Tax Returns and Multiple Modes of Evasion*

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Abstract

This paper examines the effect of publicly announced line item priorities for tax return reviews in a German state. By using a difference-in-differences strategy, I compare taxpayers’ tax returns in this state with unaffected taxpayers’ returns in other German states. Overall, this policy evaluation addresses three questions. First, does the announcement of line item priorities indeed reduce tax evasion for this item? Second, is there substitution evasion to non-mentioned line items and lastly, how persistent are these effects?

Keywords: Tax Avoidance, Tax Evasion, Tax Review

JEL Codes: H24, H26, H79, H83

Please Note:

Due to unforeseen delays and (restrictive) remote data access, the results are not included in this version of the paper, but will be included in due time.

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1 Introduction

Tax evasion is a great concern to governmental revenue agencies all over the world. According to recent estimates, 58% of the United States’ overall tax gap is due to under-reporting in the individual income tax (Internal Revenue Service 2016). In the United Kingdom, 40% of the tax gap are due to missing payments related to the income tax, national insurance contributions, and capital gains taxes (HMRC 2018). Also in Germany, tax evasion is an important issue. In 2017, German tax investigators concluded 35,000 cases of tax evasion that led to additional tax revenues (including fines) in the amount of €2.9 billion and a total of 1,568 years of imprisonment (Bundesministerium der Finanzen 2018).

While the above mentioned tax gap estimates are extrapolated from random audits, targeted audits, based on propensities to evade, are used in a multitude of countries to minimize tax evasion. However, due to limited resources, alternative policy measures that increase tax compliance have gained policymakers’ attention. For example, just before “Tax Day” on April 15, the Internal Revenue Service (IRS) increases the public announcements of convictions related to tax fraud (Blank and Levin 2010). They do so to increase taxpayers’ awareness of penalties for possible tax evasion and to thereby ultimately increase tax compliance. Research by Hoopes et al. (2015) shows that taxpayers’ behavior might indeed be influenced by such news shocks.

Since 2011, the Ministry of Finance in the German State of North Rhine-Westphalia (NRW) follows a related policy. At the beginning of each year, the Ministry publishes a list of line items which are priorities in the review process for personal income tax returns. These items vary on the level of the 138 local tax offices in NRW, which are responsible for all personal income tax returns within their district. The list can be found and downloaded from the Ministry’s website and has been discussed in various national and local news outlets.

By using a 5% stratified sample of the universe of German taxpayers, I examine the causal effects of this policy on listed and unlisted items. To this end, I apply a difference-in-differences analysis. Taxpayers in the remaining fifteen German states were not subject to this list, had no additional formation regarding the review process of their tax return and, therefore, serve as the control group.

This work relates to a vast literature concerning various aspects of tax evasion. The seminal work by Allingham and Sandmo (1972), based on Becker (1968), gives a first theoretical foundation of tax evasion. Allingham and Sandmo show that tax evasion is indeed a rational choice and depends on three parameters: the tax rate, the detection or audit probability, and the penalty on undeclared income. Yitzhaki (1974) further shows that the important trade-offs persist also if the penalty is levied on the evaded taxes rather than evaded income. Sandmo (2005) and Slemrod (2007) summarize this literature.

Given that tax rates and imposed penalties, two of the three key policy parameters in the model by Allingham and Sandmo (1972), can hardly be randomized for empirical work, most scholars’ research concerns the third parameter: the detection probability.
Due to the increasing availability of tax return micro data, the literature examining the features of tax evasion grew extensively in recent years. Alm (2012) offers an early summary of various aspects of tax evasion, which has recently been complemented by a review on the literature of tax compliance and enforcement (Slemrod 2018).

One main result of this literature is that sources of income that are characterized by a high detection probabilities, such as third-party reported income, experience significantly lower levels of tax evasion. In contrast, self-reported income is more likely to be evaded. Kleven et al. (2011) show this by using Danish data, whereas Engström and Hagen (2017) and Engström and Holmlund (2009) confirm this for Swedish data.

More generally, a large strand of the literature using (natural) field experiments to estimate or modify taxpayer’s perception about the detection probability has developed in the past decades. Blumenthal et al. (2001) and Slemrod et al. (2001) started this literature by sending modified versions of a letter to Minnesotan taxpayers.1

By now, most contributions do not only cover detection probabilities anymore but also focus on other aspects that might influence tax compliance. For example, Dwenger et al. (2016) sent out different letter variations in a zero deterrence context of a local church tax to estimate the degree of intrinsic motivation for tax payments. Fellner et al. (2013) test the effectiveness of three different enforcement strategies for the collection of a TV license fee in Austria: threat, moral appeal, and social information. While threat is found to be a viable tool to increase compliance, both moral appeal and social information have no or only limited effects, respectively.

Similarly, Bott et al. (2017) sent various letters to Norwegians that potentially under-reported foreign income. While the salience of the detection probability rather induces taxpayers to start reporting foreign income, the moral appeal mainly increases the amount reported. Other recent work has examined notification strategies for late-payers in the United Kingdom (Hallsworth et al. 2017) or notification strategies with respect to local property taxes (Chirico et al. 2016).2

I add to the literature on field experiments by evaluating another policy tool that has previously not been considered. In previous work, audit announcements concerned overall income tax returns but not individual line items. Furthermore, I evaluate a potentially less salient public announcement relative to direct letter treatments in previous studies.3

The second strand of the literature I add to examines multiple modes of evasion. Early work in this field was conducted by Klepper and Nagin (1989) and Feinstein (1991). Klepper and Nagin (1989) develop a generalized model for tax evasion, based on the institutional setting in the United States. Among other things, the authors discuss substitution responses between line items. Feinstein (1991) adds to this work

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1Recently, researchers have also looked at other forms of increasing tax compliance with phone calls and personal visits (e.g. Ortega and Scartascini 2017).

2A comprehensive overview of the empirical literature on tax experiments is given by Mascagani (2018). Luttmer and Singhal (2014) summarizes the complementary literature on tax morale.

3Chetty et al. (2009) highlight the importance of tax salience for behavioral reactions. See also Goldin (2015) for a theoretical analysis of the optimal level of tax salience.
by examining income tax evasion from the IRS’s Taxpayer Compliance Measurement Program (TCMP).

More recently, Cummings et al. (2006) run an experiment in which participants have various modes to evade taxes. The authors find that increasing enforcement for a single item may lead to revenue declines due to higher evasion in other items. By using data from the 1985 IRS’s Taxpayer Compliance Measurement Program, Martinez-Vazquez and Rider (2005) contradict this result. The authors find that increased enforcement efforts have a positive effect on compliance in the respective line item, negative effects on unaffected items, but a positive overall effect on tax compliance.

This paper complements previous research in this area by using individual level tax returns, combined with an exogenous increase in line item audit probabilities. This allows for the identification of direct effects on respective line items, as well as substitution effects for other items.

Lastly, the third strand of literature this paper adds to discusses long term effects of tax audits on compliance behavior. Gemmell and Ratto (2012) highlight that the compliance decisions following an audit are dependent upon prior compliance. In the year following an audit, honest taxpayers are more likely to be less compliant than before. Advani et al. (2017) look at long term effects of audits in the United Kingdom and conclude that, conditional on the prime source of income, tax liabilities increase up to five years after the audit. In a similar study, DeBacker et al. (2018) confirm this result for random audits by the Internal Revenue Service. This paper adds to the literature by exploiting a different variation, namely taxpayers that were continuously audited for one line item relative to taxpayers that were audited just once.

The remainder of this paper is organized as follows. Section 2 gives an introduction to the German Personal Income Tax. Section 3 develops a Model to derive hypotheses, before the data set and the descriptive statistics are discussed in Section 4. Section 5 is devoted to the Empirical Strategy before the results are presented in Section 6. Section 7 discusses alternative explanations for the (potentially insignificantly) small effect size. Lastly, Section 8 concludes.

2 Personal Income Tax in Germany

2.1 Institutional Setup

In order to understand the identification strategy for the policy evaluation, it is necessary to know the key institutional mechanisms of the German Personal Income Tax: All laws concerning the content of the Personal Income Tax Law (PITL) in Germany are passed on the federal level. Due to a fiscal equalization scheme, the revenue from the personal income tax (“Einkommensteuer”) is shared between the federal and the

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4 There are now several contributions that look at other behavioral aspects of taxation. While Chetty et al. (2009) examines tax salience, Engström, Nordblom, et al. (2015) and Rees-Jones (2018) consider the role of loss aversion in tax compliance.
state level (42.5% each) and the municipality of a taxpayer (15%). In contrast to other countries, such as the United States, there is no personal income tax levied at the state level.

The collection of the tax revenue is however organized at the state level. Each of Germany’s sixteen states has its own two or three-layer tax administration. In all states, the respective Ministry of Finance organizes and oversees the tax collection, which is ultimately conducted by 535 tax offices (as of 2016).\(^5\) Ten states also include a third, intermediate layer (a so-called “Mittelbehörde”).

It is thus appropriate to consider taxpayers residing in other states as a control group to treated taxpayers in North Rhine-Westphalia. I address concerns about culturally different taxpayers in geographically distant districts, by running a robustness check which only includes taxpayers living in counties that share a common border with NRW.

Taxable units, according to Germany’s Personal Income Tax Law, are either single fillers or married couples.\(^6\) The allocation of taxable units to tax offices takes place via the taxpayer’s residence at the time of filing. In general, tax districts are similar but not identical to other political districts below the state level, such as counties.

### 2.2 Important Features

Besides the institutional setup, there are several important features relating to the content of Germany’s Personal Income Tax Law. Most noteworthy, there is no uniform duty to file a tax return. The German PITL specifies which taxable units are required to file a tax return for the previous calendar year by May 31 and which taxable units are not.\(^7\)

For example, if a taxable unit only receives labor income (not self-employed) and capital gains, which are both subject to automatic withholding, then the taxable unit does not have to file a tax return.

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\(^5\)See Bundesministerium der Finanzen (2018) for a brief overview of the German tax administrative system.

\(^6\)In this work, I will use taxpayer and taxable unit interchangeably. However, I highlight any difference between both expressions whenever necessary.

\(^7\)Anecdotal evidence suggests that May 31 is no hard deadline, as most petitions for deadline extensions are granted. Furthermore, taxpayers who file their return with tax consultants do not have to file until the end of February the following year.
Table 2: Most important features of the basis for the assessment of the German Personal Income Tax

Generally, the German PITL consists of two broad kinds of personal income: surplus income ("Überschusseinkünfte") and profit income ("Gewinneinkünfte"). Table 1 gives an overview of the different income sources in both categories. For each type of income, the difference between revenues and expenses is considered. One example: Taxpayers earning income from dependent work can either claim an automatic deduction of 1,000 € or itemize their deductions. These deductions include, among others, commuting costs, expenditure for working clothes, or expert literature.

The seven different sources of income are then taken together before various additional deductions and allowances are considered. The non-exhaustive Table 2 highlights the interplay of the most important deductions and allowances. Ultimately, the result of these computations yields the level of taxable income ($TI$), rounded down to the last full Euro, for which the respective tax year’s general tax formula $T(TI)$ is applied.

For the tax years from 2010 to 2012, the (partially) linearly progressive tax formula $T(TI)$ was as follows:

\[
T(TI) = \begin{cases} 
0 & \text{if } TI \leq 8,004 \\
\frac{TI - 8,004}{10,000} & \text{if } 8,005 \leq TI \leq 13,469 \\
1,038 + \frac{TI - 13,469}{10,000} & \text{if } 13,470 \leq TI \leq 52,881 \\
\frac{912,17 \cdot TI - 8,004}{10,000} + 1,400 & \text{if } 8,005 \leq TI \leq 13,469 \\
228,74 \cdot TI - 13,469 & \text{if } 13,470 \leq TI \leq 52,881 \\
0.42 \cdot TI - 8,172 & \text{if } 52,882 \leq TI \leq 250,730 \\
0.45 \cdot TI - 15,694 & \text{if } TI \geq 52,882 \\
0.42 \cdot TI - 8,172 & \text{if } 52,882 \leq TI \leq 250,730 \\
0.45 \cdot TI - 15,694 & \text{if } TI \geq 250,731 
\end{cases}
\]

Taxpayers whose taxable income is below an exemption threshold, here 8,004 €, are not subject to any personal income tax. Starting at 8,005 € there is a linearly increasing marginal tax rate, starting at 14% up to 24% at 13,469 €. There is a second range of taxable income for which the marginal tax rate increases linearly, between 13,470 €

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8Schmidt (2013) provides a detailed analysis of micro-simulating the taxable income with the Taxpayer-Panel. Also consult page 12 for a graphical summary of the German Personal Income Tax Computation. Doerenberg et al. (2017, Section 3) offer an additional, insightful overview of the German Personal Income Tax Law.
and 52,881 €, ranging from 24% at the lower boundary to 42% at the upper boundary. Lastly, there are two brackets with marginal tax rates of 42% and 45% for taxable income above 52,882 € and 250,731 €, respectively.

If married taxpayers file jointly, the average income of the couple is computed, for which the couple pays the income tax twice. Put differently, \( T(TI_1 + TI_2) = 2T\left(\frac{T(I_1 + I_2)}{2}\right) \).

Furthermore, note that there has been a large corporate tax reform in Germany in 2008. This corporate tax reform also entailed changes to the German Personal Income Tax Code as of January 1, 2009. Since this day, a multitude of kinds of interest income such as, e.g., interest income, dividends, and certificates are, above an allowance level, subject to an automatic 25% withholding tax.\(^9\) Prior to this day, capital income was automatically part of the taxable income and therefore subject to the, potentially higher, marginal tax rate.

3 Model

3.1 Audit Probabilities and Penalties

In order to derive hypotheses to guide the empirical evaluation of the policy, a slightly modified version of the model by Klepper and Nagin (1989) is considered.\(^10\) This model helps to capture the main trade-offs associated with tax evasion on various items. In general, there is a two step procedure by the tax authority concerning line item audits. First, the tax authority decides to audit a taxpayer. Conditional on this decision, there is a probability attached to the auditing of each line item.\(^11\)

Assume a taxpayer’s tax return consists of \( l \in [1, 2, \ldots, K] \) line items. The true level of an income (deduction) item is given by \( y^*_l \geq 0 \) (\( y^*_l \leq 0 \)), whereas the level of reported income (deduction) is given by \( y_l \geq 0 \) (\( y_l \leq 0 \)). The overall level of taxable income is thus given by \( \sum y^*_l \) and the reported level of income by \( \sum y_l \). The linear income tax is given by \( t \in (0, 1) \).

When deciding about underreporting of income or overreporting of deductions for a particular line item, the taxpayer incorporates the audit probability of this line item \( p_l \), which is conditional on being chosen for an audit, as follows:

\[
p_l = f_l(RNC) \cdot g(NC) .
\]

\(9\)The tax rate is automatically multiplied by a 5.5.% surcharge, the “Solidaritätszuschlag”. A further increase by 8% or 9% occurs for church members, differing by federal state.

\(10\)Among other things, the authors assume a linear income tax. For the sake of simplicity, this is also assumed for this model. Note however that the German Personal Income Tax is characterized by a linear progressive system for a broad range of values.

\(11\)Klepper and Nagin (1989) initially propose this two stage approach for the IRS. Due to missing information on German tax audits, it seems a reasonable first approximation to assume that German officials and taxpayers follow the same strategy.
The probability for a line item audit \( p_l \) is the product of two factors. First, there is a line item specific function \( f_l(RNC) \) that has the relative noncompliance, \( RNC = \frac{(y^*_l - y_l)}{|y^*_l|} \), as an argument. Intuitively, the higher the relative noncompliance, the easier (and cheaper) it is for the tax authority to proof tax evading behavior. This in turn increases the probability of a line item audit. The shape of \( f_l \) is dependent on the nature of the line item, as different items experience varying difficulties to proof tax evasion. For example, evasion of income that is subject to third-party reporting might be easier to proof for the tax authority, relative to self-reported income.

The second factor is a general function \( g(NC) \), which incorporates the absolute level of noncompliance, \( NC = (y^*_l - y_l) \). Intuitively, the more noncompliance there is, i.e., the higher \( NC \), the more profitable it is for the tax revenue agency to audit this item. The shape of \( g \) is the same across all line items, thereby indicating that the value of an additional unit of tax revenue is the same for all taxes. Note that it holds that both \( f'_l > 0 \) and \( g' > 0 \), i.e. a rise in the absolute or the relative noncompliance increases the probability of a line item audit.

Klepper and Nagin (1989) further define the unconditional probability to be subject to an audit, \( a \), as a function of the sum of line item audit probabilities in the following way:

\[
a = h(\Sigma p_l).
\]

It holds that \( h \) is such that \( h' > 0 \). If the audit probability of one item increases so does to the overall probability that this tax return is chosen for an audit. Therefore, the probability that noncompliance on line item \( l \) is discovered \( (d_l) \) is the following:

\[
d_l = f_l(RNC)g(NC) \cdot h(\Sigma f_l(RNC)g(NC)) \quad ,
\]

where (1) represents the conditional audit probability \( p_l \) and (2) the probability of being selected for an audit.

Furthermore, following the work by Klepper and Nagin (1989), there are proportional monetary penalties imposed if the evader is caught in the act.\(^\text{12}\) The penalty rate \( pr_l \) for a line item \( l \) is given by

\[
pr_l = t(y^*_l - y_l) \cdot v_l(RNC) \quad .
\]

The penalty rate for a given line item \( pr_l \) is a function of the evaded taxes, \( t(y^*_l - y_l) \), as well as the taxpayer’s possibility to label the noncompliance as an error. This latter part is captured by \( v_l(RNC) \), which varies by line item. For some items, for example where there exists legal ambiguity, the taxpayer faces a lower penalty than for blatant tax evasion. Generally, it holds that \( v' > 0 \), that is, higher relative levels of noncompliance increase the penalty rate.

\(^\text{12}\)I abstract from non-monetary costs as they are of second order for this exercise. As concerns potential imprisonment, the monetary equivalent thereof is implicitly included already.
3.2 Taxpayer Maximization Problem

The risk-neutral taxpayer maximizes his expected total income $M$ by choosing the appropriate levels of line item income $y_l$:\(^{13}\)

$$\max_{y_1,..,y_K} M = \Sigma (y^*_l - ty_l - m_l \cdot t(y^*_l - y_l)) .$$ (1)

For simplicity, I follow Klepper and Nagin (1989) to assume that $y_l > 0 \forall l$. Also, $m_l = a \cdot p_l \cdot v_l(RNC)$ represents the expected costs of evading on unit of income for line $l$, as the probability that line item $l$ is audited, $(a \cdot p_l)$, is multiplied by the monetary cost of evading taxes for this item $(v_l(RNC))$. Consider the first order condition for any line item $l = 1, 2, .., K$:

$$\frac{\partial M}{\partial y_l} = -t \left[ 1 - m_l + (y^*_l - y_l) \frac{\partial m_l}{\partial y} \right] \equiv 0$$ (2)

$$\Leftrightarrow t(1 - m_l) = t(y^*_l - y_l) \frac{\partial m_l}{\partial y_l}$$ (3)

The taxpayer’s benefit of reporting another unit of income is given by the right hand side, whereas the costs are on the left hand side. The benefit consists of the product of the evaded taxes, $t(y^*_l - y_l)$, weighted by the change in the expected cost of evading for line item $i$, $\partial m_l / \partial y_l$. The latter effect is induced by a reduction in the (overall) audit probability.

The left hand side represents the costs of reporting another unit of income. Reporting this marginal unit leads to a higher tax payment of $t$. However, when not reporting the marginal unit, the expected costs are equal to $tm_l$. Thus, $t(1 - m_l)$ is the cost of reporting this unit of income. To allow for the existence of evasion, it has to hold that $1 - m_l > 0$. Put differently, the expected cost of evading a unit of income have to be less than one.

3.3 Hypotheses

In order to guide the empirical analysis, hypotheses with three different focuses are formulated. Generally, the announcement of line item priorities can be thought of as an exogenous shift in $p_l$. This shift in $p_l$ can be caused by a change in the slope of $f_l$. The more tax reviewers focus on one item, the easier it is for them to spot and establish a case of evasion, thereby increasing the probability that a certain item is chosen, given there is an audit.

This leads to the first hypothesis, see also Klepper and Nagin (1989, Equation (2) p.7), that guides the empirical analysis:

\(^{13}\)While there is work incorporating loss aversion into tax filing behavior, e.g., Rees-Jones (2018), I abstain from incorporating this into the model.
Hypothesis 1. The higher the audit probability for line item $l$, the less evasion takes place for this item, i.e., $\frac{\partial y_l}{\partial p_l} > 0$.

This first hypothesis is quite straightforward following the model and represents a more granular version of the results derived by those authors that examine general audit probabilities. More interesting however, is the response of tax evasion on other items, which are not part of the list of line item priorities.

As concerns this impact, the model is not as clear. Generally, there are three different responses possible. The first response is an increase in the other items’ compliance level. Consider the change in $f_l$. The first, direct effect is an increase in $p_l$, thereby inducing a higher reporting level of $y_l$. However, it depends on the specific functional parameters, whether the reporting increase offsets the increase in $p_l$ or not. If the increase in $y_l$ is not sufficiently large, then there is a clear spillover to other items, due to the summation in $h(\Sigma p_l)$. Hence, there is less evasion for other items as well. This is summarized in Hypothesis 2.1:

Hypothesis 2.1. The higher the audit probability for line item $l$, the less evasion takes place in line item $j \neq l$, i.e., $\frac{\partial y_j}{\partial p_l} > 0$.

If the opposite is true, i.e., the direct effect outweighs the indirect effect, there is more tax evasion for other items, due to the overall reduction in $p_l$. An additional reason not incorporated in the model thus far could be in limited governmental resources. Taxpayers might anticipate that a prioritization of one line item $l$ might lead to less intense reviews for other items $j \neq l$ and make it therefore more profitable to evade taxes for these items.\(^{14}\)

Hypothesis 2.2. The higher the audit probability for line item $l$, the more evasion takes place in line item $j \neq l$, i.e., $\frac{\partial y_j}{\partial p_l} < 0$.

It might however, by chance, be the case that these two effects exactly offset and there is no change in the evasion behavior for other items. This third potential reaction to the line item audits is captured in Hypothesis 2.3:

Hypothesis 2.3. A change in the audit probability for line item $l$ does not influence the evasion taking place in other items, i.e., $\frac{\partial y_j}{\partial p_l} = 0$.

Furthermore, the panel structure of the data set allows for a third hypothesis concerning the long term dynamics of tax evasion. Assuming that Hypothesis 1 is true, a shift away from a particular line item priority should lead to an increase in evasion in the upcoming tax year. As shown by previous literature (e.g. Advani et al. 2017), faster increases of evasion are expected for income sources not subject to third-party reporting.

Hypothesis 3. Given that Hypothesis 1 is fulfilled, the effect for item $l$ gets weaker over time as other line items are prioritized. The size of the effect depends on the verifiability of this income source.

\(^{14}\)The model could capture this by a reduction in $f_l$ when $f_l$ increases.
4 Data Set and Descriptive Statistics

4.1 Data Set

In order to examine the effect of publicly announcing line item priorities, I use a 5% stratified sample of the German Taxpayer Panel (TPP) for the tax years between 2001 and 2014 (Statistisches Bundesamt 2014).15 The TPP is an administrative data set, provided by the German Federal Statistical Office, that comprises the universe of German taxpayers who file an income tax return. The taxable unit is either the single taxpayer or married couples if they wish to file jointly.

The tax office assignment is based on the Amtlicher Gemeindeschlüssel (henceforth AGS), an eight digit code that identifies each municipality in Germany. Data on the tax office districts is also provided by the German Statistical Office (Finanzamtsbezirke mit Gemeinde nach Fläche und Bevölkerung) on the eight digit AGS for the tax years 2010 until 2014 (Statistisches Bundesamt 2011, 2015). For the years 2012 to 2014, the TPP comprises the taxpayer municipality’s AGS, which allows for unambiguous tax office assignment for these years.

For the years prior to 2012, the tax office (and treatment) assignment is fuzzy. I can observe taxpayers that previously resided in other federal states. However, I cannot observe whether a taxable unit moves within a federal state. This is especially critical for the treated state of NRW, as line item treatments vary between tax offices. To deal with this issue, I compute the share of intra-state movers between the tax years of 2012 and 2014. Under the reasonable assumption that within-state moving in NRW remained constant between 2010 and 2012, I am able to rescale the treatment effect.

Furthermore, residence information for high income tax payers is truncated for all years of the panel. For these taxpayers, I can only observe whether they live in West Germany or East Germany. Therefore, these taxpayers will be excluded, as discussed in more detail in the following section.

4.2 Sample Selection

Several sample restrictions are applied (in this order):

• 1: I exclude taxpayers who did not file an income tax return for the years 2012-2014. This is sensible as they are never in contact with their respective tax office.

• 2: The enhanced data availability starting in the tax year 2012 also leads to the inclusion of previously excluded cases of loss carry-forwards/loss carry-backwards. Mechanically, they cannot be part of the treatment group for 2010, therefore I exclude these taxpayers.

15Kriete-Dodds and Vorgrimler (2007) describes the matching procedure for a previous version of the TPP.
• 3: I exclude taxpayers who were outside of Germany more than 163 days in the previous year. The reason thereof is that for those taxpayers a different subset of the Personal Income Tax Law applies.

• 4: I exclude all taxpayers whose filing status is not the general filing status. For example, widows and widower have a special filing status in the tax year following the death of their spouse.

• 5: I split the sample between taxpayers that change their filing status and between those that do not. Due to a marriage income tax split, there might be strong changes in incentives. They will be included for robustness checks.

• 6: The sample is split among various dimensions, for example between single and married taxpayers.

• 7: Various plausibility checks are conducted (no change in date of birth, etc.)

4.3 Descriptive Statistics

This section will be added, once results are in.

5 Empirical strategy

5.1 List of Line Item Priorities

Since the calendar year 2011, the Ministry of Finance in the German state of North Rhine-Westphalia annually publishes a list of line item priorities for tax review that vary on the tax office level. Figure A.1 in the Appendix shows the first page of the list published in 2011.\textsuperscript{16} The points on each of those lists consists of either single line items or a general income category as pointed out in Section 2.

The list published in January of 2011 is important for all tax returns for the tax year 2010. Theoretically, taxpayers who are not obligated to file their tax return can defer filing the tax return for up to four years. Therefore, for the baseline regression, only taxpayers that were obliged to file a tax return are considered. A robustness check also includes voluntary filers.

5.2 Difference-in-Differences

In order to assess the effect of the public announcement of line item priorities, I use a difference-in-differences strategy, whereby the treatment assignment is based upon the individual tax office. In this setting, treatment assignment is unlikely to be

\textsuperscript{16} All lists (PDF files) can be downloaded from the author on https://github.com/tohauck/nrw_line_items.
endogenous, i.e., dependent on a single taxpayer’s reporting or evasion behavior, given
the atomistic nature of a taxpayer within a tax office’s district. Furthermore, it seems
quite unlikely that taxpayers would move to another tax office district to avoid or benefit
from a specific line item priority.\textsuperscript{17}

The control group comprises all taxpayers in Germany who are not living in North
Rhine-Westphalia. One might be concerned that taxpayers from other, geographically
more distant German states might be culturally different. To account for this, I run
a robustness check, in which the control group only consists of taxpayers that live in
districts that share a border with NRW. The baseline estimation equation is given as
follows:

\begin{equation}
Y_{ilt} = \beta_0 + \beta_1 \text{Treated}_{il} + \beta_2 \text{Post}_t + \beta_3 \text{Treated}_{il} \cdot \text{Post}_t + \beta_4 \gamma_i + \beta_5 \rho_t + \epsilon_{ilt}, \tag{4}
\end{equation}

where $Y_{ilt}$ is the reported level of line item $l$ by taxpayer $i$ in year $t$, Treated$_{il}$ indicates
whether taxpayer $i$ was subject to the treatment for line item $l$ or not. Post$_t$ indicates
the post-treatment period, for the baseline estimation these are the tax years 2010
and following. The coefficient of interest will thus be $\beta_3$, the change of the reporting
behavior on line item $l$ for taxpayer $i$ in the years following Individual fixed effects $\gamma_i$
and time fixed effects $\rho_t$ are included.

Starting from this baseline estimation, two main modifications are considered. First,
besides direct effects, there might be scope for substitution evasion by underreporting
other sources of income or overreporting costs. More particularly, overreporting of
costs can either happen within the same income category, another income category,
or right before the final computation of taxable income, i.e., via claiming additional
“extraordinary burdens” or “special expenses”.

Furthermore, for the tax years between 2010 and 2014, the local tax office in
Bochum-Mitte constantly had deductions for professional expenses related to employed
income (“Werbungskosten”) as a review priority. The tax office in Detmold was only
supposed to conduct a priority review for this item for the tax year 2010. Therefore, the
comparison between taxpayers in those two districts over the four year horizon allows
to assess the longevity of the line item audit effects.

5.3 Control Variables

The data set offers only a limited number of control variables who are observed
when filing the tax return. This includes age, number of children, marital status, and
membership in a religious confession.

\textsuperscript{17}Especially when considering that the average German women (men) moves only 4.6. (4.4) times
in her (his) life. See https://www.enteaga.de/blog/wohnungswechsel-stromanbieter-mitnehmen-
bei-umzug (last retrieved 2/8/2019).
6 Results

This section will be added, once results are in.

6.1 Direct Effects

6.2 Persistence of Effects

6.3 Substitution Effects

6.4 Robustness checks

The following robustness checks are considered:

- Include Taxpayers that were not legally obliged to file a tax return but did so voluntarily.

- Examine, irrespective of the effect on the line items, whether the probability to receive a reimbursement (or the size thereof) changes significantly. This could be important, when taxpayers evade only slightly on multiple items.

- Only include individuals in the control group that live in tax office districts that share a boarder with the treated state (NRW). This reduces concerns for unobserved cultural differences between the groups.

- Furthermore, I am to exploit whether there are systematic differences between singles or married couples, due to different shifting possibilities and different incentives between both.

- An examination by income deciles (relative to the overall German income distribution) is undertaken.

- Shifting review process to other tax offices with different priorities. I aim to control for this by looking at smaller tax offices (below/above median population in tax office district)

- Look at taxpayers that changed their filing status due to marriage
7 Alternative Explanations

Anticipating the possibility of an insignificant or economically small effect, there is a variety of alternative explanations that I aim to address:

- High moral costs to interact with tax office, therefore over-reporting of income (underreporting of costs) to avoid contact.
- It might very well be that tax payers are not risk-neutral but rather risk averse (related to this first argument), then effects should be smaller in size and might not be tractable at all.
- Only an intent-to-treat model, as some taxpayers, who are not legally obliged to do so, may file their taxes later than the following year. This is possible up to for years after the respective tax year.

8 Conclusion

This paper evaluates a natural experiment in a German state, where individuals were informed about line item priorities for tax reviews. It examines direct effects on the individual items and substitution effects to other items. Furthermore, the persistence of these effects is analyzed.
References


# A Line Item Priorities List

Figure A.1 gives the first page of the line item list from the year 2011 as an example. The other lists are available from the author on request.

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**Figure A.1: First Page of the List for the Calendar Year 2011**

<table>
<thead>
<tr>
<th>FA-Nr.</th>
<th>FA</th>
<th>Bezeichnung Prüffeld</th>
</tr>
</thead>
<tbody>
<tr>
<td>301</td>
<td>Ahaus</td>
<td>Gewinneinkünfte § 13 EStG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Liebhaberei</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nutzungsumfang/Nutzungsänderungen/Veräußerungen von LüF Flächen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gewinneinkünfte §§ 15/18 EStG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Branchenspezifische Untersuchung</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gewinneinkünfte § 15a EStG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gewinneinkünfte § 16 EStG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gesellschaftswechsel bei vorhandenem Sonderbetriebsvermögen</td>
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<tr>
<td></td>
<td></td>
<td>Überschusseinkünfte § 21 EStG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Erstmalige Vermietung</td>
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<td></td>
<td>Gewerbesteuer</td>
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<td></td>
<td>§ 10a GewStG: Gewerbeverlust</td>
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<tr>
<td></td>
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<td>Gemeinnützigkeit</td>
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<tr>
<td></td>
<td></td>
<td>Umsatzsteuerjahresarklärungen mit Erstattungsüberhängen</td>
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<td>Wegfall der steuerbegünstigten Zwecke</td>
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<tr>
<td></td>
<td></td>
<td>Wirtschaftlicher Geschäftsbetrieb</td>
</tr>
</tbody>
</table>

| 302   | Altena  | Gewinneinkünfte § 17 EStG                                                                                     |
|       |         | Anteilsveräußerung                                                                                           |
|       |         | Überschusseinkünfte § 21 EStG                                                                              |
|       |         | Vermietung und Verpachtung                                                                                  |
|       |         | Gemeinnützigkeit                                                                                           |
|       |         | Steuerabzug § 50a EStG                                                                                       |

| 303   | Arnsberg| Gewinneinkünfte §§ 15/18 EStG                                                                                |
|       |         | Arbeitszimmer                                                                                               |
|       |         | Schuldzinsenabzug § 4 Abs. 4a EStG                                                                           |
|       |         | Gewinneinkünfte § 15a EStG                                                                                  |
|       |         | Überschusseinkünfte § 19 EStG                                                                              |
|       |         | Arbeitszimmer                                                                                               |
|       |         | Außergewöhnliche Belastungen                                                                               |
|       |         | Unterstützung naher Angehöriger                                                                             |