany, which we outline in Section 2.3. The reform disproportionately reduced the withholding tax burden of individuals in the unfavorable withholding tax class compared to individuals in the other two withholding tax classes. As argued in Section 3.2, we focus our analysis on comparing women in the unfavorable withholding tax class, who received a large withholding tax cut, to women in the default withholding tax class, who only experienced a modest withholding tax cut.

A naive approach would simply compare women who were in the unfavorable withholding tax class at the time of the reform to women who were in the symmetric withholding tax class using a difference-in-differences design. However, as previously shown in Figure 5, individuals' exposure to the reform is not only determined by their withholding tax class but also by their own pre-reform labor income. The latter is problematic, since it results in large differences in the absolute and relative changes in withholding tax payments by own income.

Treatment Intensity. To account for this and to be able to calculate an elasticity of labor income with respect to withholding taxes, we use a continuous treatment variable. The treatment variable measures the percent change in the marginal net-of-withholding-tax rate of the woman induced by the reform and can therefore be understood as a measure of treatment intensity.²⁵ We construct the treatment variable for each couple by taking the labor income of the woman in 2009 and calculating the percent change of her marginal net-of-withholding-tax rate resulting from using the tax schedule of 2010 compared to using the one of 2009.²⁶

²⁵This measure is standard in the literature for income tax elasticities. Following Saez, Slemrod, and Giertz (2012), regressing log income on this measure of treatment intensity allows us to capture the elasticity of labor income with respect to the withholding tax.

²⁶The exact equation is: $\text{Treatment Intensity}_{w,2010} = \frac{\text{NWTR}_{w,2009}^{2010} - \text{NWTR}_{w,2009}^{2009}}{\text{NWTR}_{w,2009}^{2009}}$, where $\text{NWTR}_{w,2009}^{2010}$ is the marginal net-of-withholding-tax rate woman w faces in 2009 with the tax schedule of 2010, while $\text{NWTR}_{w,2009}^{2009}$ is the marginal net-of-withholding-tax rate woman w faces in 2009 with the tax schedule of 2009. The subscript w denotes that we calculate the treatment intensity using the income and tax rates of the woman in each married couple.

Difference in Differences. Using this newly created variable, we are able to estimate a difference-in-differences equation which yields us an estimate for the elasticity of labor income with respect to the withholding tax:

$$(1) \quad \begin{aligned} \text{Log Income}_{i,t} = & \beta \text{ Treatment Intensity}_{w,2010} \times \mathbb{1}(\text{Post Reform}_t) \\ & + \alpha_{c,2009} \times \theta_t + \gamma X_{c,t} + \eta_i + \epsilon_{i,t}, \end{aligned}$$

where β measures the percent change in labor income if the marginal net-of-withholding-tax rate of the woman increases by one percent. η_i controls for time-invariant individual fixed effects. Further, $X_{c,t}$ controls for time-varying characteristics of the couple c . These include the number of children, region of residence, and, for both spouses, age, age squared and a dummy for being a public sector worker. Finally, we control for own and partner pre-reform income, by adding couple-level income bin fixed effects $\alpha_{c,2009}$ interacted with year dummies θ_t .²⁷ Doing so we allow for different time trends across income bins. While controlling for own pre-reform income is common in the literature, additionally also controlling for partner income is not. In our setting, however, this is useful and necessary and we explain the reason in detail in Appendix A.²⁸

Identifying Assumption. The validity of our identification strategy relies on two main assumptions. First, it has to hold that there is no selection of individuals into treatment. As discussed before, the reform was arguably nonsalient and therefore not anticipated by the average taxpayer.²⁹ However, it is possible that individuals changed into a different withholding tax schedule as a result of the reform. This would change the treatment intensity they are subject to and thereby could bias our results. In Figure C.1 in the Appendix, we depict the flow of couples between withholding tax schedules for the balanced sample. It shows that couples generally stick to the withholding tax schedule they have chosen and that

²⁷We do so by dividing own and partner income into bins of 10,000 €, ranging from 0 to 100,000 €, whereby the last income bin also includes incomes above 100,000 €. We then interact the own and partner income bins, leaving us with 100 couple-level income bins.

²⁸Typically, the literature measures the elasticity of taxable income with an IV approach (see (Saez, Slemrod, and Giertz, 2012)). This is not necessary in our setting, as the dense income controls ensure that almost all variation in treatment intensity stems from the variation in withholding tax classes.

²⁹There was no public debate about the implications of the reform on withholding taxes and a search in Google Trends for relevant key words shows no signs of public discussion.

there is no substantial number of couples changing between the symmetric and men-favoring schedule over time.³⁰

Second, we have to assume that the parallel trend assumption holds. It assumes that the labor market outcomes of treated and untreated individuals would have evolved the same in absence of the reform, irrespective of the treatment intensity. This implies that all observed post-reform differences in outcomes are due to differences in the treatment intensity induced by the reform.

One implication of this assumption is that we should see no significant effect of the treatment intensity on labor supply in the years before the withholding tax reform. We do so by also estimating a dynamic version of the DiD equation 1 in which we replace the post reform dummy with year dummies.³¹ Economically insignificant estimates for the pre-reform years can make us confident that individuals with differing treatment intensity had no different trends in labor market outcomes before the reform. In Section 5, we will show that we indeed cannot find any economically significant estimates for the pre-reform period.

5 Empirical Results

Static Diff-in-Diff. First, we present the results of the static diff-in-diff as laid out in Equation 1. Table 3 shows regression results by gender for both the balanced and unbalanced sample and with and without income bin controls. All regressions control for time-variant characteristics of a couple. All estimates for women are moderate in size, significant at the 1% level, and have the expected sign. Panel A shows the estimate for our sample without any bin controls. Importantly, this specification does not include any controls for the income of the spouses. Therefore, as discussed in detail in Appendix Section A, the DiD estimate also captures variation in treatment intensity within a withholding tax class. Accordingly, Panel B controls for own and spousal income, so that only variation between withholding tax classes is picked up by the estimate. The procedure is explained in detail in Section A, Figure A.1 illustrates the underlying idea.

³⁰Typically, couples pick their withholding tax schedule at their marriage and do not adapt the withholding tax schedule thereafter. Also, there is no evidence for an increase in withholding tax schedule changes around the reform. This makes us confident that there was no selection into treatment in our setting.

³¹ $\text{Log Income}_{i,t} = \sum_{t=2006}^{2016} \beta_t [\text{Treatment Intensity}_{w,2010} * \mathbf{1}(\text{Year}_t)] + \alpha_{c,2009} \times \theta_t + \gamma X_{c,t} + \eta_i + \theta_t + \epsilon_{i,t}$

Overall, the result is robust to different specifications with and without bins. For the unbalanced panel with bins, a one percent higher treatment intensity results in a 0.065 % higher labor income. This corresponds to an elasticity of labor income with respect to the withholding tax of 0.065. The point estimates are somewhat higher in the balanced panel. If they were much lower in the balanced than in the unbalanced panel, we would be concerned that the positive reform effect might be explained by women differently moving out of the labor market, e.g. due to child birth.

The point estimates for men are lower in size and negative and their treatment effects are only significant when using the income bin controls. This could be expected as they are not assigned their own but their wives' treatment intensity. The decrease in labor income could be explained by a substitution of male labor income with female labor income that leads to a shift in the intra-household distribution of labor supply. It is notable that the point estimates are similar in size for both the unbalanced and the balanced panel. From a policy perspective, both coefficients are informative. The coefficient for the balanced sample takes into account the extensive margin, while the coefficient for the unbalanced sample does not.

Table 3: Static Diff-in-Diff Results

	Women		Men	
	Unbalanced	Balanced	Unbalanced	Balanced
	(1)	(2)	(3)	(4)
<i>Panel A: No Bins</i>				
DiD estimate	0.057*** (0.021)	0.092*** (0.018)	-0.021 (0.014)	-0.016 (0.011)
<i>Panel B: With Bins for Female and Male Income</i>				
DiD estimate	0.065*** (0.021)	0.094*** (0.019)	-0.032** (0.014)	-0.020* (0.011)
Individual FE	Yes	Yes	Yes	Yes
N	212216	120758	212216	120758

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Notes: The table corresponds to equation 1. In the balanced sample we only keep couples where both partners are working in every year. Controls include potentially time-varying individual characteristics like the number of children, region, age, and age square as well as dummies for public sector workers. Bin-controls add granular interacted controls for female and male income as illustrated in Figure A.1.

Dynamic Diff-in-Diff. Figure 6 displays the estimates for the dynamic version of equation 1 for the unbalanced panel.³² In Figure 6a, the yearly estimates for women are plotted. It is visible that the post-reform point estimates increase monotonically until reaching about 0.14 in 2016, the seventh post-reform year, and are significantly different from zero from 2011, the second post-reform year, onwards. Variation of the effect size over time can be expected due to our assumptions about how taxpayers learn about their taxes. As we assume that employees partly learn about income taxes by looking at their monthly payslips and as adjustments in hours worked likely take some time, we expect a lagged response to the reform. This is in line with Shapiro and Slemrod, 1993 who find that one month after a much-debated cut in withholding only a third of the respondents self-report that they noticed the change in withholding taxes. This might also help explain why the estimate for the first post-reform year is very close to zero.

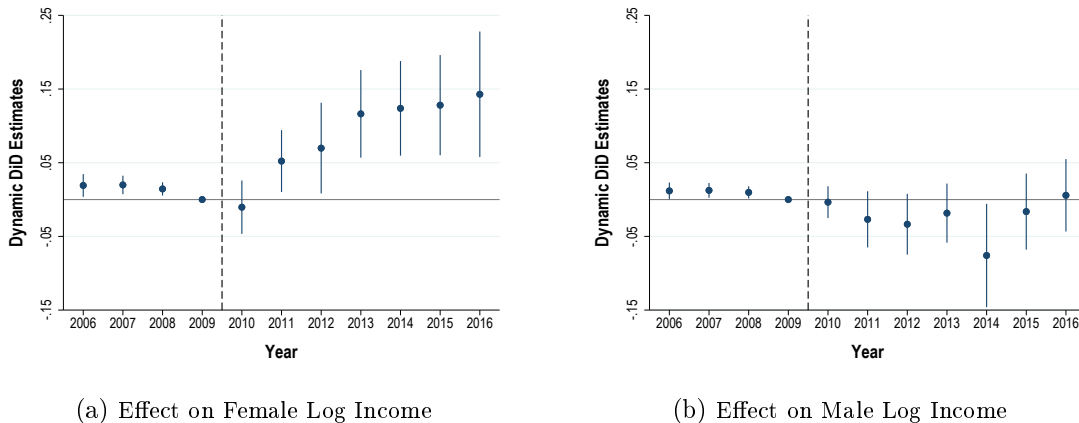


Figure 6: Dynamic Diff-in-Diff Estimates

Notes: The figure plots the elasticity of labor income with respect to the withholding tax estimated based on the dynamic version of equation 1 for women and men. The dependent variable is the log income of the individual, the independent variable the treatment intensity. Treatment intensity is defined as the percent change in the marginal net-of-withholding-tax rate of the woman induced by a reform of the withholding tax 2010. By using granular interacted controls for female and male income ("bins") we only exploit variation in the treatment intensity between the treatment and control group. Other controls include potentially time-varying individual characteristics like the number of children, region, age, and age square as well as dummies for public sector workers. The plotted estimates are based on the unbalanced sample. Confidence intervals are plotted at the 95% level and are based on robust standard errors. The sample excludes households where at least one member experienced a drop in income by more than 25% from one year to the next before 2010 to ensure that no individuals directly hit by the financial crises are part of the sample. This explains the smaller standard errors before the reform.

³²The results for the balanced panel are shown in Appendix A, Figure D.1 and they are fairly similar.

As discussed in Section 4, one implication of the parallel trend assumption is that we should see no pre-reform effects of the treatment intensity. In fact, the pre-reform estimates for women are statistically significantly different from zero but economically insignificant and very small compared to the point estimates after 2010. The finding of economically non-significant pre-reform effects therefore gives us additional confidence in the validity of the common trends assumption.

For men, we see in Figure 6b no significant effects over time, with the exception of the year 2014. Looking at the pre-reform period, we again find only slightly significant but economically insignificant estimates.

6 Conclusion

We show that individuals react to withholding taxes. With our static difference-in-differences estimation, we estimate an elasticity of labor income with respect to the withholding tax of about 0.07, while the dynamic post-reform estimates increase monotonically until reaching about 0.14 seven years after the reform. These estimates can be compared to estimates from the literature on the elasticity of taxable income (ETI). As Neisser (2021) shows in a meta-analysis, estimates for the ETI with respect to the income tax range from about 0.2 to about 0.8. This means that our findings are in line with our expectations. On the one hand, motivated by our survey findings, we expect some effect due to individuals' lack of understanding and inattentiveness to the tax system that might make them use their withholding tax burden as proxy for their income tax burden. On the other hand, individuals' reactions should be somewhat less strong than their reactions to income taxes because fully-informed households should not react to withholding taxes.

The fact that individuals react to withholding taxes has two strong implications. One can be applied to all income tax systems that incorporate withholding taxes, while the second one applies specifically to the German institutional setting.

First, a behavioral reaction to withholding taxes implies that governments should be careful when designing withholding tax schedules. Typically, taxpayers receive large paybacks when filing income tax returns as the withholding tax does not take into account special deductions.

For example, in the US, nearly a third of the amount of all personal income tax payments is returned as tax refunds (Gelman et al., 2022). According to the Federal Statistical Office of Germany, about 88 % of all taxpayers filing their income taxes in Germany received tax refunds for the tax year of 2018 which amounted to 1,072 € per person on average. Our results suggest that these large paybacks go hand in hand with taxpayers overestimating their actual income tax burden, as their withholding tax is much higher than the actual income tax. Hence, governments should redesign their withholding tax systems to better reflect the actual income taxes.

Second, our results imply that the current German system of withholding tax class choices has detrimental effects on women’s labor supply. 55 % of married couples in Germany pick the men-favoring schedule. For wives in this constellation, the withholding tax rate is much higher than the income tax rate. As our results suggest that withholding taxes inform people about income taxes, this implies that the perceived income tax is too high for women in households picking the men-favoring schedule. Hence, their labor supply is inefficiently small, contributing to the substantial gender gap in labor incomes.

All in all, our findings suggest that governments should set withholding tax rates close to the eventual income tax rates. Specifically for Germany, the finding suggests that the government should stop offering couples the possibility to shift the income tax burden from one partner to the other.

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Appendix A Empirical Strategy

In our setting, controlling for own labor income is necessary. Even if two individuals have the same treatment intensity, they can, as shown in the bottom of Figure A.1, have different labor income which might lead to different reactions to the reform. Not controlling for that could be problematic because the likelihood of being in a specific withholding tax class varies with own income. This is shown in Figure A.2, which plots the proportion of women in men-favoring withholding tax schedules among all women in men-favoring and symmetric schedules (“share of treated couples”) by female and male income. It can be seen that the share of women in men-favoring schedules decreases with their income.

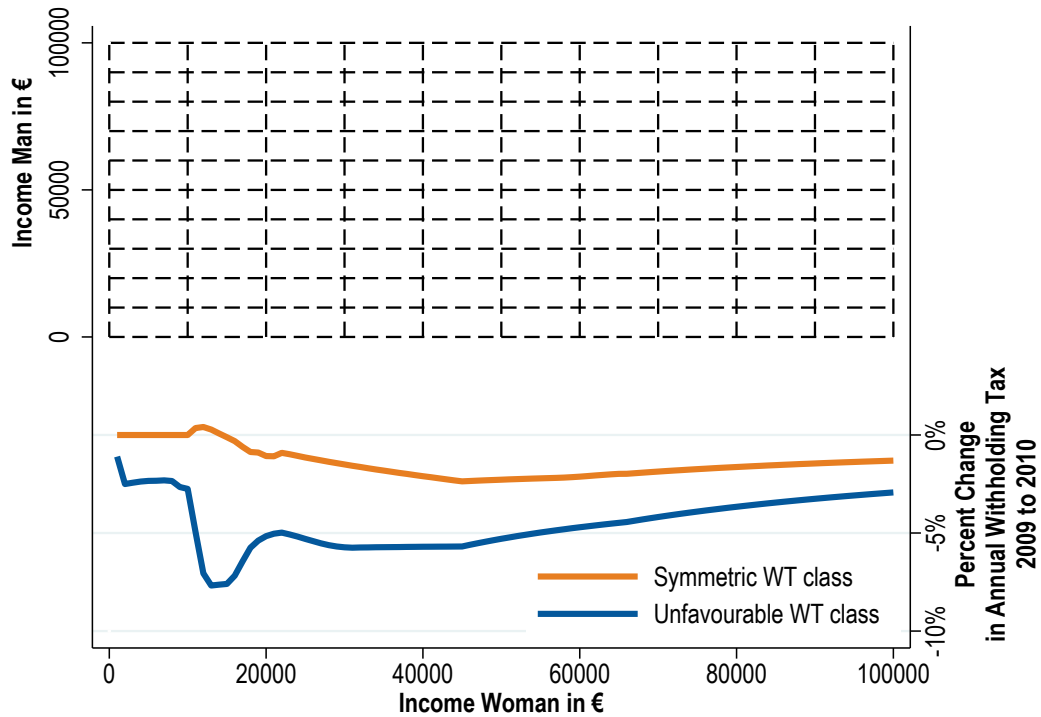
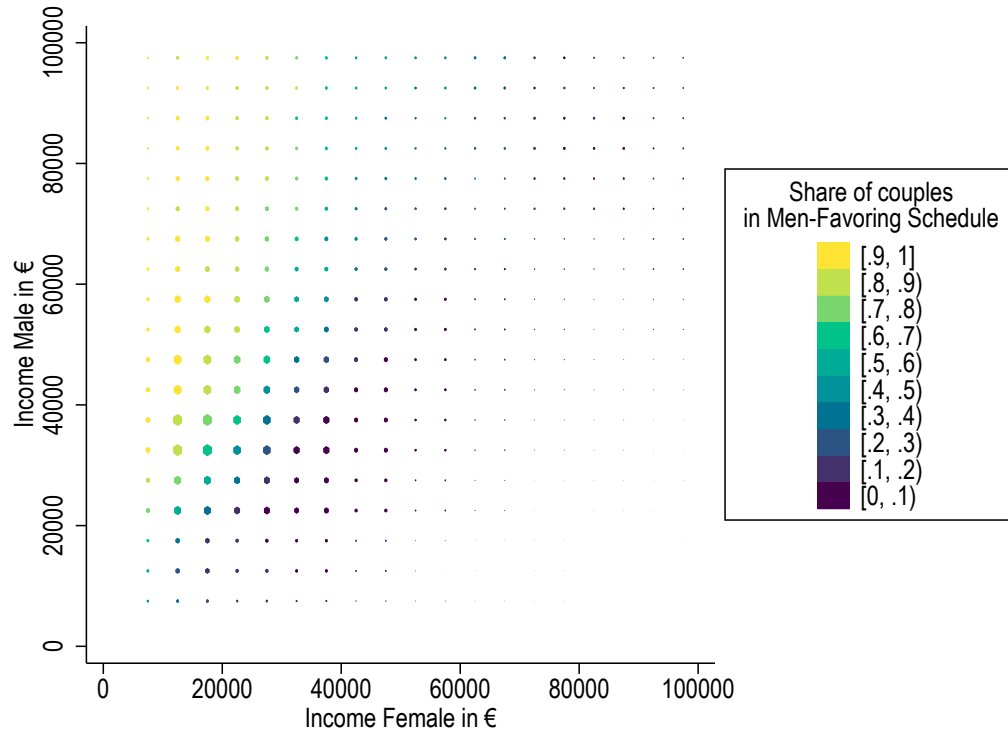


Figure A.1: Illustration of Bin Approach

Notes: This figure illustrates the idea behind the bin approach. The lower part of the figure displays the induced percentage change in withholding taxes by the reform in 2009, so it is only a different representation of figure 5. The upper part of the figure illustrates the bin approach. We create bins for the income of women and men and interact them with each other and years. By adding these interacted bins to our regression equation, we only exploit variation within the bins. Thereby, the DiD estimate does not capture variation in the reform effect across female incomes and accounts for the importance of the share of female income in the overall household income.

Figure A.2: Heatplot: Number of observations and share of couples in men-favoring schedule



Notes: The figure displays the number of observations and the exploited variation by income bins. Each dot represents observations that lie in an interval of 5,000 € male and female income. For example, the bin in the upper right corner contains women and men with an income between 95,000 € and 100,000 €. Incomes below 5000 € are not displayed as they are not part of our analysis. Income in this range is often not subject to taxation and is therefore only incompletely observable in our data set. The size of each bin represents the number of observations. The larger the dot size, the more observations are in the respective bin. The color displays the share of couples in each bin who are in the men-favoring withholding tax schedule at the time of the reform, conditional on being in the men-favoring or symmetric withholding tax schedule. Thereby it measures how much variation between the two withholding tax classes can be exploited for each bin.

Moreover, adequately controlling for spousal income plays a fundamental role in estimating the elasticity of labor income with respect to the withholding tax correctly in this setting. This is because the impact of being in a certain withholding tax class should not only depend on that tax class and own income but also on spousal income. One can think about two major channels. First, joint household income could play a role. A higher household income might make it feel less profitable to adjust labor supply after a change in withholding taxes. Second, relative within-household labor income can both express the economic importance of own labor income and a couple's labor market related gender norms. Gender norms of the within-household division of labor can arguably play a large role in explaining labor market decisions

of spouses as well as their choice of withholding tax schedule. Furthermore, controlling for both joint household income and relative within-household labor income also captures the reform-induced shift in the spousal net-of-withholding-tax rate that might have an impact on the own reaction to the reform.

In order to address these above-outlined channels, we follow an empirical approach brought forward recently by Carbonnier et al. (2022) that is based on dividing observations into two-dimensional bins to exploit variation in treatment within each bin. In our preferred specification, we put every individual in one of 100 10x10 bins based on own income and spousal income in the last pre-reform year 2009. The lower 9 bins of both own and spousal income are evenly spaced bins of 10,000x10,000 € of annual income each while the bin with the highest income includes, respectively, everyone with an annual income of more than 90,000 €. Each of the 100 bins is then interacted with year dummies.³³ By adding the resulting couple-level bin-year fixed effects as controls we only use the variation in treatment intensity within each bin. We thus compare women with similar pre-reform individual and spousal income characteristics and thereby also similar gender norms and exploit that they still have a different treatment intensity due to their diverging choice of withholding tax schedule.

Figure A.1 illustrates how the bin approach helps to tackle endogeneity concerns when estimating women's elasticity of labor income with respect to the withholding tax. Along the x-axis, the bins help to control for own labor income so that differences in treatment intensity are only induced by the choice of withholding tax schedule, not by the income level. Along the y-axis, differences in relative within-household labor income and indirectly thus also gender norms are accounted for. Two women with the same own labor income but different withholding tax classes, who would be compared to each other when not controlling for spousal income, can still plausibly be very different with regards to other relevant factors than just their withholding tax classes such as the economic importance of own labor income and the couples' gender norms. The following thought experiment should illuminate that: Imagine that one of the two wives earns substantially more than her husband so that there is a considerable marriage benefit but is nevertheless in the unfavorable withholding tax class. This could mean that her labor income is very important for her household and that the couple rather adheres

³³We also run an alternative specification with just the bins based on female income in 2009 interacted with year dummies.

to "traditional" gender norms. The other wife earns slightly less than her husband but is in the symmetric withholding tax class. Her labor income might then be less important for her household and the second couple's gender norms might be more progressive. This means that with respect to potential outcomes the withholding tax class is arguably not the only substantial difference between these two women when not controlling for spousal income.

Given the arguments brought forward so far, though, controlling for both own and spousal income separately would be sufficient. However, not only relative within-household labor income but also absolute household labor income might play a role. Couples with higher absolute labor income might tend to choose other withholding tax schedules but also react differently to changes in the net-of-withholding-tax rate. Thus, the bin approach controls for differences in absolute household labor income along the diagonal of the upper part of Figure A.1.

The variation that we can exploit by the bin approach is illustrated in Figure A.2. It shows for each of the income bins the share of couples who are treated in a binary sense, i.e. the share of couples being in the men-favoring withholding tax schedule at the time of the reform conditional on being in the being in the men-favoring or symmetric withholding tax schedule. The size of each bin represents the number of observations, meaning that bins with larger dots contain a larger share of the observations in our sample. The plot shows that for the largest shares of couples the husband earns between 20,000 € and 50,000 € and the wife between 10,000 € and 40,000 € and that within those bins there is a considerable amount of variation in the choice of withholding tax schedules.

Appendix B Survey

B.1 Survey Description

In this section, we provide an extensive description of our survey. As argued before, we conducted this survey to gain more insights into married couples' understanding of withholding taxes in Germany and to identify channels through which a misunderstanding of withholding taxes can affect their labor supply.

Content and Sampling. With this aim, we constructed an online survey to be filled out by employed married couples living in Germany. The survey questions can be divided broadly into five main categories. Foremost, we directly inquire about the participants' understanding of withholding taxes in Germany. Second, we ask for information on the intra-household division of tax-planning and financial decisions. Third, we elicit participants' preferences on changing their weekly working hours and check whether an information treatment, which informs the participants about the withholding tax system in Germany, changes these preferences. Fourth, we elicit respondents' gender norms. Lastly, we also collect information on individual and couple characteristics.

After pre-registering our survey with the Open Science Foundation, we ran it on the micro job platform Clickworker between December 2022 and April 2023. We prescreened the participants so that they all speak German, are between 20 and 60 years old, married, and employed. We remove respondents from our sample who fail at least one of two attention checks.³⁴ Furthermore, we restrict the sample to respondents with employed spouses. This makes sure that we can elicit information on wage transfers from and between both spouses and makes the sample more comparable to the sample for our main analysis with observational data.³⁵ Our final sample then consists of 506 respondents (258 men, 248 women).

³⁴The attention checks can be found in the questions A2 and D15 in Appendix B.2.

³⁵We also exclude respondents from our analysis who are in a same-sex marriage, where one of the two partners is non-binary or when the gender is not stated. This is for two reasons: First, there is an option for spouses in a same-sex marriage to keep that marriage secret from their employers by choosing withholding tax class I instead of III, IV, or V. This might then influence their knowledge of withholding taxes in an unforeseeable way. Second, same-sex couples were not yet allowed to benefit from joint taxation and were thus not allowed to choose their withholding tax classes at the time of the 2010 reform.

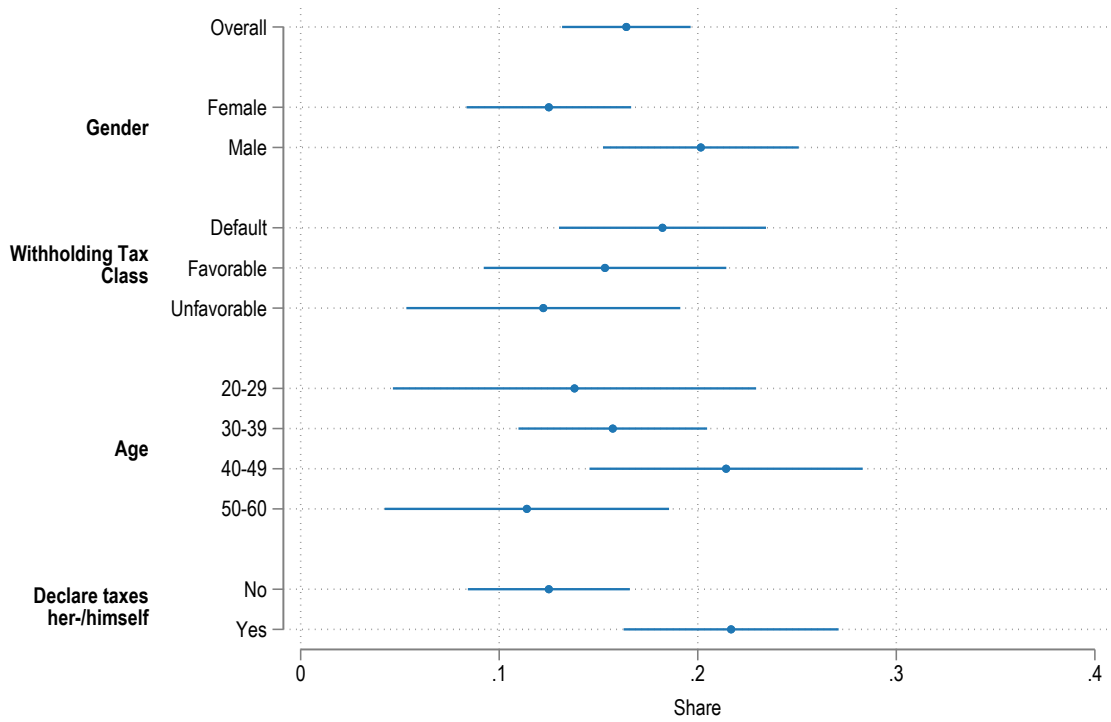


Figure B.1: Knowledge of Interlinkage between Withholding Tax and Final Income Tax Burden by Subgroups

Notes: The figure plots the overall and subgroup-specific shares of surveyed individuals who correctly identify that the choice of withholding tax class does not impact the final income tax burden given an example of the labor incomes of two spouses (one spouse earning 60,000 € per year, the other one 30,000 €).

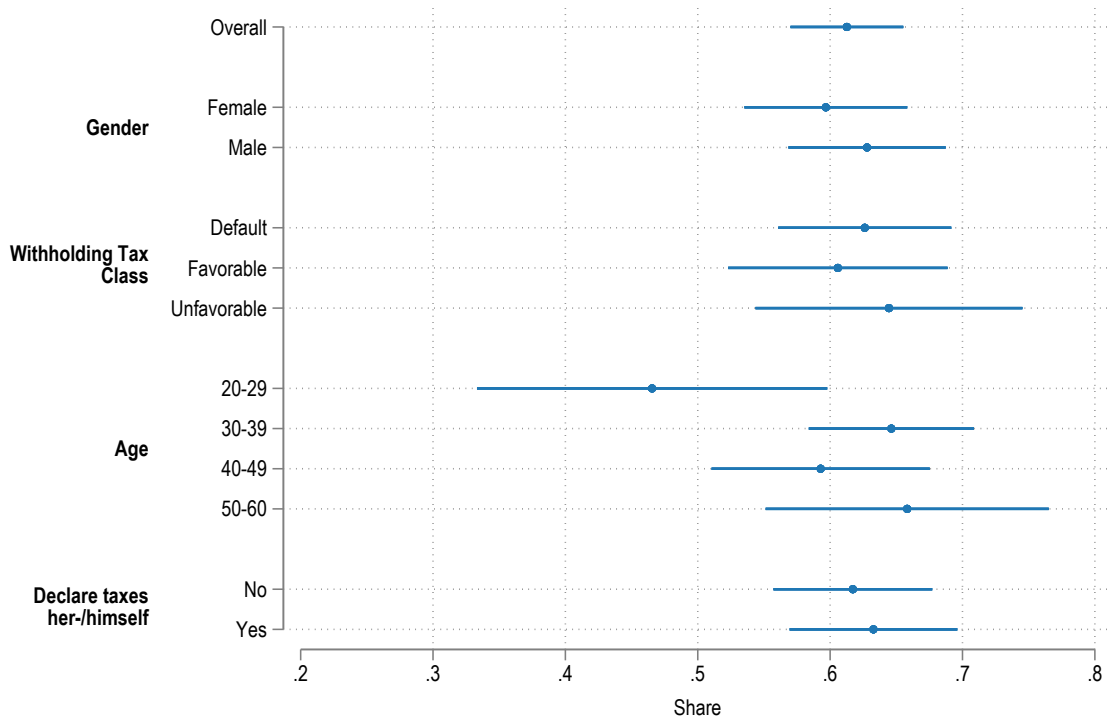


Figure B.2: Knowledge of Interlinkage between Withholding Tax Classes and Monthly Payslip

Notes: The figure plots the overall and subgroup-specific shares of surveyed individuals who correctly identify that and in which way the choice of withholding tax classes impacts the monthly net wage received from one's employer. Respondents are classified as being knowledgeable if they both answer correctly what happens qualitatively with respect to monthly wage transfers from their employers when changing from the default withholding tax class to (1) the favorable withholding tax class and (2) the unfavorable withholding tax class.

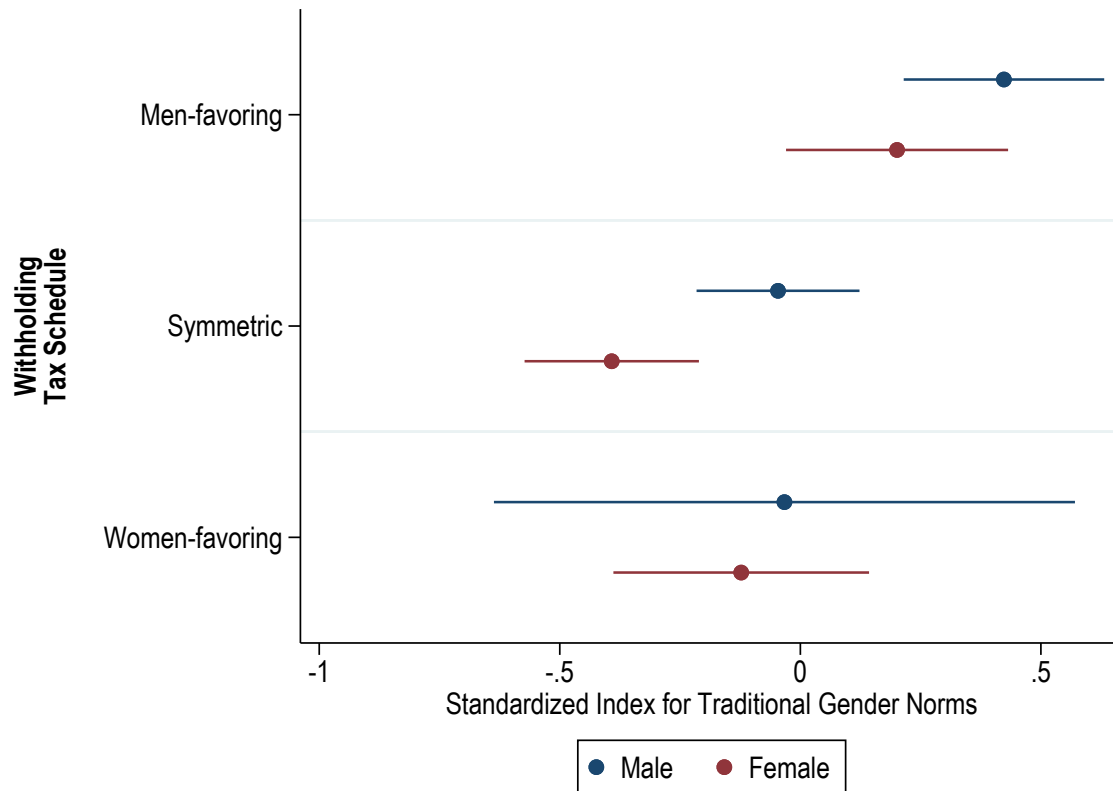


Figure B.3: Gender Norms Index by Gender and Withholding Tax Schedule

Notes: The figure plots standardized index values for gender norms by gender and withholding tax schedule. A higher value is associated with more traditional gender norms, i.e. a desired larger role for husbands than for wives with regards to decision-making in the household and market work.

B.2 Survey Questions

This section documents the survey questions. Section B.2.1 includes the German questions. Depending on the answer to question A1a, the gender of the interviewed, and A1b, the gender of the partner, the personal pronouns were adapted in all questions and explaining texts. Section B.2.2 provides a translation into English.

B.2.1 German Version

Guten Tag!

Wir sind Forscher an den Universitäten Bonn und Göteborg und bedanken uns schon jetzt herzlich für Ihre Teilnahme an unserer Umfrage und Ihre damit verbundene Unterstützung unserer Forschung! Ihre Antworten in der Umfrage haben keine Auswirkung auf Ihre persönliche Auszahlung. Wir möchten Sie deshalb darum bitten, alle Fragen ohne Hilfsmittel (Internetrecherche, etc.) zu beantworten.

Wer ist verantwortlich für die Studie?

Kontaktdaten

Welchen Zwecken dient die Studie?

Zweck der Studie ist die Untersuchung ökonomischen Verhaltens. Wie bei ökonomischen Studien üblich, erfolgt daher vorab keine umfassende Aufklärung über den Forschungshintergrund.

Was geschieht mit meinen Daten?

Alle beteiligten Mitarbeiter und Wissenschaftler arbeiten selbstverständlich nach den Vorschriften der Datenschutz-Grundverordnung, dem Bundesdatenschutzgesetz und den einschlägigen Landesdatenschutzgesetzen. Die Daten werden auf einem Server der Universität Bonn innerhalb der EU gespeichert. Ihre Daten werden nach erfolgter Auszahlung anonymisiert und anschließend statistisch ausgewertet. Aus den Ergebnissen lassen sich anschließend keine Rückschlüsse auf Sie ziehen.

Welche Rechte habe ich?

Sie haben das Recht, Auskunft über die zu Ihrer Person gespeicherten Daten zu erhalten (Art. 15 DS-GVO). Sollten unrichtige personenbezogene Daten verarbeitet werden, steht Ihnen ein Recht auf Berichtigung zu (Art. 16 DS-GVO). Liegen die gesetzlichen Voraussetzungen vor, so können Sie die Löschung oder Einschränkung der Verarbeitung verlangen sowie Widerspruch gegen die Verarbeitung einlegen (Art. 17, 18 und 21 DS-GVO). Sie haben das Recht, sich mit einer Beschwerde an die zuständige Aufsichtsbehörde für Datenschutz zu wenden. Die hier erklärte Einwilligung können Sie jederzeit mit Wirkung für die Zukunft widerrufen. Sofern Ihre Daten bereits anonymisiert wurden, können Ihnen diese aber nicht mehr zugeordnet werden. Wir können Ihre Angaben also nicht aus dem Ergebnis „herausrechnen“.

Einwilligungserklärung

Hiermit willige ich in die Verarbeitung meiner personenbezogenen Daten für das Forschungsvorhaben ein. Die Einwilligung kann ich jederzeit widerrufen. Ich habe die Hinweise zur Verwendung meiner Daten und zu meinen Rechten in der Datenschutzerklärung zur Kenntnis genommen.

Ich bin einverstanden. (Ja, Nein)

Page Break

Screening

S1 Haben Sie momentan Einkommen aus Lohnarbeit? (Ja, Nein)

S2 Sind Sie verheiratet? (Ja, Nein)

Page Break

A1a Was ist Ihr Geschlecht? (Weiblich, Männlich, Divers)

A1b Was ist das Geschlecht Ihres Ehepartners/Ihrer Ehepartnerin? (Weiblich, Männlich, Divers, Ich habe keinen Ehepartner/keine Ehepartnerin, Keine Angabe)

Page Break

A2 Die nächste Frage betrifft folgendes Problem: In Umfragen wie unserer gibt es manchmal Teilnehmerinnen und Teilnehmer, die die Fragestellungen nicht sorgfältig durchlesen, sondern sich nur schnell durch die Umfrage klicken. Dies führt zu vielen zufälligen Antworten, die die Qualität der Forschungsvorhaben beeinträchtigen. Bitte wählen Sie "Sehr stark interessiert" und "Überhaupt nicht interessiert" als Ihre Antwort auf die kommende Frage, um uns zu zeigen, dass Sie unsere Fragen sorgfältig lesen. Geben Sie diese Information, wie interessiert Sie am Thema Steuern?

(Überhaupt nicht interessiert, Fast gar nicht interessiert, Etwas interessiert, Stark interessiert, Sehr stark interessiert)

Page Break

A3 Stellen Sie sich vor, dass Ihr Arbeitgeber Ihnen eine freie Wahl Ihrer wöchentlichen Arbeitsstunden anbietet: Wie würden Sie sich entscheiden? (Ich würde meine Arbeitsstunden erhöhen, Ich würde meine Arbeitsstunden verringern, Ich würde meine Arbeitsstunden unverändert lassen, Weiß nicht)

Page Break

D4 Was ist Ihre momentane Lohnsteuerklasse? (1, 2, 3, 4, 4 mit Faktor, 5, 6, Weiß nicht)

D5 Wer hat über die Steuerklasse entschieden? (Ich, Mein Ehepartner, Mein Ehepartner und ich zusammen, Ein Steuerberater/Eine Steuerberaterin, Eine andere Person, Niemand, Weiß nicht)

Page Break

D_Text Wir wollen nun mehr über Ihr generelles Verständnis der Steuerklassen herausfinden, es geht also in den folgenden Fragen nicht um Ihre eigene Steuerklasse.

Page Break

D6 Existieren die folgenden Steuerklassenkombinationen (Ihr Ehepartner erstgenannt, Sie zweitgenannt)? (Ja, Nein, Weiß nicht)

(4/4, 5/4 , 3/5 , 5/5 , 4/1 , 3/3 , 4/5 , 5/3 , 1/4)

Wenn D4 == "4 mit Faktor":

(4/4, 5/4 , 3/5 , 5/5 , 4/1 , 3/3 , 4/5 , 5/3 , 1/4, 4 mit Faktor/3, 4 mit Faktor/4 mit Faktor, 3/4 mit Faktor, 5/4 mit Faktor, 4 mit Faktor/5)

Page Break

D7 Stellen Sie sich vor, dass Sie 60.000 € und Ihr Ehepartner 30.000 € brutto pro Jahr verdienen und dass Sie eine gemeinsame Steuererklärung machen. Bei welcher Steuerklassenkombination tragen Sie als Paar zusammen die geringste jährliche finale Steuerlast (entspricht der Einkommensteuer)? Alle drei genannten Steuerklassenkombinationen existieren.

(Ich in Steuerklasse 5 und mein Partner in Steuerklasse 3, Ich in Steuerklasse 4 und mein Partner in Steuerklasse 4, Ich in Steuerklasse 3 und mein Partner in Steuerklasse 5, Egal, Weiß nicht)

Page Break

D8 Nehmen Sie nun an, Sie wären in Steuerklasse 4. Was stimmt? Wenn Sie nun von 4 in 3 wechseln, dann bekommen Sie persönlich monatlich...

(...mehr netto von Ihrem Arbeitgeber, ...weniger netto von Ihrem Arbeitgeber, ...gleich viel netto von Ihrem Arbeitgeber, Weiß nicht)

Page Break

D9 Nehmen Sie nun an, Sie wären in Steuerklasse 4. Was stimmt? Wenn Sie nun von 4 in 5 wechseln, dann bekommen Sie persönlich monatlich...

(...mehr netto von Ihrem Arbeitgeber, ...weniger netto von Ihrem Arbeitgeber, ...gleich viel netto von Ihrem Arbeitgeber, Weiß nicht)

Page Break

D10 Bitte nehmen Sie sich ausreichend Zeit, um die folgende Information zu verstehen. In der Tabelle sehen Sie beispielhaft die Lohnsteuer abhängig von den Steuerklassen für ein Paar, bei dem beide Partner brutto 3500 € monatlich verdienen.

	Monatliche Lohnsteuer Partner A	Monatliche Lohnsteuer Partner B
Partner A in Steuerklasse 3 Partner B in Steuerklasse 5	350 €	1 000 €
Partner A in Steuerklasse 4 Partner B in Steuerklasse 4	700 €	700 €
Partner A in Steuerklasse 5 Partner B in Steuerklasse 3	1 000 €	350 €

Sie können sehen, dass die Wahl der Steuerklassen die zu zahlende Lohnsteuer stark beeinflusst. Sind beide Partner in der Steuerklasse 4, so zahlen beide Partner jeweils 700 € Lohnsteuern. Ist ein Partner stattdessen in Steuerklasse 3, so zahlt sie/er 350 € Lohnsteuern. In Steuerklasse 5 werden 1000 € Lohnsteuern fällig. Wie Sie sehen: Ihre individuell gezahlte Lohnsteuer hängt stark von der gewählten Steuerklasse ab. Aber auch die Lohnsteuer Ihres Partners wird stark durch die Steuerklassenwahl beeinflusst. Waren Ihnen die folgenden Informationen schon bekannt? Bitte antworten Sie ehrlich. Denken Sie daran, dass Ihre Auszahlung in dieser Umfrage nicht von Ihren Antworten auf die Fragen abhängt. (Ja, Nein, Ich verstehe die Aussage nicht)

(Ich wusste, dass die Wahl der Steuerklasse die eigene Lohnsteuer beeinflusst, Ich wusste, dass die Wahl der Steuerklasse die Lohnsteuer meines Partners beeinflusst, Ich wusste, dass es Steuerklassenkombinationen gibt, bei der einer der beiden Partner deutlich mehr und der andere Partner deutlich weniger Lohnsteuern zahlt – selbst wenn beide Partner gleich viel verdienen)

Page Break

D11 Bitte nehmen Sie sich ausreichend Zeit, um auch die folgende Information zu verstehen. Die finale Steuerlast eines Paares wird durch die Einkommensteuer bestimmt. In der Tabelle

können Sie sehen, dass Steuerklassen keine Auswirkungen auf die Einkommensteuer, und somit auf die finale Steuerlast eines Ehepaares, haben. Nur die Lohnsteuer wird durch die Steuerklassenwahl beeinflusst:

	Monatliche Lohnsteuer Partner A	Monatliche Lohnsteuer Partner B	Gemeinsame jährliche Einkommensteuerlast
Partner A in Steuerklasse 3 Partner B in Steuerklasse 5	350 €	1 000 €	16 300 €
Partner A in Steuerklasse 4 Partner B in Steuerklasse 4	700 €	700 €	16 300 €
Partner A in Steuerklasse 5 Partner B in Steuerklasse 3	1 000 €	350 €	16 300 €

Die monatlich von Ihnen als Paar gezahlte Lohnsteuer wird am Jahresende mit der Einkommensteuer verrechnet. Wenn also Ihre gezahlte Lohnsteuer höher ist als die zu zahlende Einkommensteuer, bekommen Sie am Jahresende eine Steuerrückzahlung. Und, andersherum, wenn Sie mehr Einkommensteuer zahlen müssen als Sie Lohnsteuer gezahlt haben, müssen Sie eine Steuernachzahlung leisten. Für das Paar in dem Beispiel bedeutet dies, dass es unabhängig von der gewählten Steuerklasse jährlich immer 16 300 € Einkommensteuern zahlt. Steuerklassen haben also keine Auswirkungen auf die finale Steuerlast eines Ehepaares, sondern nur auf die Lohnsteuer. Waren Ihnen die folgenden Informationen schon bekannt? Bitte antworten Sie ehrlich. Denken Sie daran, dass Ihre Auszahlung in dieser Umfrage nicht von Ihren Antworten auf die Fragen abhängt. (Ja, Nein, Ich verstehe die Aussage nicht)

(Ich wusste, dass die gezahlte Lohnsteuer nicht die finale Steuerlast beeinflusst, Ich wusste, dass die Steuerklassenwahl nicht die finale Steuerlast beeinflusst)

Page Break

D12 Stellen Sie sich vor, dass Sie 40.000 € und Ihr Ehepartner 70.000 € brutto pro Jahr verdienen und dass Sie eine gemeinsame Steuererklärung machen. Bei welcher Steuerklassenkombination tragen Sie als Paar zusammen die geringste jährliche finale Steuerlast (entspricht der Einkommensteuer)? Alle drei genannten Steuerklassenkombinationen existieren.

(Ich in Steuerklasse 5 und mein Partner in Steuerklasse 3, Ich in Steuerklasse 4 und mein Partner in Steuerklasse 4, Ich in Steuerklasse 3 und mein Partner in Steuerklasse 5, Egal, Weiß nicht)

Page Break

D13a Steuerklassen haben also keine Auswirkungen auf die finale Steuerlast eines Ehepaars, nur auf die Lohnsteuer. Stellen Sie sich mit diesem Wissen nun vor, dass Ihr Arbeitgeber Ihnen eine freie Wahl Ihrer wöchentlichen Arbeitsstunden anbietet: Wie würden Sie sich entscheiden? (Ich würde meine Arbeitsstunden erhöhen, Ich würde meine Arbeitsstunden verringern, Ich würde meine Arbeitsstunden unverändert lassen, Weiß nicht)

D13b Steuerklassen haben keine Auswirkungen auf die finale Steuerlast eines Ehepaars, nur auf die Lohnsteuer. Stellen Sie sich mit diesem Wissen nun vor, dass Ihr Arbeitgeber Ihnen in der Vergangenheit eine freie Wahl Ihrer wöchentlichen Arbeitsstunden angeboten hätte. Wie hätten Sie sich entschieden?

(Ich hätte meine Arbeitsstunden erhöht, Ich hätte meine Arbeitsstunden verringert, Ich hätte meine Arbeitsstunden unverändert gelassen, Weiß nicht)

D13c Steuerklassen haben keine Auswirkungen auf die finale Steuerlast eines Ehepaars, nur auf die Lohnsteuer. Wie wirkt sich dieses Wissen auf Ihre bevorzugte Steuerklassenwahl aus? (Ich würde meine Steuerklasse gerne ändern, Ich würde meine Steuerklasse gerne beibehalten, Weiß nicht)

D14 Beeinflussen Steuerklassen folgende staatliche Leistungen? (Ja, Nein, Weiß nicht)

(Rente, Arbeitslosengeld II/Hartz IV, Arbeitslosengeld I, Elterngeld, Wohngeld, Kurzarbeitergeld)

Page Break

D15 Die nächste Frage betrifft folgendes Problem: In Umfragen wie unserer gibt es manchmal Teilnehmerinnen und Teilnehmer, die die Fragestellungen nicht sorgfältig durchlesen, sondern sich nur schnell durch die Umfrage klicken. Dies führt zu vielen zufälligen Antworten, die die Qualität der Forschungsvorhaben beeinträchtigen. Bitte wählen Sie "Fast gar nicht interessiert" und "Stark interessiert" als Ihre Antwort auf die kommende Frage, um uns zu zeigen, dass Sie unsere Fragen sorgfältig lesen. Gegeben dieser Information, wie interessiert sind Sie am Thema Steuern?

(Überhaupt nicht interessiert, Fast gar nicht interessiert, Etwas interessiert, Stark interessiert, Sehr stark interessiert)

Page Break

D16a Haben Sie als Ehepaar ein gemeinsames Bankkonto? (Ja, Nein, Weiß nicht)

D16b Wohin überweist Ihr Arbeitgeber Ihren monatlichen Lohn? (Auf mein persönliches Bankkonto, Auf das Bankkonto meines Ehepartners, Auf ein Bankkonto, das ich mit meinem Ehepartner teile, Weiß nicht)

D16c Wohin überweist der Arbeitgeber Ihres Ehepartners den monatlichen Lohn? (Auf mein persönliches Bankkonto, Auf das Bankkonto meines Ehepartners, Auf ein Bankkonto, das ich mit meinem Ehepartner teile, Mein Ehepartner ist selbstständig oder arbeitet nicht, Weiß nicht)

Page Break

If D16a == Ja And D16b == Auf mein persönliches Bankkonto

D16d Wie viel Prozent Ihres monatlich von Ihrem Arbeitgeber überwiesenen Lohneinkommens transferieren Sie auf das gemeinsame Konto? (0 % - 20 %, 20 % - 40 %, 40 % - 60 %, 60 % - 80 %, 80 % - 100 %, Weiß nicht)

If D16a == Ja And D16b == Auf das Bankkonto meines Ehepartners

D16e Wie viel Prozent seines monatlich von seinem Arbeitgeber überwiesenen Lohneinkommens transferiert Ihr Ehepartner auf das gemeinsame Konto? (0 % - 20 %, 20 % - 40 %, 40 % - 60 %, 60 % - 80 %, 80 % - 100 %, Weiß nicht)

If D16a == Ja

D16f Haben Sie noch besondere Absprachen für Ihr gemeinsames Konto getroffen? Falls ja, erklären Sie bitte noch genauer, wie Sie Ihr gemeinsames Konto verwalten. Falls Sie keine besonderen Absprachen getroffen haben, lassen Sie das Freifeld gerne einfach frei.

Page Break

D17a Geben Sie und Ihr Partner üblicherweise eine Steuererklärung ab? (Ja. Mein Partner und ich veranlagen gemeinsam, Ja. Mein Partner und ich veranlagen getrennt, Ja. Aber ich weiß nicht, ob wir getrennt oder gemeinsam veranlagen, Nein, Weiß nicht)

Page Break

If D17a == Ja:

D17b Wie machen Sie und Ihr Partner üblicherweise Ihre Steuererklärung? Mehrere Ja-Antworten sind möglich. (Ja, Nein, Weiß nicht)

(Ich mache die Steuererklärung überwiegend alleine, Mein Ehepartner macht die Steuererklärung überwiegend alleine, Wir machen die Steuererklärung gemeinsam, Wir nutzen die Hilfe einer Steuerberaterin/eines Steuerberaters, Wir nutzen die Hilfe eines Steuerprogramms wie etwa WISO, Wir nutzen die Hilfe anderer Personen)

Page Break

If D17a == Ja:

D17c Auf welches Bankkonto werden potentielle Steuererstattungen überwiesen? (Mein Konto, Das Konto meines Ehepartners, Ein gemeinsames Konto, Weiß nicht)

Page Break

If D17a == Nein

D17d Warum geben Sie keine Steuererklärung ab? Mehrere Ja-Antworten sind möglich. (Ja, Nein) (Es ist mir zu viel Arbeit, Ich weiß nicht, wie man das macht, Es lohnt sich für mich kaum, Ich habe Angst, dass ich Steuern nachzahlen muss)

Page Break

D18 Auf einer Skala von 1 bis 7, wie sehr stimmen Sie den folgenden Aussagen zu? 7 bedeutet, dass Sie der entsprechenden Aussage voll zustimmen. 1 bedeutet, dass Sie der entsprechenden Aussage überhaupt nicht zustimmen. (1 Stimme überhaupt nicht zu, 2, 3, 4, 5, 6, 7 Stimme voll zu)

(Der Ehemann sollte zu Hause das letzte Wort haben., Am besten ist es, wenn der Ehemann und die Ehefrau beide gleich viel erwerbstätig sind und sich beide in gleichem Maße um Haushalt und Familie kümmern., Männer sollten sich stärker um die finanzielle Absicherung der Familie kümmern als Frauen.)

Page Break

D19 Wie alt sind Sie? (Jünger als 20, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-60, 61 oder älter)

D20 Was ist Ihr höchster schulischer/akademischer Bildungsabschluss? (Ohne allgemeinen Schulabschluss, Hauptschulabschluss, Mittlere Reife, Fachhochschul- oder Hochschulreife (Abitur), Bachelor, Master/Diplom/Staatsexamen, Promotion)

D21 Haben Sie mindestens ein minderjähriges Kind? (Ja, Nein, Keine Angabe)

Page Break

D22 Haben Sie häufiger das Gefühl, dass das Geld vor der Überweisung des nächsten Gehalts knapp wird? (Ja, Nein, Diese Frage möchte ich nicht beantworten)

Page Break

D23 Wie hoch ist Ihr Bruttoeinkommen aus Lohnarbeit pro Jahr? Für die Beantwortung dieser Frage können Sie gerne in Ihren Unterlagen nachschauen.

(Ich habe kein Lohneinkommen, 1 € - 10.000 €, 10.001 € - 20.000 €, 20.001 € - 30.000 €, 30.001 € - 40.000 €, 40.001 € - 50.000 €, 50.001 € - 60.000 €, 60.001 € - 70.000 €, 70.001 € - 80.000 €, 80.001 € - 90.000 €, 90.001 € - 100.000 €, 100.001 € - 110.000 €, 110.001 € - 120.000 €, Über 120.000 €, Weiß nicht / Keine Angabe)

D24a Wie hoch ist das Bruttoeinkommen Ihres Ehepartners aus Lohnarbeit pro Jahr? Für die Beantwortung dieser Frage können Sie gerne in Ihren Unterlagen nachschauen oder Ihren Ehepartner fragen.

(Mein Ehepartner arbeitet nicht, Mein Ehepartner ist selbstständig, 1 € - 10.000 €, 10.001 € - 20.000 €, 20.001 € - 30.000 €, 30.001 € - 40.000 €, 40.001 € - 50.000 €, 50.001 € - 60.000 €, 60.001 € - 70.000 €, 70.001 € - 80.000 €, 80.001 € - 90.000 €, 90.001 € - 100.000 €, 100.001 € - 110.000 €, 110.001 € - 120.000 €, Über 120.000 €, Weiß nicht / Keine Angabe)

If D24a == Mein Ehepartner ist selbstständig

D24b Wie viel verdient Ihr Ehepartner in selbstständiger Arbeit pro Jahr brutto? Für die Beantwortung dieser Frage können Sie gerne in Ihren Unterlagen nachschauen oder Ihren Ehepartner fragen.

(1 € - 10.000 €, 10.001 € - 20.000 €, 20.001 € - 30.000 €, 30.001 € - 40.000 €, 40.001 € - 50.000 €, 50.001 € - 60.000 €, 60.001 € - 70.000 €, 70.001 € - 80.000 €, 80.001 € - 90.000 €, 90.001 € - 100.000 €, 100.001 € - 110.000 €, 110.001 € - 120.000 €, Über 120.000 €, Weiß nicht / Keine Angabe)

Page Break

D25 Wie hoch ist Ihre durchschnittliche wöchentliche Arbeitszeit in Stunden?

D26 Wie hoch ist die durchschnittliche wöchentliche Arbeitszeit Ihres Ehepartners in Stunden?

Page Break

A27 Haben Sie irgendwelche Anmerkungen zur Umfrage oder zu dem Thema Lohnsteuerklassen?

B.2.2 English Version

Hello and welcome!

We are researchers at the Universities of Bonn and Gothenburg and would like to thank you in advance for taking part in our survey and for thereby supporting our research! Your responses to the survey will not affect your personal payout. We would therefore like to ask you to answer all questions without using any tools (internet research, etc.).

Who is responsible for the study?

Contact details

What is the purpose of the study?

The purpose of the study is to examine economic behavior. As is usual with economic studies, there is no comprehensive explanation of the research background beforehand.

What happens to my data?

Of course, all employees and scientists involved work in accordance with the provisions of the General Data Protection Regulation, the Federal Data Protection Act and the relevant state data protection laws. The data is stored on a server of the University of Bonn within the EU. Your data will be anonymized after the payment has been made and then statistically evaluated. No conclusions can be drawn about you from the results.

What rights do I have?

You have the right to receive information about the data stored about you (Art. 15 DS-GVO). If incorrect personal data is processed, you have the right to rectification (Art. 16 DS-GVO).

If the legal requirements are met, you can request the deletion or restriction of processing and object to the processing (Art. 17, 18 and 21 DS-GVO). You have the right to lodge a complaint with the competent supervisory authority for data protection. You can revoke the consent given here at any time with effect for the future. However, if your data has already been anonymized, it can no longer be assigned to you. We can therefore not "remove" your information from the result.

Declaration of consent

I hereby consent to the processing of my personal data for the research project. I can revoke my consent at any time. I have taken note of the information on the use of my data and my rights in the data protection declaration.

I agree. (Yes, No)

Page break

Screening

S1 Do you currently have wage income? (Yes, No)

S2 Are you married? (Yes, No)

Page break

A1a What is your gender? (Female, Male, Diverse)

A1b What is the gender of your spouse? (Female, Male, Diverse, I have no spouse, No answer)

Page break

A2 The next question concerns the following problem: In surveys like ours, there are sometimes participants who do not read the questions carefully, but just click through the survey quickly. This leads to a lot of random answers, which affects the quality of the research projects. Please choose "Very interested" and "Not at all interested" as your answer to the upcoming question to show us that you are reading our questions carefully. Given this information, how interested are you in taxes?

(Not at all interested, Slightly interested, Somewhat interested, Interested, Very interested)

Page break

A3 Imagine that your employer offered you a free choice of your weekly working hours: How would you decide? (I would increase my hours, I would decrease my hours, I would keep my hours the same, Don't know)

Page break

D4 What is your current withholding tax class? (1, 2, 3, 4, 4 with factor, 5, 6, don't know)

D5 Who decided the withholding tax class? (Me, My Spouse, My Spouse and I Together, An Accountant, Another Person, Nobody, Don't Know)

Page break

E_Text We now want to find out more about your general understanding of withholding tax classes, so the following questions are not about your own withholding tax class.

Page break

D6 Do the following withholding tax class combinations exist (your spouse named first, you named second)? (yes, no, don't know)

(4/4, 5/4, 3/5, 5/5, 4/1, 3/3, 4/5, 5/3, 1/4)

If D4 == "4 with factor":

(4/4, 5/4, 3/5, 5/5, 4/1, 3/3, 4/5, 5/3, 1/4, 4 with factor/3, 4 with factor/4 with factor, 3/4 with factor, 5/4 with factor, 4 with factor/5)

Page break

D7 Imagine that you earn €60,000 and your spouse €30,000 gross per year and that you file a joint tax return. In which withholding tax class combination do you as a couple bear the lowest final annual tax burden (corresponds to income tax)? All three withholding tax class combinations mentioned exist.

(I in withholding tax class 5 and my partner in withholding tax class 3, I in withholding tax class 4 and my partner in withholding tax class 4, I in withholding tax class 3 and my partner in withholding tax class 5, doesn't matter, don't know)

Page break

D8 Now suppose you were in withholding tax class 4. Which is correct? If you now switch from 4 to 3, you will personally receive monthly...

(...more net from your employer, ...less net from your employer, ...same amount net from your employer, don't know)

Page break

D9 Now suppose you were in withholding tax class 4. Which is correct? If you now switch from 4 to 5, you will personally receive monthly...

(...more net from your employer, ...less net from your employer, ...same amount net from your employer, don't know)

Page break

D10 Please take enough time to understand the following information. The table shows an example of the payroll tax depending on the withholding tax classes for a couple where both partners earn a gross monthly income of €3,500.

	Monatliche Lohnsteuer Partner A	Monatliche Lohnsteuer Partner B
Partner A in Steuerklasse 3 Partner B in Steuerklasse 5	350 €	1 000 €
Partner A in Steuerklasse 4 Partner B in Steuerklasse 4	700 €	700 €
Partner A in Steuerklasse 5 Partner B in Steuerklasse 3	1 000 €	350 €

You can see that the choice of withholding tax class greatly affects the payroll tax you pay. If both partners are in withholding tax class 4, both partners each pay €700 in payroll tax. If a partner is in withholding tax class 3 instead, she/he pays €350 in payroll tax. In withholding tax class 5, €1,000 in payroll tax is due. As you can see, the payroll tax you pay depends heavily on the withholding tax class you choose. But your partner's payroll tax is also strongly influenced by the choice of withholding tax class. Did you already know the following information? Please answer honestly. Remember that your payout in this survey is not dependent on your answers to the questions. (Yes, No, I don't understand the statement)

(I knew that the choice of withholding tax class affects my own payroll tax, I knew that the choice of withholding tax class influences my partner's payroll tax, I knew that there are withholding tax class combinations where one of the two partners pays significantly more and the other partner significantly less pays payroll taxes – even if both partners earn the same amount)

Page break

D11 Please take enough time to understand the following information. The final tax burden of a couple is determined by the income tax. In the table you can see that withholding tax classes have no effect on the income tax and therefore on the final tax burden of a married couple. Only the payroll tax is affected by the withholding tax class selection:

	Monatliche Lohnsteuer Partner A	Monatliche Lohnsteuer Partner B	Gemeinsame jährliche Einkommensteuerlast
Partner A in Steuerklasse 3 Partner B in Steuerklasse 5	350 €	1 000 €	16 300 €
Partner A in Steuerklasse 4 Partner B in Steuerklasse 4	700 €	700 €	16 300 €
Partner A in Steuerklasse 5 Partner B in Steuerklasse 3	1 000 €	350 €	16 300 €

The payroll tax you pay monthly as a couple is offset against the income tax at the end of the year. So if your paid payroll tax is higher than the income tax to be paid, you will receive a tax refund at the end of the year. And, vice versa, if you have to pay more income tax than you paid payroll tax, you have to make an additional tax payment. For the couple in the example, this means that they always pay €16,300 in income tax annually, regardless of the withholding tax class they choose. withholding Tax classes therefore have no effect on the final tax burden of a married couple, but only on the payroll tax. Did you already know the following information? Please answer honestly. Remember that your payout in this survey is not dependent on your answers to the questions. (Yes, No, I don't understand the statement)
(I knew that the payroll tax paid does not affect the final tax burden, I knew that the choice of withholding tax classes does not affect the final tax burden)

Page break

D12 Imagine that you earn €40,000 and your spouse €70,000 gross per year and that you file a joint tax return. In which withholding tax class combination do you as a couple bear the lowest final annual tax burden (corresponds to income tax)? All three withholding tax class combinations mentioned exist.

(me in withholding tax class 5 and my partner in withholding tax class 3, me in withholding tax class 4 and my partner in withholding tax class 4, me in withholding tax class 3 and my partner in withholding tax class 5, whatever, don't know)

Page break

D13a Withholding Tax classes therefore have no effect on the final tax burden of a married couple, only on the payroll tax. Now, knowing this, imagine that your employer offered you a free choice of your weekly working hours: How would you decide?

(I would increase my hours, I would decrease my hours, I would keep my hours the same, Don't know)

D13b Withholding tax classes have no effect on the final tax burden of a married couple, only on the payroll tax. Now, knowing this, imagine that in the past your employer would have offered you a free choice of your weekly work hours. How would you have decided?

(I would have increased my hours, I would have decreased my hours, I would have left my hours unchanged, Don't know)

D13c Withholding tax classes have no effect on a married couple's final tax burden, only on the payroll tax. How does this knowledge affect your preferred withholding tax class choice?

(I would like to change my withholding tax class, I would like to keep my withholding tax class, Don't know)

D14 Do withholding tax classes affect the following government benefits? (yes, no, don't know)

(Pension, unemployment benefit II/Hartz IV, unemployment benefit I, parental benefit, housing benefit, short-time work benefit)

Page break

D15 The next question concerns the following problem: In surveys like ours, there are sometimes participants who do not read the questions carefully, but just click through the survey quickly. This leads to a lot of random answers, which affects the quality of the research projects. Please choose "Slightly interested" and "Very interested" as your answer to the next question to show us that you are reading our questions carefully. Given this information, how interested are you in taxes?

(Not at all interested, Slightly interested, Somewhat interested, Interested, Very interested)

Page break

D16a As a married couple, do you have a joint bank account? (yes, no, don't know)

D16b Where does your employer transfer your monthly wages to? (To my personal bank account, To my spouse's bank account, To a bank account I share with my spouse, Don't know)

D16c Where does your spouse's employer transfer the monthly salary to? (To my personal bank account, To my spouse's bank account, To a bank account I share with my spouse, My spouse is self-employed or does not work, Don't know)

Page break

If D16a == Yes And D16b == To my personal bank account

D16d What percentage of your monthly wage income transferred from your employer do you transfer to the joint account? (0% - 20%, 20% - 40%, 40% - 60%, 60% - 80%, 80% - 100%, Don't know)

If D16a == Yes And D16b == To my spouse's bank account

D16e What percentage of his/her monthly wages transferred from his/her employer does your spouse transfer to the joint account? (0% - 20%, 20% - 40%, 40% - 60%, 60% - 80%, 80% - 100%, Don't know)

If D16a == Yes

D16f Have you made any special arrangements for your joint account? If so, please explain in more detail how you manage your joint account. If you have not made any special arrangements, please feel free to leave the free field empty.

Page break

D17a Do you and your partner usually file a tax return? (Yes. My partner and I file taxes jointly, Yes. My partner and I file taxes separately, Yes. But I don't know if we file our taxes separately or jointly, No, Don't know)

Page break

If D17a == Yes:

D17b How do you and your partner usually file your tax return? Several yes answers are possible. (yes, no, don't know)

(I mostly file the tax return alone, my spouse mostly files the tax return alone, we file the tax return together, we use the help of a tax consultant, we use the help of a tax program such as WISO, we use the help of other people)

Page break

If D17a == Yes:

D17c To which bank account are potential tax refunds transferred? (My Account, My Spouse's Account, A Joint Account, Don't Know)

Page break

If D17a == No

D17d Why don't you file a tax return? Several yes answers are possible. (Yes, No) (It's too much work for me, I don't know how to do it, It's hardly worth it for me, I'm afraid I'll have to pay more taxes)

Page break

D18 On a scale from 1 to 7, how much do you agree with the following statements? 7 means that you fully agree with the corresponding statement. 1 means that you completely disagree with the corresponding statement. (1 Strongly Disagree, 2, 3, 4, 5, 6, 7 Strongly Agree)

(The husband should have the last word at home., It is best if the husband and wife both work an equal amount and both take care of the household and family equally., Men should take more care of the financial security of the family than women.)

Page break

D19 How old are you? (Under 20, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-60, 61 or older)

D20 What is your highest school/academic qualification? (Without general school leaving certificate, secondary school leaving certificate, higher secondary school leaving certificate or higher education entrance qualification (Abitur), bachelor, master/diploma/state examination, doctorate)

D21 Do you have at least one minor child? (Yes, No, Not specified)

Page break

D22 Do you often have the feeling that money is running out before you receive your next salary? (Yes, No, I don't want to answer this question)

Page break

D23 What is your gross income from wage labor per year? You are welcome to consult your documents to answer this question.

(I have no wage income, €1 - €10,000, €10,001 - €20,000, €20,001 - €30,000, €30,001 - €40,000, €40,001 - €50,000, €50,001 - €60,000, €60,001 - €70,000, - €80,000, €80,001 - €90,000, €90,001 - €100,000, €100,001 - €110,000, €110,001 - €120,000, over €120,000, don't know / no answer)

D24a What is your spouse's gross income from wage labor per year? To answer this question, you are welcome to consult your records or ask your spouse.

(My spouse does not work, My spouse is self-employed, €1 - €10,000, €10,001 - €20,000, €20,001 - €30,000, €30,001 - €40,000, €40,001 - €50,000, €50,001 - €60,000, €60,001 - €70,000, €70,001 - €80,000, €80,001 - €90,000, €90,001 - €100,000, €100,001 - €110,000, €110,001 - €120,000, over €120,000, don't know / no answer)

If D24a == My spouse is self-employed

D24b How much does your spouse earn gross per year in self-employment? To answer this question, you are welcome to consult your records or ask your spouse.

(€1 - €10,000, €10,001 - €20,000, €20,001 - €30,000, €30,001 - €40,000, €40,001 - €50,000, €50,001 - €60,000, €60,001 - €70,000, €70,001 - €70,001.1 € - 90,000 €, €90,001 - €100,000, €100,001 - €110,000, €110,001 - €120,000, Over €120,000, Don't know / no answer)

Page break

D25 What are your average weekly working hours?

D26 What are the average weekly working hours of your spouse?

Page break

A27 Do you have any comments on the survey or on the subject of withholding tax classes?

Appendix C Additional Descriptive Statistics

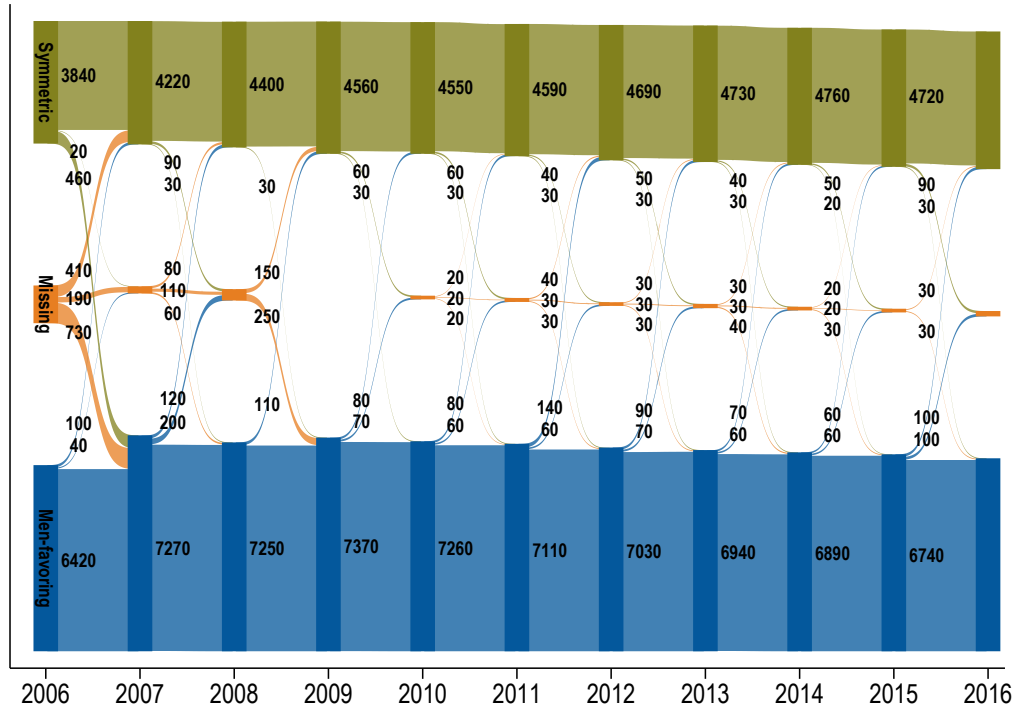


Figure C.1: Stability of the Choice of Withholding Tax Choices over Time

Notes: The figure shows how couples pick their withholding tax choice in the analyzed sample and how commonly couples switch their schedule. The unit of observation are couples. All sample restrictions from section 3 are applied, in particular both partners have to earn more than 5,400€ in 2009. For better clarity, these observations are not counted in the respective year. However, also these couples typically do not redecide on their withholding tax choice. The plot is based on the balanced sample (see definition in Section 3).

Table C.1: Descriptive Statistics for the Year 2009

	Men-Favoring	Symmetric
Income Wife	19651.74 (8470.72)	33321.58 (13402.3)
Income Husband	49737.3 (17046.99)	39453.28 (15233.01)
Female Income Share	0.29 (0.09)	0.46 (0.11)
Age Wife	44.63 (4.47)	44.69 (4.97)
Age Husband	46.57 (4.43)	46.39 (4.8)
Eastern Germany	0.08 (0.27)	0.36 (0.48)
Has a Child	0.67 (0.47)	0.31 (0.46)
Number of Children	1.42 (0.88)	0.76 (0.86)
Catholic Wife	0.4 (0.49)	0.23 (0.42)
Catholic Husband	0.37 (0.48)	0.2 (0.4)
Public Servant Wife	0.12 (0.32)	0.12 (0.33)
Public Servant Husband	0.2 (0.4)	0.15 (0.36)
N	5772	5267

Notes: The table displays descriptive statistics for the year 2009 for the balanced panel for couples who picked either the men-favoring or symmetric withholding tax schedule. They are calculated based on the sample restrictions outlined in Section 3.2. Specifically, we focus on households with dual earners in 2009, in which both partners have received no unemployment benefits and short-time work compensations in 2009, are between 20 and 60 years old in 2009, have no income from self-employment of more than 1,000 € in 2009 and whose incomes were stable between 2006 and 2009, i.e. the income for both household members fluctuated by less than 25 % from one year to the other.

Table C.2: Explanatory Variables for the Choice of Withholding Tax Schedules

	Choice of Men-Favoring Schedule
Eastern Germany	-0.227*** (0.007)
Female Income Share	-0.018*** (0.001)
Income Wife (1000 Euro)	-0.005*** (0.00)
Income Husband (1000 Euro)	-0.0 (0.00)
Has a Child	0.093*** (0.008)
Number of Children	0.065*** (0.004)
Catholic Wife	0.011 (0.007)
Catholic Husband	0.026*** (0.007)
Public Servant Wife	0.015* (0.008)
Public Servant Husband	0.006 (0.007)
Age Wife	0.002** (0.001)
Age Husband	0.005*** (0.001)
Commuting Days Wife (100 days)	-0.004 (0.003)
Commuting Days Husband (100 days)	-0.005 (0.003)
Commuting Distance Wife (100 km)	-0.021 (0.019)
Commuting Distance Husband (100 km)	0.019 (0.012)
Constant	0.928*** (0.035)
N	23233.0
Adj. R^2	0.491

Notes: The table displays which characteristics of a couple are predictive for the choice of the men-favoring schedule instead of the symmetric schedule. The coefficients stem from the regression of a dummy indicating the men-favoring schedule on various characteristics of couples in the year 2009, just before the withholding tax reform, using the unbalanced sample. Heteroscedasticity-robust standard errors are displayed in brackets.

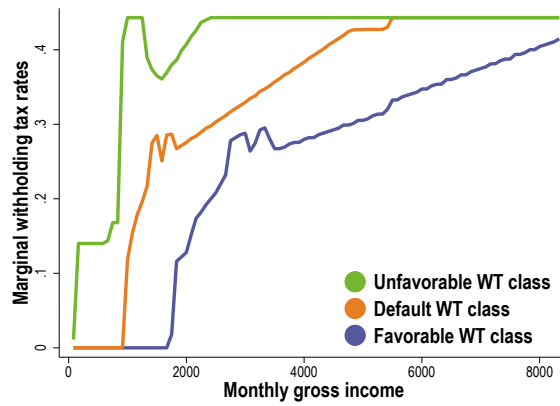


Figure C.2: Marginal Withholding Tax 2009

Notes: The figure plots the marginal tax rates by withholding tax class in 2009.

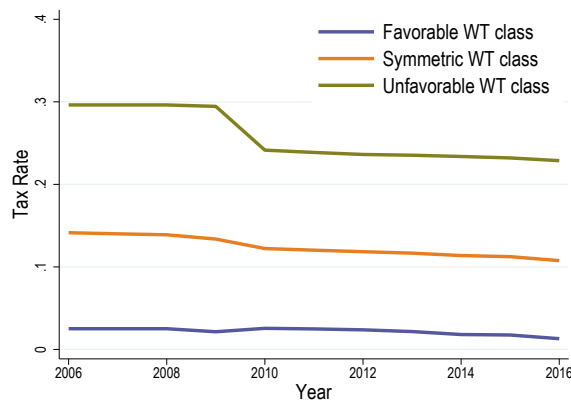


Figure C.3: Development of the Average Withholding Tax Rate by WT Class for an Income of 25,000 € over Time

Notes: The figure plots the size of withholding tax payments depending on the withholding tax class for the period from 2006 to 2016. It illustrates for an income of 25,000 € that there were no other major reforms changing withholding tax payments except for the 2010 reform that we study in this paper. The same holds true for all other incomes.

Appendix D Additional Regression Results

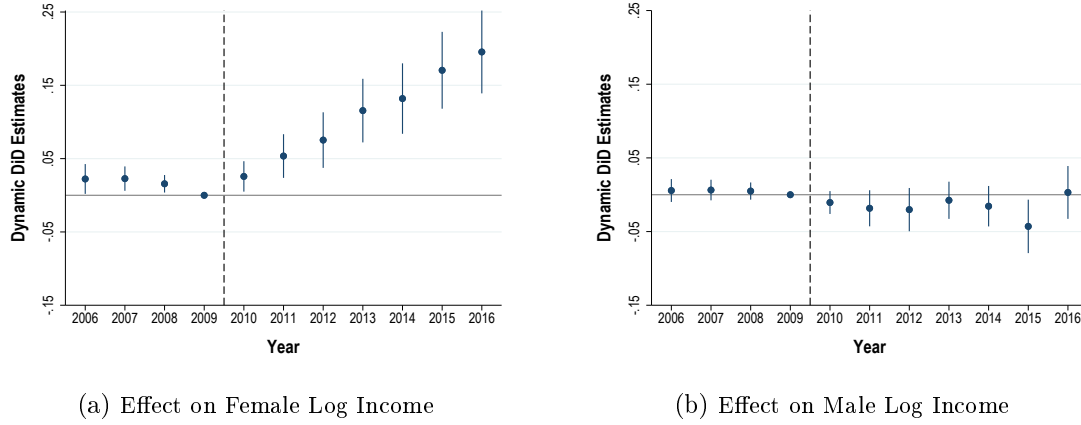


Figure D.1: Dynamic Diff-in-Diff Estimates

Notes: The figure plots the elasticity of labor income with respect to the withholding tax estimated based on the dynamic version of equation 1 for women and men. The dependent variable is the log income of the individual, the independent variable the treatment intensity. Treatment intensity is defined as the percent change in the marginal net-of-withholding-tax rate of the woman induced by a reform of the withholding tax 2010. By using granular interacted controls for female and male income ("bins") we only exploit variation in the treatment intensity between the treatment and control group. Other controls include potentially time-varying individual characteristics like the number of children, region, age, and age square as well as dummies for public sector workers. The plotted estimates are based on the balanced sample. Confidence intervals are plotted at the 95% level and are based on robust standard errors. The sample excludes households where at least one member experienced a drop in income by more than 25% from one year to the next before 2010 to ensure that no individuals directly hit by the financial crises are part of the sample. This explains the smaller standard errors before the reform.