Extrinsic and Intrinsic Motivations for Tax Compliance: Evidence from a Field Experiment in Germany

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Abstract

This paper studies the role of extrinsic and intrinsic motivations for tax compliance in the context of a local church tax in Germany. This is a legally binding tax that encourages overpayments (donations). Hence, evaders and donors co-exist in this system, and we are able to distinguish between the two using administrative data. The system has so far relied on zero deterrence, implying that any compliance must be intrinsically motivated. Starting from this zero deterrence baseline, we inject positive deterrence or social recognition into the system using a natural field experiment. Our main findings are as follows. First, 20% of individuals pay at least their true taxes owed in the zero deterrence baseline, while the remaining 80% pay less than their true taxes owed and most of them pay nothing. Hence, intrinsically motivated compliance is substantial, although the majority behave as rational, self-interested taxpayers. Second, deterrence has strong effects on compliance for baseline evaders (the extrinsically motivated), but small and insignificant effects for baseline donors (the intrinsically motivated). Third, recognition through social and monetary rewards for compliance has fundamentally different effects on baseline donors (who increase their payments) and baseline evaders (who further decrease their payments). Hence, whether social recognition is effective depends crucially on the distribution of extrinsic and intrinsic motivations in the population. Fourth, we provide evidence of intrinsic motivation driven by a duty to obey the law, using an identification strategy based on sharp bunching at *exact* compliance in the zero deterrence baseline. We interpret all our findings using a conceptual framework that unifies the standard deterrence model of tax compliance with a model of warm-glow giving. *JEL* Codes: C93, D03, H26.

1 Introduction

Is tax compliance driven only by *extrinsic* motivations such as deterrence and tax policy, or is there also a role for *intrinsic* motivations such as duty, norms, guilt and shame? The economic theory of tax compliance building on Becker (1968) and Allingham and Sandmo (1972) focuses only on the former and predicts low compliance under low audit probabilities or penalties. This prediction stands in sharp contrast to the empirical observation that tax compliance is high in modern tax systems despite very low audit probabilities and modest penalties. The literature has proposed three ways of resolving this *compliance puzzle* (Sandmo 2005, Slemrod 2007).

First, modern tax systems make widespread use of third-party information from firms and the financial sector, which creates a divergence between the observed audit rate and the actual detection probability conditional on evading (Kleven *et al.* 2009, Kleven *et al.* 2011). Hence, the notion that deterrence is weak is to some extent an illusion. Second, theory assumes that taxpayers have perfect knowledge of deterrence parameters, but in practice there may be misperception: survey evidence suggests individuals tend to overestimate audit probabilities and fines associated with tax evasion (Scholz and Pinney 1995, Chetty 2009). Third, agents may comply based on moral sentiments, social norms, guilt and shame (Cowell 1990, Andreoni *et al.* 1998), all of which are non-deterrence motives for compliance. The importance of such intrinsically motivated compliance is the hardest to study empirically and therefore the least understood.

We consider a context and natural field experiment that are ideally suited to make progress on the second and third explanations for the compliance puzzle. Our setting is one in which third-party information reporting is not implemented, and our field experiment is designed to quantify the importance of extrinsic and intrinsic motivations for tax compliance.

The empirical setting is the local church tax in a metropolitan region of Bavaria, Germany. This is a legally binding tax that is levied on church members. Three features of this setting are crucial for our empirical analysis. First, it combines taxation with charitable giving: the church tax is compulsory and non-compliance represents a violation of the tax law, but the church highlights the good cause and encourages overpayments which are defined as donations. Hence, tax evaders and donors can coexist in this system. Second, the *true* tax base relevant for the church is defined as *reported* taxable income to the government, which we can perfectly observe for each individual by linking church tax records to administrative income tax records. We are therefore able to compare actual taxes paid to the church with true taxes owed for each individual, and thus distinguish precisely between evaders, compliers, and donors. This overcomes a key limitation of previous tax evasion studies in the field, namely that the outcome variable of interest is not observed. Third, even though the church has the legal right to cross-check filed taxes against income tax returns

(which would detect evasion with certainty), they have not exercised this right in the past. In other words, prior to the experimental treatments described below, there is zero deterrence in the system. Together with the previous point, this implies we can observe compliance in a baseline with zero deterrence, which provides a direct measure of intrinsically motivated tax compliance.[1]

Distinguishing between intrinsically motivated agents (namely donors or compliers in the zero deterrence baseline) and extrinsically motivated agents (namely evaders in the zero deterrence baseline), we inject deterrence or social incentives/rewards into the system using a randomized field experiment and estimate the effects on each type of agent. This allows us to study if policies aimed at either extrinsic motivation (deterrence) or intrinsic motivation (social incentives/rewards) have qualitatively different impacts across individuals, whose observed pre-treatment compliance behaviors reveal whether they are extrinsically or intrinsically motivated. Our measure of motivation types is particularly compelling, because our panel data allows us to identify those types using pre-treatment information on compliance behavior. We now outline the experimental design and main findings.

In conjunction with the Protestant church, our natural field experiment manipulates the official tax notification sent by the church to collect the local church tax in the metropolitan area we study. Almost $40,000$ individuals participated in the experiment and were randomly assigned either to a control group or to one of 12 treatment groups, varying in three broad dimensions. The first group of treatments focus on raising the *tax salience* of the local church tax, and correcting for any *misperceptions* individuals might have on audit probabilities. The second group of treatments vary *deterrence* by announcing strictly positive audit probabilities, including both fixed probabilities on all taxpayers and notched probabilities that depend on the tax payment. The third group of treatments provide *social and monetary rewards* for compliance as well as information on social norms and moral appeals.

To guide and interpret our empirical findings, we develop a conceptual framework that unifies the standard compliance model (Allingham and Sandmo 1972) with the warm-glow model of public goods contributions (Andreoni 1989, 1990). The framework incorporates heterogeneity in intrinsic motivation (warm-glow) to allow for the coexistence of evaders, compliers and donors as in our empirical setting. We use this to characterize the potentially heterogeneous impacts of deterrence and shocks to intrinsic motivation (such as social rewards) on evader and donor types.

Our main empirical findings are the following. First, a significant fraction of agents comply in the zero deterrence baseline where compliance should be zero absent intrinsic motivation. We find that around 20% of individuals pay at least the true taxes owed, implying that intrinsic

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[1]This measure could also be affected by misperception about deterrence, but we will be able to separately identify potential misperception using one treatment specifically designed to measure this, as we describe below.

motivation is substantial. On the other hand, the remaining 80% of individuals evade taxes and most of them fully evade (by paying zero tax), and so the vast majority behave as rational, self-interested taxpayers consistent with the Allingham-Sandmo framework. Previous studies have not been able to directly test the economic model of tax evasion in this manner both because effective deterrence is typically difficult to measure (making the compliance prediction unclear) and because compliance is typically not well observed (Slemrod and Weber 2012).

Second, announcing a zero audit probability (the status quo) has only a small effect on the compliance rate, implying there is very little misperception on average. This confirms that misperception is not a confounding factor in the measure of intrinsic motivation described above. Nevertheless, since there will always be some idiosyncratic variation in perception, we compare all other audit probability treatments to the zero audit probability treatment in order to make the variation in audit probabilities across treatments unambiguous and hence increase power.

Third, tax salience and deterrence have strong effects on compliance for baseline evaders, but small and insignificant effects for baseline donors. This is consistent with our conceptual framework in which the enforcement constraint is not binding for the intrinsically motivated, which makes them unresponsive to changes in deterrence. When comparing fixed audit probabilities (up to 50%) to a notched audit probability (50% below a payment threshold, 0% above), we find much stronger effects of the notched treatment on evaders.[2] The strength of the randomized audit notch letter in our study may have broader implications for the design of audit letter experiments given that the existing literature has often struggled to detect significant effects of audits (Slemrod *et al.* 2001, Kleven *et al.* 2011, Pomeranz 2013).

Fourth, we provide direct evidence of a particular form of intrinsic motivation: a duty to obey the law. Our identification is based on sharp bunching at *exact* compliance in the zero deterrence baseline, a finding that can only be explained by a sharp spike in intrinsic motivation at the point of exact compliance. As we detail later, this effect is naturally interpreted as duty-to-comply preferences, in contrast to guilt/shame or a desire to contribute to the public good as those would create different patterns in the data. While duty motives have been much discussed in the literature (Scholz and Pinney 1995, Andreoni *et al.* 1998), we are not aware of any previous non-parametric evidence of such effects.

Finally, recognition through social and monetary rewards for compliance has fundamentally different effects on baseline donors (who *increase* their payments) and baseline evaders (who *further decrease* their payments). Hence, whether social recognition from tax compliance raises or reduces tax payments hinges on what motivates taxpayers in the first place, with positive effects

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[2]Here we build on the bunching approach developed by Saez (2010), Chetty *et al.* (2011), and Kleven and Waseem (2013) to take advantage of the randomization of the notch.

on the intrinsically motivated and negative effects on the extrinsically motivated. A natural interpretation of this finding is that rewarding taxpayers for contributing to the public good (rather than punishing them for not paying their taxes) highlights the *voluntary* aspect of a poorly enforced tax system (and so may affect donor types positively) and at the same time downplays the *mandatory* aspect of a legally binding tax system (and so may affect evader types negatively).

As discussed later, our specific treatments comparing increased deterrence, social *and* monetary rewards, provide new insights on whether intrinsic motivations are crowded-out by extrinsic incentives (Gneezy *et al.* 2011), and whether intrinsic motivations for tax compliance are driven more by social-image or self-image concerns (Fehr and Falk 2002, Benabou and Tirole 2003, 2006).[3]

Although there is an enormous empirical literature on tax evasion (as surveyed by Andreoni *et al.* 1998, Slemrod and Yitzhaki 2002, Slemrod and Weber 2012), our study provides the first direct evidence of intrinsically motivated tax compliance and the interplay between individual motivation and deterrence or social recognition. Previous work has tried to uncover intrinsic motivation from compliance responses to letters of moral appeal (Blumenthal *et al.* 2001, Fellner *et al.* 2013), but changing behavior through such cheap talk is difficult and it is therefore not surprising that those studies find zero effect. Our approach relies instead on identifying intrinsic motivation through revealed preference in a zero-enforcement baseline and studying its interaction with policies that could be implemented (such as deterrence and recognition).

The paper is organized as follows. Section 2 describes the local church tax in Germany, emphasizing the features that are crucial for our conceptual and empirical approach. Section 3 develops a warm-glow theory of tax compliance. Section 4 describes the experimental design, data and empirical approach, including how we use pre-treatment behavior to define baseline compliance types (evaders, compliers, donors). Section 5 presents empirical results on the compliance responses to deterrence and social incentives and the interplay with baseline compliance type, mapping the results back to the conceptual framework. Section 6 concludes. The Appendix presents additional details related to the data and presents further robustness checks.

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[3]On the issue of intrinsic motives being crowded-out by extrinsic incentives, the field evidence across settings remains mixed, with some studies finding such crowd-out (as reviewed in Gneezy *et al.* 2011) and others not (Dal Bo *et al.* 2013, Ashraf *et al.* 2014 and Chetty *et al.* 2014). On the second issue, evidence of social image concerns driving charitable contributions are found in Andreoni and Petrie (2004), Andreoni and Bernheim (2009), DellaVigna et al. (2012), Karlan and McConnell (2012), and Perez-Truglia and Cruces (2013), although our design probes this further by providing an experimental comparison of social and monetary rewards.

2 Institutional Background

The payment of church taxes is a legal obligation for all members of the Catholic and Protestant churches in Germany. Church taxes are well established, having evolved during the 19th century and been codified in the Weimar Constitution of 1919. The institution is also widespread: a similar system of church taxes also exists in Austria, Denmark, Finland, Iceland and Sweden.

In Germany two tiers of church taxes exist: at the federal state and the church district levels. The state church tax is collected by state tax authorities, corresponds to around 9% of income tax liabilities, and raises billions of euros annually for both the Protestant and Catholic Churches. The local church tax is collected by decentralized church authorities and is much smaller in size.[4] The focus of our study is the local church tax collected by the Protestant church in a large metropolitan area in Bavaria, covering 68 parishes that collectively comprise a Church District. By default, individuals baptized as Protestants are church members and therefore liable to pay the local church tax once they reach age 18. It is possible for individuals to opt-out of the church and thus remove any obligation to pay the local church tax.

The local church tax is an under-exploited source of revenue for local parishes: it currently contributes only around 13% of total revenues per member, but this is based on a baseline situation featuring weak enforcement and low compliance. As we document below, baseline compliance with the church tax is only around 20%. Assuming full compliance and no offsetting changes in other revenue streams, Church Districts could obtain as much as 47% of their revenues from the local tax. The funds raised within a given parish remain in that parish, and so tax payments can be thought of as contributing directly to the local public good of church services.[5]

We now describe three institutional features that are central to our study.

1. Tax base and tax schedule: the local church tax is a progressive income tax as shown in Figure A1. The schedule is a step function with an exemption level of €8,005 in annual income followed by six tax brackets in which the tax liability varies from €5 in the lowest bracket to €100 in the highest bracket. The tax base is a broad income measure (wages, business income, capital income, pensions, etc.) with no deductions. Importantly, the income components included in the church tax base are also taxable under the personal income tax and must be reported separately to state tax authorities. By defining the *true* taxable income for the church tax as *reported* taxable income for the personal income tax, the Church District is essentially leveraging on the far larger

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[4]Local church tax authorities exist in several German states, including Bavaria, Berlin-Brandenburg, Hesse, and Thuringia.

[5]Participation in church activities varies across parishes: between 0.83% to 8.75% of church members regularly attend church services. At Christmas participation rates rise to between 5.19% and 63.4%. The church also provides a series of social and outreach services to parish residents.

administrative capacity of the state tax authority. Reported taxable income might of course be subject to misreporting due to personal income tax evasion, but it is still defined as true income for the church tax. Given the magnitude of church tax liabilities compared to those for personal income tax, it is extremely unlikely that reported taxable income for the *personal* income tax is misreported due to a desire to evade the local *church* tax.

2. Tax collection and enforcement: the Church District mails a tax notification (shown in the Appendix) to all resident church members in May/June of each year in order to collect the local church tax. A bank transfer form pre-filled with the church's bank account information and the individual's local church tax number is attached to the notice. The mail-out asks church members to *self-assess* their income and taxes owed according to the tax schedule, and to transfer the appropriate amount to the church's bank account by September.[6] Although the church has the legal right to cross-check self-assessed income against information from personal income tax returns held by the state tax authorities (which would detect church tax evasion with certainty), they have never exercised this right in the past. In other words, prior to the treatments that we implement in our field experiment, there is zero deterrence in this tax system. We use this feature to pin down the share of tax payers that are intrinsically motivated.[7]

3. Mandatory taxes and voluntary donations: an important feature of this setting is that it is possible for individuals to *overpay* their tax liability. Unlike conventional taxes, overpayments are encouraged and not refunded to individuals. As all funds raised remain within the parish, we can think of such overpayments as charitable donations to the local public good of parish services. This feature of our setting allows for the coexistence of tax evaders (who pay less than their legal obligation) and donors (who pay more than their legal obligation). We use this feature to separately identify extrinsically and intrinsically motivated individuals, based on their *actual* past behavior in the baseline setting.[8]

We exploit all three institutional features for our conceptual and empirical analysis, which is focused on identifying the existence of extrinsically and intrinsically motivated taxpayers using the

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[6]Individuals who do not pay their taxes before the September deadline receive a reminder in October, requesting the transfer of the appropriate amount by the end of the calender year.

[7]There is no need to file a tax declaration when paying the local church tax. Hence there is no direct inter-linkage between the local church tax and filing for other legally required taxes. This reinforces the zero deterrence at baseline characteristics of our setting.

[8]Besides encouraging overpayments (donations), the social pressures to comply with church taxes are not very different from those related to standard personal income taxes: whether an individual makes a payment to the local church tax remains private information, and individual or aggregate information on compliance is not communicated within or across parishes. Finally, we note that the democratic participation of church members is largely limited to the election of members to local parish boards. Church members have little say in the tax collection practices of the Church District, which are subject to top-down oversight from the District Synod. Parishes with lower levels of compliance are not able to endogenously respond by improving tax collection methods.

zero deterrence baseline, and measuring the responses of each type to exogenous changes in tax salience, deterrence, and intrinsic motivations. Of course there is a potential trade-off with external validity: the features that make this setting so well-suited to study these research questions, are also features that distinguish our setting from conventional taxes such as the personal income tax. Due to these differences, our focus is mainly to provide *qualitative insights* on what motivates tax compliance, while such insights remain almost impossible to obtain based on the types of taxes typically examined.[9]

3 A Warm-Glow Theory of Tax Compliance

We develop a theory of tax compliance that unifies the standard model (Becker 1968, Allingham and Sandmo 1972) with the warm-glow model of public goods donations and pro-social behavior (Andreoni 1989, 1990, Benabou and Tirole 2006). Our framework embodies both extrinsic motives to pay taxes (through deterrence) and intrinsic motives to pay taxes (through warm-glow).[10]

We consider taxpayers with true income $\bar{z}$ facing a tax schedule $T(\bar{z})$ under truthful reporting. They decide on reported income z and tax payment $T(z)$ facing a probability of audit and penalty for evasion. Denoting consumption by c, utility is given by $u(c, T(z), s)$ where the inclusion of taxes paid $T(z)$ as an explicit argument captures warm glow of giving, or intrinsic motivations, and s is a preference parameter capturing the strength of intrinsic motivation. We assume the marginal rate of substitution between social and material benefits u'_T / u'_c is increasing in s and equal to zero for $s = 0$. We allow for heterogeneity in social preferences captured by a smooth cdf $F(s)$. The Allingham-Sandmo model of tax evasion corresponds to $s = 0$ in this framework.

Agents choose reported income z to maximize expected utility, which can be written as,

$$(1 - p) \cdot u(\bar{z} - T(z), T(z), s)$$

$$+ p \cdot u(\bar{z} - T(z) - I\{z \leq \bar{z}\}[1 + \theta][T(\bar{z}) - T(z)], T(z), s), \tag{1}$$

where p is the audit probability, θ is the penalty rate on tax evasion, and $I\{z \leq \bar{z}\}$ is an indicator for not overpaying taxes. We use the terms *evaders* for those who underpay ($z < \bar{z}$), *compliers* for those who pay exactly the right amount ($z = \bar{z}$), and *donors* for those who overpay ($z > \bar{z}$).

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[9] We later address sample selection issues. For example, one concern could be that church members represent a more intrinsically motivated sample than the overall population, but Kleven *et al.* (2011) find that Danish church members are *not* more compliant once we condition on deterrence (third-party information) variables. To further address sample selection, we later compare the characteristics of our sample to all tax filers in the metropolitan area we study, and to non-church members in the same area.

[10] Allingham and Sandmo (1972) considered a model allowing for social stigma associated with being caught evading taxes. The stigma idea is conceptually different from the warm glow idea we analyze here.

As described in Section 2, evaders and donors can coexist in our empirical tax setting.

Conditional on audit, evaders have to pay the unpaid tax topped up by the penalty rate θ, whereas donors are not reimbursed for the excess tax nor rewarded at rate θ. This is consistent with our empirical setting where overpayments are encouraged and defined as donations.[11] As described below, the asymmetric treatment of evaders and donors creates a *kink* in the consumption possibility set at the point of exactly truthful reporting $z = \bar{z}$, and so there will be excess bunching at exact compliance. Such bunching represents a compliance response to the penalty rate $1 + \theta$.

Finally, note that (1) specifies warm glow in terms of the *voluntary* tax payment $T(z)$ in both the audited and unaudited states. That is, an evader does not obtain warm glow from being forced to pay additional taxes $T(\bar{z}) - T(z)$ due to an audit. This formulation seems most consistent with the warm-glow idea.

Conditional on an interior solution to the agent's problem (either being a strict evader $z < \bar{z}$ or a strict donor $z > \bar{z}$), the choice of z is governed by the following condition,

$$(1 - p) u'_{c_N} + p \left(1 - I\left\{z \le \bar{z}\right\} [1 + \theta]\right) u'_{c_A} = E\left[u'_T\right], \tag{2}$$

where $u'_{c_N} \equiv u'_c(c_N, T(z), s)$ and $u'_{c_A} \equiv u'_c(c_A, T(z), s)$ denote marginal utilities of consumption in the non-audited and audited states, respectively, and $E\left[u'_T\right] \equiv (1 - p) u'_T(c_N, T(z), s) + p u'_T(c_A, T(z), s)$ is the expected marginal utility of tax payments due to warm glow. This condition highlights the trade-off between the material (consumption) costs and the social (warm glow) benefits of increasing tax payments. In the Allingham-Sandmo model of tax evasion (corresponding to $s = 0$), we have $E\left[u'_T\right] = 0$ and $I\left\{z \le \bar{z}\right\} = 1$ in which case (2) simplifies to the standard condition $u'_{c_A}/u'_{c_N} = (1 - p)/(p\theta)$.

In the following, we consider extensive and intensive margin compliance responses to extrinsic and intrinsic motivations. The *extensive margin* decision of evading, complying or donating is characterized as follows:

Proposition 1 (Extensive Margin) *Assuming smooth preferences, there exists cutoffs $\bar{s}_1, \bar{s}_2$ such that a fraction $F(\bar{s}_1)$ of the population are evaders ($z < \bar{z}$), a fraction $F(\bar{s}_2) - F(\bar{s}_1)$ are compliers ($z = \bar{z}$), and a fraction $1 - F(\bar{s}_2)$ are donors ($z > \bar{z}$). The cutoffs are given by,*

$$\frac{u'_T(\bar{z} - T(\bar{z}), T(\bar{z}), \bar{s}_1)}{u'_c(\bar{z} - T(\bar{z}), T(\bar{z}), \bar{s}_1)} = 1 - p[1 + \theta] \quad and \quad \frac{u'_T(\bar{z} - T(\bar{z}), T(\bar{z}), \bar{s}_2)}{u'_c(\bar{z} - T(\bar{z}), T(\bar{z}), \bar{s}_2)} = 1, \tag{3}$$

implying $\bar{s}_1 < \bar{s}_2$ and therefore excess bunching at $z = \bar{z}$ for any positive deterrence incentive,

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[11] In most tax settings, excess tax payments would be interpreted as mistakes and reimbursed if detected, which would require a modification of the specification above.

$p[1 + \theta] > 0$. *We have:*

(A) Extrinsic motivation: *stronger deterrence (larger p or θ) reduces $\bar{s}_1$ and does not affect $\bar{s}_2$. Hence, the fraction of evaders is decreasing, the fraction of compliers is increasing, and the fraction of donors is unaffected by deterrence.*

(B) Intrinsic motivation: *stronger warm-glow (larger u'_T all else equal) reduces both $\bar{s}_1$ and $\bar{s}_2$. Hence, the fraction of evaders is decreasing, the fraction of compliers is indeterminate, and the fraction of donors is increasing in warm glow.*

Proof: This follows from (2) and the fact that u'_T/u'_c is increasing in s. We also use the fact that there is a convex kink at $z = \bar{z}$ as the marginal deterrence incentive falls discretely from $p[1 + \theta]$ to 0.∎

This Proposition provides three predictions that we study empirically. First, there will be excess bunching at exact compliance and the amount of bunching is increasing in deterrence as measured by $p[1 + \theta]$. We are able to analyze such bunching as our linked administrative data records both reported and true incomes $(z, \bar{z})$, enabling us to precisely measure compliance. Second, the fraction evaders is decreasing in deterrence, whereas the fraction of donors is unaffected by deterrence (as the deterrence constraint is not binding for those individuals). Our field experiment probes this prediction by experimentally manipulating the audit probability p. Third, the fraction of evaders is decreasing while the fraction of donors is increasing in intrinsic motivation. Our field experiment probes this prediction by manipulating the salience of various intrinsic motivations to comply with the local church tax.

Our empirical setting starts from a baseline of zero deterrence in which the tax authority never audits $(p = 0)$. It is therefore useful to explicitly describe this equilibrium:

Corollary 1 (Zero Deterrence) *Under $p = 0$, we have $\bar{s}_1 = \bar{s}_2$ and therefore zero excess bunching at $z = \bar{z}$, assuming that preferences are smooth. Reported income z for each agent satisfies $u'_T/u'_c = 1$ (evaluated at consumption $\bar{z} - T(z)$), and so compliance in this equilibrium is driven solely by intrinsic motivation.*

The absence of bunching at $z = \bar{z}$ under zero deterrence assumes smooth preferences: a continuous utility function $u(\cdot)$ and a smooth distribution of s. However, individuals might have discontinuous preferences for exact compliance, naturally driven by a duty to obey the law, in which case there would be bunching even under zero deterrence. Given our data enables us to precisely measure compliance in a zero deterrence baseline, we are able to empirically study whether such *intrinsically motivated bunching* exists and so estimate the importance of intrinsic motivation to obey the law exactly. For future reference, we remark the following:

Remark 1 (Duty to Obey the Law) *Excess bunching at exact compliance ($z = \bar{z}$) under zero deterrence ($p = 0$) must reflect discontinuous intrinsic motivation to exactly comply with the law, which we label a "duty to obey the law".*

Having characterized the extensive margin decision to become an evader, complier or donor, we now turn to the *intensive margin* decision within each group. For this purpose, it is helpful to state the following (natural) assumption on preferences:

Assumption 1 *The MRS between consumption in the audited and non-audited states u'_{c_A}/u'_{c_N} and the MRS between warm glow and consumption $E[u'_T]/u'_{c_N}$ are both decreasing in the tax payment $T(z)$.*

This assumption is consistent with, but stronger than, concavity of the utility function ($u''_{cc}, u''_{TT} < 0$). That is, while concavity by itself creates the effect in Assumption 1, there could be an offsetting effect under either substitutability ($u''_{cT} < 0$) or complementarity ($u''_{cT} > 0$) between consumption and warm glow. For example, while higher tax payments directly reduce u'_{c_A}/u'_{c_N} by moving consumption from the non-audited to the audited state, the larger warm-glow benefits will have an indirect effect on u'_{c_A}/u'_{c_N} provided that u''_{cT}/u'_c is different between the two states (which depends on a *third-order* derivative of the utility function). Assumption 1 rules out situations where the indirect effect goes against the direct effect and is strong enough to overturn it.[12]

With this assumption, we are able to state the following result on the intensive margin:

Proposition 2 (Intensive Margin) *Under Assumption 1, we have:*

*(A) **Extrinsic motivation:** stronger deterrence (larger p or θ) increases reported income z for evaders ($s < \bar{s}_1$), while it does not affect reported income z for donors ($s > \bar{s}_2$).*

*(B) **Intrinsic motivation:** stronger warm-glow (larger u'_T other things equal) increases reported income z for both evaders and donors ($s < \bar{s}_1$ and $s > \bar{s}_2$, respectively).*

Proof: The evader results follow from (2) for $I\{z \leq \bar{z}\} = 1$ and Assumption 1. The donor results follow from (2) for $I\{z \leq \bar{z}\} = 0$ in which case $u'_{c_N} = u'_{c_A} = u'_c(\bar{z} - T(z), T(z), s)$ and $E[u'_T] = u'_T(\bar{z} - T(z), T(z), s)$.■

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[12]Formally, for the MRS between consumption in the audited and non-audited states u'_{c_A}/u'_{c_N}, the effect of $T(z)$ coming through warm glow (holding consumption c_A, c_N fixed) is given by

$$\frac{\partial}{\partial T}\frac{u'_{c_A}}{u'_{c_N}}\bigg|_{c_A, c_N} = \left[\frac{u''_{c_A T}}{u'_{c_A}} - \frac{u''_{c_N T}}{u'_{c_N}}\right]\frac{u'_{c_A}}{u'_{c_N}},$$

where $u''_{c_A T} \equiv u''_{cT}(c_A, T(z), s)$ and $u''_{c_N T} \equiv u''_{cT}(c_N, T(z), s)$. Assumption 1 implies that this effect (which depends on u'''_{cTc}) cannot be so strongly positive that it dominates the direct negative effect coming through diminishing marginal returns to consumption.

The difference in deterrence responses between evaders and donors follow from the fact that enforcement (extrinsic motivation) is not a binding constraint for the latter group.

On intrinsic motivations, some of the treatments are designed to shift the warm-glow from giving, $\Delta u'_T \neq 0$, such as those that provide social recognition from paying taxes. However, it is important to note that there is no reason to expect all individuals to respond similarly on the intensive margin to treatments aiming to shock their marginal intrinsic motivation. This is because the *exact form* that intrinsic motivation takes may vary across individuals, especially across individuals of different baseline types: evaders and donors.

For example, in relation to our treatments that emphasize social recognition for compliance, such recognition treatments highlight the voluntary donation aspect of an unenforced tax system (and so may affect donor types positively), but may at the same time downplay the morality problem of evading taxes (and so may affect evader types negatively). Being able to accurately measure baseline types of evaders and donors, and examine heterogeneous treatment responses across this dimension, is therefore a central methodological contribution of our empirical analysis.

4 Design, Data and Empirical Method

4.1 The Natural Field Experiment

The Protestant church mails out a tax notification to individuals liable for the local church tax in May/June of each year. In conjunction with the Church District, our field experiment manipulated the content of notifications sent in May 2012. Tax payments due are a function of individual taxable income in 2011, which is observed in our matched administrative records alongside the pre-treatment compliance behavior of individuals for up to four tax years: 2007-10. Mail-out recipients in May 2012 were randomly assigned either into a control group or one of 12 treatments.[13]

The Appendix shows the format and content of the mail-out letter for the control group (T1). The same mail-out design had been used in earlier years. This standard notification comprises a cover page (with the remittance slip at the foot of the first page) and an information leaflet about current church activities. The standard mail-out clearly states on the front page that, "the local church tax forms part of the general church tax", and that the "letter serves as a tax certificate". On the second page it makes precise that the tax is "a compulsory contribution" and explicitly lists the legal foundations for the tax. However, in other regards, the standard mail-out appears poorly

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[13]Following standard procedures in earlier tax years, a reminder was sent to non-payers in October 2012. The reminder letter is the same for all individuals and hence makes no mention of the original treatment assignment. The reminder sets a final payment deadline of December 31st 2012.

designed: important details such as the payment deadline and tax schedule are only mentioned on the second page.

The 12 treatments varied the mail-out design along three broad dimensions. The first group of treatments focus on raising the *tax salience* of the local church tax, and correcting for any *misperceptions* individuals might have on audit probabilities. The second group of treatments probe the *extrinsic motivations* of individuals, by varying the deterrence parameters through the suggestion of strictly positive audit probabilities, and an audit probability notch. The third treatment group probes the *intrinsic motivations* of individuals, by emphasizing social rewards for compliance, the public good nature of tax payments, social norms and moral appeal.

4.1.1 Treatment Group 1: Tax Salience and Misperception

In the tax salience treatment (T2), we made two simplifications to the mail-out design, as shown in the Appendix: (i) it is significantly shorter and further emphasizes the legal obligation to pay; (ii) payment deadlines and the tax schedule are presented on the cover page. All other aspects of the mail-out remained unchanged relative to the control group, including the payment deadline, the remittance slip provided, the accompanying information leaflet, the description of the legal foundations for the tax collection, and information on how the tax revenues are spent across church activities. All else equal, we might reasonably expect the tax salience treatment to have an impact on baseline evaders, rather than baseline compliers or donors, because some evaders might be simply misinformed about, or inattentive towards, some aspects of the church tax system, and can then be induced to pay with this simplified mail-out.

All subsequent treatments then vary *one paragraph* in this simplified and more salient mail-out. The Appendix shows where the additional paragraph is placed. In this context it is well known among tax payers that enforcement is lax. However, our next treatment corrects for any remaining misperception by making explicit that there is no enforcement of the tax. In our framework this misperception treatment (T3) corresponds to informing individuals that $p = 0$. This is communicated through the following paragraph in the mail-out:

"Please note that, according to Article 9 para. 4 of the Church Levy Collection Act, the Evangelical-Lutheran congregation can delegate the collection of the local church tax to the church tax authority. The church tax authority can officially assess your income. However, the Evangelical-Lutheran congregation does not make use of this option. There is no verification of church members' own income assessment."

As it is almost common knowledge that the local church tax is unenforced, we randomly assigned *twice* as many individuals to this treatment as for any other treatment to ensure we had statistical

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power to detect any updated beliefs over the audit probability p. The natural comparison group is with T2, the tax salience treatment.

We would expect responses to this treatment to vary across baseline types. For example, baseline compliers might have been paying the tax because they previously misperceived p to be far higher. By making explicit $p = 0$, the treatment eliminates any extrinsic motivation they might have had for paying, and they should now evade, all else equal. As the framework makes clear, once it is common knowledge that $p = 0$ then any tax payments made under T3 can be driven *solely* by some form of intrinsic motivation ($u_T' > 0$). Treatment T3 allows us to cleanly estimate this share of individuals. Moreover, as Remark 1 makes precise, if there is bunching at exact compliance even under a zero expected penalty, this can *only* be explained by a discontinuity in intrinsic motivation at exact compliance: what we label a *duty to obey the law*. We are thus able to probe the existence of such discontinuous preferences driving tax compliance in the field.

4.1.2 Treatment Group 2: Extrinsic Motivations

The second group of treatments suggest to mail-out recipients that the audit probability p is unconditionally set to some strictly positive value, namely (one of) $p = .1, .2$ or $.5$. These p-treatments are denoted T4, T5 and T6 respectively. This is communicated as follows:

"*Please note that, according to Article 9 para. 4 of the Church Levy Collection Act, the Evangelical-Lutheran congregation can delegate the collection of the local church tax to the church tax authority. The church tax authority can officially assess your income. In order to ensure a fair tax collection, we consider it necessary to verify the church members' own income assessment for every tenth [fifth, second] church member. In other words, the self-assessment of 10% [20%, 50%] of church members will be verified.*"

These treatments make clear that the church *has the legal right* to delegate tax enforcement to the state tax authorities, to whom a tax filer's income is known. These p-treatments were truthfully implemented in that the church did verify income self-assessments, but in practice no monetary penalty followed if the individual was caught misreporting. Like previous tax enforcement field experiments, we do not observe individual *beliefs* about penalties. These beliefs are particularly difficult to gauge in our context, because the zero-audit policy of the church implies that taxpayers have never had to face a penalty. Based on our conceptual framework, behavioral responses to $p > 0$ *must* be a response to a positive *expected* penalty, $p\theta > 0$. If agents believe that $\theta = 0$, they should not respond to these p-treatments. A belief that $\theta > 0$ may reflect not only expected monetary penalties, but also the hassle cost or mental cost of being caught cheating.

The natural comparison group for these p-treatments is the $p = 0$ treatment, so that we

pin down the precise comparative static impacts of deterrence through Δp, all else equal. On the extensive margin, Proposition 1A shows the fraction of evaders is decreasing, the fraction of compliers is increasing, and the fraction of donors is unaffected by deterrence. On the intensive margin of tax payments, Proposition 2A shows that increased deterrence increases reported income z for evaders, but has no impact for compliers or donors.

The final deterrence treatment is designed to probe the extrinsic motivations of individuals through the introduction of an audit probability notch (Treatment T7). Individuals face an audit probability of .5 if they pay less than or equal to €10, and face a zero audit probability otherwise, communicated as follows:

"*Please note that, according to Article 9 para. 4 of the Church Levy Collection Act, the Evangelical-Lutheran congregation can delegate the collection of the local church tax to the church tax authority. The church tax authority can officially assess your income. While there will be no verification of church members' own income assessment for payments above €10, there may be a verification of payments at €10 or lower. In order to ensure a fair tax collection, we consider it necessary to verify the church members' own income assessment for every second church member paying €10 or less. In other words, the self-assessment of 50% of church members paying €10 or less will be verified.*"

There are two natural comparison groups to this notch treatment: the T3 misperception treatment that sets $p = 0$, and the T6 treatment that sets $p = .5$ for all payments (not just those less than or equal to €10).

4.1.3   Treatment Group 3: Intrinsic Motivations

The third group of treatments probe the intrinsic motivations for giving. All are designed to shock the warm-glow of giving, u'_T, in some way to induce changes in behavior. The natural comparison group throughout is the T2 Tax Salience treatment, as any misperceptions on audit probabilities are the same in both T2 and the treatments described below. Central to these treatments are that they might induce different responses among baseline evaders and baseline donors, because these individual types are differently motivated to begin with. Baseline evaders are less intrinsically motivated, although not necessarily completely unmotivated: in particular, *partial* evaders who make some positive payment $(T(z) \in (0, T(\bar{z})))$ under zero deterrence must have some degree of intrinsic motivation. Furthermore, as discussed above, the exact form of intrinsic motivation may vary across partial evaders, compliers, and donors. Motivations such as guilt costs of evading, a duty to obey the law, or the desire to contribute towards a public good will vary across baseline types *and* are likely to interact differently with the intrinsic motivation

treatments that we implement.[14]

Across this group of treatments we emphasize different aspects of the intrinsic motivations to comply. The first treatment does so by providing compliers with social recognition (T8) through the possibility of their timely compliance being publicly announced in a local newspaper: this is an entirely social reward and leverages against intrinsically motivated individuals contributing to the tax because they have, for example, social image concerns or a desire to signal to others their conspicuous generosity (Benabou and Tirole 2006, Ellingsen and Johannesson 2014). This is communicated as follows:

"Among all individuals paying a local church tax of at least €5 no later than September 30, 2012, we will randomly draw 100 church members. If you belong to the church members drawn by lot we will contact you and ask you for your consent before publishing your name in a newspaper advertisement. With this advertisement, published in the [names of three local newspapers], we are going to thank the allotted church members by name for funding our work. Funds for financing the advertisement have been kindly founded to this end."

The next two treatments provide the opportunity for compliers/donors to be entered in *monetary* prize draws. There are two randomly assigned values of reward (€250 and €1000) that are denoted Treatments T9 and T10 respectively, and communicated as follows:[15]

"All individuals paying a local church tax of at least €5 no later than September 30, 2012 are going to take part in a lottery. From every 1,000 local church tax payers one will be drawn to win a prize of €250 [€1,000]. The prize has been kindly founded to this end."

Of course, these treatments offer entirely private rewards. If the intrinsically motivated are largely driven by concerns over self-image (rather than social image), then making explicit the private monetary benefits from compliance might reduce their warm-glow from contributing ($\Delta u'_T < 0$), all else equal. As such, it is useful to contrast the impacts of providing such private monetary rewards to the pure social reward treatment in T8.

The next treatment combines the social recognition and large monetary rewards, so that compliers/donors have the opportunity to be named in a local newspaper *and* to be entered in the higher valued prize draw. This treatment is denoted T11 and is communicated as follows:

"Among all individuals paying a local church tax of at least €5 no later than September 30, 2012, we will randomly draw 100 church members. If you belong to the church members drawn by

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[14]To be clear, treatments in the field experiment probe the motivations to comply at the margin. Individuals could have inframarginal motivations for compliance that we do no measure or shock.

[15]The winners of the social reward and monetary prize rewards were drawn by lot, before local church officials, in December 2012 and then immediately notified about their prize. Monetary prizes were paid in January 2013. The advertisement thanking church members for their local church tax payment was published in early 2013 (after the final payment deadline of December 31st 2012 so to avoid any impact on outstanding payments).

lot we will contact you and ask you for your consent before publishing your name in a newspaper advertisement. With this advertisement, published in the [names of three local newspapers], we are going to thank the allotted church members by name for funding our work. In addition, out of the 100 church members mentioned above, we will randomly draw 15 members who will each win a prize of €1,000. Funds for financing the advertisement and the prizes have been kindly founded to this end."

Our last two treatments mirror treatments implemented in Blumenthal *et al.* (2001). These stress a social norm related to compliance, and provide a moral appeal to comply based on emphasizing the local public goods that can be provided as a result. While Blumenthal *et al.* (2001) found such treatments to have limited impact, we revisit the issue by probing further whether there are heterogenous impacts across baseline extrinsically and intrinsically motivated tax payers. On social norms, our penultimate treatment provides individuals information on the average payments of those that made some *strictly* positive payment in previous tax year.[16] This social norm treatment is denoted T12 and is communicated as follows:

"In 2011, payers of the local church tax paid €31, on average."

Our final treatment on moral appeal emphasizes the social benefits of making a payment to the local public good of parish services (and specifically naming the parish the individual belongs to). This treatment is denoted T13 and is communicated as follows:

"With the local church tax you notably fund the work of your parish, the [PARISH NAME]."

The design of the field experiment is such that individuals expect others to have received similar tax notifications. This is important for the treatments utilizing social norms and moral appeal. While our conceptual framework interprets responses through some generalized shock to the warm-glow from giving ($\Delta u'_T \neq 0$), the underlying mechanism might also be driven by observationally equivalent changed beliefs over others' tax compliance that underlie intrinsic motivations.[17]

4.2   Data Sources

Our analysis exploits linked data that merges two individual-level panel data sets: Church District records on individual payments to the local church tax based on self-assessed income, $T(z)$, and administrative tax records containing the *true* taxable income of individuals ($\bar{z}$).

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[16]We might expect such norms treatments to be effective if individuals are conditional cooperators (Rabin 1998, Falk and Fehr 2002), or they have a preference for conformity (Bernheim 1994). Benabou and Tirole (2011) overview the evidence on the effective of such appeals in various contexts related to prosocial behavior. More recently, Hallsworth *et al.* (2013) provide evidence from a natural field experiment that providing information on norms and moral appeal accelerates actual payments among UK tax payers.

[17]Del Carpio (2013) presents direct evidence on the second channel using a field experiment on social norms related to the payment of property taxes in Peru, that also elicited post-treatment beliefs over compliance behavior.

The Church District's payment records cover payment years 2008-12, and they record the amount and date of tax payments for each year. Church payments in year t are based on taxable income in year $t-1$. Hence, in conjunction with the Church District and state tax authority, we have linked these data with administrative tax records for years 2007-11 using information on names, date of birth, and zip code. This data linkage allows us to measure the true taxable income of individuals (top-coded at €500,000), as well as individual characteristics (age, gender, marital status, sources of income etc.).[18],[19]

Our working sample is then 39,782 individuals that are matched from the Church District and tax authority records and were included in the field experiment that took place in the 2011 tax year. Table A1 presents evidence of the representativeness of our sample relative to other sub-groups of tax filers in 2007, the last year for which nationwide personal income tax statistics are available.[20] This shows that overall, there are relatively minor differences in gender, age, the presence of children entitled to child allowances, taxable incomes and income sources, between our sample (Columns 1a and 1b) and: (i) the general population in the same metro area (Columns 2a and 2b); (ii) non-church members in the same metro area (Columns 3a and 3b).

The other sampling concern relates to attrition from our linked panel. Individuals can attrit for multiple reasons: falling below the income threshold to be tax liable, relocating outside the Church District, not filing a tax return, or individuals might decide to opt-out of the Protestant church. This last cause of attrition might be of most concern for the representativeness of our sample and interpretation of our results. However, rates of attrition are relatively low: less than 3% of individuals attrit each year for *any* reason, and hence 87% of individuals are observed in *all* tax years 2007-11. In the Appendix and Table A2 we report formal evidence on the correlates of attrition, but summarize those findings as showing: (i) attrition is *uncorrelated* to treatment

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[18]Our administrative tax records allow us to observe tax compliance behavior across the income distribution in this large metropolitan area in Bavaria. As the lower portion of Figure A1 highlights: 29% of our sample have an income below €24,999 and so fall into the first two payment bins, while 13% of the sample has an income above €70,000 and lies in the highest payment bin.

[19]There are two restrictions on the data linkage. First, administrative income tax records are available only for those that file a tax declaration. In the metropolitan area our study is based in, 60% of Protestants file a tax declaration. Second, the tax base for the local church tax is *individual* taxable income. This raises an issue among joint filers: in the administrative tax records, individual shares of taxable household income are available only for joint filers who belong to different religious denominations. Hence we are forced to exclude married couples in which both spouses are Protestants, and on the basis of advice from the church we also excluded individuals 75 years or older from the field experiment.

[20]In Germany, individuals are obliged to file a tax return if they receive business income or income from self-employment: around 38% of the population files a tax return. Single filers comprise unmarried individuals and married couples who choose to file two separate tax returns. The vast majority of married couples are joint filers and benefit from the associated reduction in the progressivity of the personal income tax. One parent of each underage child is entitled to child allowances. Tax raising communities in Germany refer to religious communities that collect taxes within the scope of the personal income tax. The Protestant and Catholic churches are by far the largest tax raising communities and cover around 60% of the population.

assignment; (ii) there is no differential attrition across treatments by past compliance behavior. For the core empirical analysis, our working sample is based on those 89% of individuals (35,603) for whom we observe taxable income for up to four tax years (2007-10) and so can construct the most accurate measure of the individual's baseline type (namely whether they are extrinsically or intrinsically motivated).

Individuals were randomly assigned (within strata) to either the control group or one of the 12 treatments.[21] Table A3 presents evidence on the sample characteristics and balance across treatments. Around 51% of the sample are men, whose average age is 45; around 42% of individuals are married with around half of them having at least one child. The field experiment covers individual incomes from across the income distribution: in the sample median (mean) taxable income in 2011 is €33,000 (€42,000). Column 10 shows a joint F-test on the significance of the covariate set on being assigned to that specific group relative to the T1 control group (in brackets) and relative to T2 Tax Salience (in braces). The evidence suggests the samples are randomly assigned across treatments.[22]

4.3 Identifying Evaders, Compliers and Donors

Since we observe both actual tax payments $T(z)$ and true taxes owed $T(\bar{z})$, we can straightforwardly measure compliance in any tax year and thus identify whether an individual is an evader, complier or donor: *evaders* pay less than true taxes owed $(T(z) < T(\bar{z}))$; *compliers* pay exactly true taxes owed $(T(z) = T(\bar{z}))$, while *donors* pay more than their legally obliged to $(T(z) > T(\bar{z}))$. Based on these indicators, in the year of the field experiment we are able to estimate extensive margin responses to the experimental treatments and compare with the theoretical characterization of the extensive margin in Proposition 1.

Moving beyond the extensive margin responses to the treatments in the year of the field experiment, we reiterate that a key feature of our linked panel data is that we can build *baseline* measures of individual compliance behavior, utilizing up to four years of tax payment data from tax years 2007-10. We use this observed behavior to classify individuals into *baseline types:* evader, complier or donor. These then clearly proxy for an individual's underlying motivation to comply, namely

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[21]Two randomization strata were used: (i) the individual's local church tax bracket in 2011; (ii) the number of pre-treatment tax years the individual is observed for in the administrative records. This improves the balance across treatments in terms of taxpayer's true income and the accuracy of the baseline taxpayer type measure.

[22]The other key identifying assumption is that there are no spillovers across treatments. Three points bolster the credibility of our design with regards to this: (i) individuals in the Church hierarchy were excluded from the field experiment, including administrative staff, priests, and a few historically generous donors; (ii) there was no media coverage of the field experiment; (iii) we set up a telephone enquiry line for individuals to call in case they had any comments/queries after receiving their tax notification: this received 162 calls in total (corresponding to .34% of treated individuals), with queries mostly relating to the tax base.

whether they are extrinsically or intrinsically motivated. Proposition 2 predicts heterogeneous treatment responses on the intensive margin across these different baseline types.

While information on past behavior can obviously be combined in many ways to define types, we propose a simple approach based on individual behavior in the 2010 tax year, the tax year immediately preceding our field experiment. According to this typology, 79% of individuals are baseline evaders, 11% are baseline compliers, and 10% are baseline donors. Columns 12 to 14 in Table A3 show the samples across treatments to be balanced *within* each of these baseline types.

Using one year of data to classify individuals into baseline types is reliable because of the high degree of persistence in behavior of individuals across tax years. To see this most clearly, if we consider the balanced panel of individuals observed for *all* tax years 2007-10 and that are assigned to our control group: (i) evaders in tax year 2010 had on average been evading for 2.79 out of the previous three years, while compliers/donors in 2011 had on average been complying or donating for 2.09 out of the previous three years.[23] Table A4 provides formal evidence on the high degree of persistence in individual compliance behavior over time using a multinomial logit model. To summarize, we find: (i) the best predictor of current compliance type is lagged type: for example, those who evaded in 2010 are 87 times more likely to evade in 2011 relative to complying; (ii) most other covariates have no predictive power on being an evader or a donor relative to a complier.[24]

4.4 Tax Gaps and Donation Gaps

On the intensive margin, we are able to precisely measure the tax gap, or tax evasion rate, as we observe both actual payments and true income for any given individual i:

$$\text{Tax Gap}_i = \max \left\{ 0, \frac{T(\bar{z}_i) - T(z_i)}{T(\bar{z}_i)} \right\} \in [0, 1]. \tag{4}$$

However, as the theory only pins down the direction of change in the tax gap (not its magnitude), we also consider a slightly cruder outcome on the intensive margin: a dummy variable equal to one simply if the individual *increased* their payment over their average payment in all pre-treatment tax years. As emphasized throughout, a unique feature of this setting is the coexistence of evaders

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[23]We also probed the data for specific inter-temporal tax payments patterns. For example, if there are high transactions costs of compliance, individuals might choose to periodically pay large amounts, and so over time on average, they would pay the total payment owed. To check for this we examined whether those that donated in any given tax year are significantly less likely to make a payment in the following year: we find no evidence for this pattern of tax payments.

[24]The few exceptions are that older individuals are significantly more likely to donate, and those with wage income or liable for trade tax (a proxy for being an entrepreneur) are significantly more likely to evade, all else equal. However, the marginal impacts of these significant covariates are however orders of magnitude smaller than the impact of the individual's own past compliance behavior.

and donors: as donors overpay by definition their tax gap is always zero. The more informative outcome to consider for donors is the 'donation gap' defined for individual i as:

$$\text{Donation Gap}_i = \max\left\{0, \frac{T(z_i) - T(\bar{z}_i)}{T(\bar{z}_i)}\right\} \in [0, \infty).$$ (5)

This measure allows us to pick up whether treatments cause donors to decrease their donations (and hence reduce their donation gap), or to increase their donations further beyond what they are legally obliged to pay. In the empirical application we cap the donation gap at two (trimming 1.5% of observations), to mitigate against our results being driven by outliers.

4.5 Empirical Method

Guided by Proposition 1, on the extensive margin of whether individual i is an evader, complier or donor in response to their treatment, we estimate a multinomial logit model for choice type k (evader, complier, donor) as follows:

$$\text{Prob}(O_i = k) = \frac{\exp(\gamma_k \mathbf{I}(T_{i1} = j) + \Sigma\beta_k \#O_{ik,pre} + \lambda_{sk})}{\sum_k \exp(\gamma_k \mathbf{I}(T_{i1} = j) + \Sigma\beta_k \#O_{ik,pre} + \lambda_{sk})},$$ (6)

where $\mathbf{I}(T_{i1} = j)$ is an indicator equal to one if i is assigned to treatment j rather than some comparison treatment c, $\#O_{ik,pre}$ is the number of times individual i has been of type k (evader, complier, donor) in the pre-treatment tax years, and λ_{sk} are dummy variables for the randomization strata. Robust standard errors are calculated, and we report relative risk ratios (RRR), that are defined as follows:

$$\frac{\dfrac{\text{Prob}_{(O_i=k|\mathbf{I}(T_{i1}=j))}}{\text{Prob}_{(O_i=complier|\mathbf{I}(T_{i1}=j))}}}{\dfrac{\text{Prob}_{(O_i=k|\mathbf{I}(T_{i1}=c))}}{\text{Prob}_{(O_i=complier|\mathbf{I}(T_{i1}=c))}}} = \frac{\dfrac{\text{Prob}_{(O_i=k|\mathbf{I}(T_{i1}=j))}}{\text{Prob}_{(O_i=k|\mathbf{I}(T_{i1}=c))}}}{\dfrac{\text{Prob}_{(O_i=complier|\mathbf{I}(T_{i1}=j))}}{\text{Prob}_{(O_i=complier|\mathbf{I}(T_{i1}=c))}}},$$ (7)

This is interpreted as the probability of being complier type-$k \in \{evader, donor\}$ relative to the probability of being a complier (the comparison group), when assigned to treatment j relative to when assigned to the comparison treatment c. We therefore report if the RRR is significantly different from one.

Proposition 2 focuses on the intensive margin responses *conditional* on a given type of extensive margin response (evader, complier or donor). This margin cannot be directly estimated because of standard selection concerns: conditioning on the extensive margin response when attempting to estimate the intensive margin response only generates consistent estimates under strong assumptions, that our conceptual framework highlights are unlikely to hold. Hence we estimate the

total response of individuals to each treatment, that corresponds to a combined treatment effect capturing two channels: (i) the tax payments made among those induced to change their extensive margin response by the treatment; (ii) intensive margin changes in tax payments in response to the treatment among those whose extensive margin choice of evading/complying/donating is unchanged. These total responses are estimated using the following OLS specification,

$$y_{i1} = \alpha + \gamma \mathbf{I}(T_{i1} = j) + \theta \bar{y}_{i,pre} + \lambda_s + \varepsilon_{i1}, \tag{8}$$

where y_{i1} is outcome y for individual i post-treatment (where all outcomes are defined in the subsection above), $\mathbf{I}(T_{i1} = j)$ is as defined above, and $\bar{y}_{i,pre}$ is i's average outcome pre-treatment. Controlling for pre-treatment behavior improves the efficiency of our parameter of interest, $\widehat{\gamma}$ (McKenzie 2012). λ_s are strata and parish fixed effects, and robust standard errors are calculated.

$\widehat{\gamma}$ is the estimated treatment effect of being assigned to treatment j relative to some comparison treatment group c. For the total response results in each table, we report: (i) the average outcome in the relevant comparison group: $E[\bar{y}_{i1}|T_{i1} = c]$; (ii) the treatment effect (and its standard error) scaled as a percentage of this average in the comparison group: $\frac{\widehat{\gamma}}{E[\bar{y}_{i1}|T_{i1}=c]}$.[25]

5 Results

5.1 Compliance Under Zero Deterrence

We begin our empirical analysis by taking advantage of a unique aspect of our setting: that we can accurately measure tax compliance in a baseline with zero deterrence. If zero deterrence is common knowledge (as is confirmed explicitly using the T3 Misperception treatment below), then there should be zero compliance in the absence of intrinsic motivation among tax payers. To provide insights on this, Table 1 and Figure 1 consider compliance behavior using data on the T1 Control group from the field experiment.

Three observations are of note. First, a significant fraction of individuals comply in the zero deterrence baseline: 20.9% of individuals make a payment greater than or equal to their true liability, while the remaining 79.1% of individuals make a payment smaller than their true liability. We refer to the former group as intrinsically motivated compliers/donors (shown in Column 1), and refer to the latter group as extrinsically motivated evaders (shown in Column 2). Second,

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[25] Our linked data allows us to measure payment responses over the entire year from the May tax notification. Hence our treatment responses should be interpreted as changes in the *total* payment that individuals make, *not* merely bringing forward in time the payments that would have been made later in the tax year in any case (accelerated revenue). Indeed, we note that our treatments did not significantly alter the timing of payments made relative to the control group.

among the extrinsically motivated, 91.9% of them are *full* evaders and pay zero tax (those with $s \leq 0$ in the theoretical model), while the remaining 8.1% are *partial* evaders and pay some tax (those with $s \in (0, \bar{s}_1)$). Given the vast majority of evaders pay nothing, the tax gap for evaders is 96.3%, close to its maximum possible value. Third, among the intrinsically motivated, 55.5% are exact compliers (those with $s \in [\bar{s}_1, \bar{s}_2]$) and 44.5% are donors (those with $s > \bar{s}_2$). Among donors, the average donation gap is 47.1%, highlighting the considerable degree of overpayments among such intrinsically motivated types.[26]

This set of findings is illustrated starkly in Figure 1, which shows baseline distributions of payments made versus payments owed for the full sample, evaders, compliers, and donors. It also shows the aggregate tax gaps (measured in money and people terms) for each sample.[27]

The implications of these findings for the compliance puzzle debate in public economics are interesting: in our setting, the majority behave as rational, extrinsically motivated individuals. Almost 80% of all individuals evade and 73% fully evade, and so the Becker-Allingham-Sandmo framework is 70-80% correct. At the same time, there coexists a substantial proportion of individuals among whom some degree of intrinsic motivation drives compliance behavior: about 20% comply or overpay and about 27% pay at least something even though the tax system is completely unenforced. Hence, both sides of the compliance puzzle debate may feel justified: the Becker-Allingham-Sandmo model is a good approximation for the behavior of 70-80% of individuals in our setting, but it does leave out a non-trivial element of intrinsic, non-pecuniary motivations for tax compliance that drive the behavior of the remaining 20-30%.[28]

5.2   Tax Salience

Panel A of Table 2 presents the results of the T2 Tax Salience treatment. The format in which nearly all our results tables are constructed is as follows. Columns 1a and 1b show extensive

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[26]This rate of donations to the local church tax are far higher than those typically observed in large-scale field experiments on charitable giving, where response rates typically vary between 2% and 5% for fundraising campaigns, despite those campaigns often being targeted to those with affinity towards the charitable cause (Karlan and List 2007, Huck *et al.* 2014).

[27]Figure 1A shows payments across all individuals: a mass point of zero payment is evident, as are smaller mass points at each level of tax payments owed according to the tax schedule. Figure 1B shows the distribution of tax payments among evaders, where by definition the people tax gap is 100%. Figure 1C shows the distribution of tax payments among compliers: by definition, payments are made only at values of the tax schedule and the people and money tax gaps are zero. In Figure 1D we see clearly that a non-trivial proportion of donors give at least the contribution due in the highest tax bin of €100.

[28]Our data allows use to use observed baseline behaviors to define individual tax payer types. An alternative methodological approach is utilized by DellaVigna *et al.* (2012): they combine a natural field experiment and a structural model to estimate the share of potential donors to a charitable cause that are intrinsically motivated, or motivated through social pressures (a form of extrinsic motivation). Despite their very different setting, they report a quantitatively similar share of individuals being extrinsically motivated to give (75%) as we find in our zero deterrence baseline.

margin effects based on the multinomial logit model (6), where relative risk ratios (RRR) are reported and the omitted base category is exact compliance. A relative risk ratio below (above) one corresponds to a reduced (increased) probability of being an evader or donor, relative to being an exact complier. The next four Columns show total response effects, distinguishing between baseline evaders (the extrinsically motivated) in Columns 2a and 2b, and baseline compliers/donors (the intrinsically motivated) in Columns 3a and 3b. We consider two total response outcomes: the probability of increasing tax payments and the size of the tax gap (donation gap) for evaders (compliers/donors). Those two outcomes generally yield consistent results, but vary with respect to power in some treatments. As all total responses are benchmarked against the level of the outcome in the comparison group, at the foot of each panel in Columns 2a-3b, we show the relevant outcome *level* in the comparison group. In Panel A on the Tax Salience treatment, the comparison is the T1 Control group.

On the extensive margin, we see from Column 1a that tax salience significantly reduces the probability of being an evader: an individual is only 70.6% as likely to evade relative to complying when assigned to the tax salience treatment rather than to the control group. The point estimate on being a donor is 85.6%, suggesting that tax salience also reduces the probability of donations, although this effect is not significant at conventional levels.[29] Overall, the evidence shows a strong tendency for the type distribution of individuals to become concentrated at exact compliance under the tax salience treatment.

On the total response, we see strongly heterogenous effects of tax salience depending on individuals' baseline type, a theme that will persist across many of the treatments we consider, and highlighted by the conceptual framework. Among baseline evaders, the tax salience treatment raises the likelihood of increased tax payment by 64.8% and reduces the size of the tax gap by 3.4%. These effects are highly significant and quantitatively large. Among baseline compliers/donors on the other hand, the tax salience treatment has no significant impact on total response behavior, and the point estimates on increased payment (negative) and donation gap (positive) are inconsistent. This set of findings is very robust to changes in the empirical specification (8) as we document in Appendix Table A5.[30]

To probe further what drives the total response among baseline evaders, Figure 2A shows the distribution of the tax gap in the tax salience group relative to the control group, for baseline evaders. More precisely, we show the difference in tax gap densities between the tax salience

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[29] A Chi-squared test on the equality of the RRRs in Columns 1a and 1b rejects the null of equality [p-value .012].

[30] As we describe in detail in the Appendix, Table A5 shows that our findings are robust to: (i) unconditionally estimated treatment effects; (ii) controlling only for randomization strata; (iii) excluding controls for pre-treatment behaviors; (iv) additionally controlling for the full set of individual controls shown in the balancing Table A3; (v) restricting the sample to the balanced panel of individuals observed in all tax years 2007-10.

and control groups in bins of 10%-points. We see that there is a large increase in tax gaps of 0% (i.e. perfect compliance) in the tax salience group relative to the control group, and a corresponding large decrease in tax gaps of 100% (i.e. full evasion). In other words, the total response to the tax salience treatment among baseline evaders is largely driven by such individuals changing their behavior along the extensive margin: from being full evaders to being exact compliers.

Taken together, the results of the tax salience treatment imply that a considerable degree of tax evasion may be due to the complexity of tax notifications. This finding contributes to a nascent empirical literature examining the importance of tax salience in the field (Chetty *et al.* 2009, Finkelstein 2009, Chetty and Saez 2013). Although not part of our modelling framework, these findings can be couched in the notion that the complexity of a decision making environment drives status quo bias (Kahneman *et al.* 1991) or that subjects can only take a small number of tax rules into account (Eliaz and Spiegler 2011). Either interpretation would be consistent with the high degree of persistence in compliance behavior over pre-treatment tax years documented in Table A4 for example.

5.3   Misperception

The notion that baseline compliance with the church tax represents intrinsic motivation relies on taxpayers being aware that there is zero deterrence. We now directly test this assertion using the T3 Misperception treatment where we make explicit that $p = 0$. Recall that on all other dimensions, this treatment is identical to the T2 Tax Salience letter, so that is the natural comparison group. Panel B of Table 2 shows the results.

Columns 1a and 1b show that on the extensive margin, correcting potential misperception has small and statistically insignificant effects on behavior: individuals are no more likely to evade (nor less likely to donate) when they are explicitly told that there is zero deterrence. These insignificant impacts are unlikely to be driven by lack of power, given that twice as many individuals were assigned to the T3 Misperception treatment as to other treatments. On the total response, while the misperception treatment has no significant impact on the intrinsically motivated, it does have a small (but statistically significant) impact on the extrinsically motivated: baseline evaders significantly increase their tax gap by 1.41% when receiving the zero-deterrence treatment.[31] This response among evaders is reassuring as it suggests that the notification letters are viewed as

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[31]Figure 2B then again makes precise where this effect is coming from: considering the difference in densities between the tax gap distributions of the T3 Misperception treatment and the T2 Tax Salience treatment, we see the effect is mostly driven by baseline evaders turning to full evasion once it is stated on the tax notification letter that $p = 0$. However, given the insignificant extensive margin impact of the T3 Misperception treatment, the total effect is also in part driven by purely intensive margin changes in tax gap among *partial* evaders.

authentic and credible by individuals: they evade to a greater extent when in receipt of the notification. Still, the overall effect of making zero deterrence explicit is quantitatively small: our estimates imply that correcting potential misperception would shift the average tax gap in the population (evaders and donors) by less than a percentage point.

These findings confirm that compliance in the zero deterrence baseline (Section 5.1) is virtually unaffected by misperception and therefore must be intrinsically motivated. That there is little misperception at baseline is not very surprising: the complete absence of enforcement in this established tax system is unlikely to go unnoticed, especially since this has been the status quo for a long time. While these findings are important for ruling out misperception as a confounder in our setting, they do not necessarily imply that misperception is a non-trivial issue in *other* enforcement settings. In settings with non-zero deterrence, given that deterrence strategies are typically confidential, there remains scope for misperception among taxpayers (Scholz and Pinney 1995, Chetty 2009, Del Carpio 2013).

5.4 Audit Probabilities

5.4.1 Uniform Audit Probabilities

Table 3 documents treatment responses to strictly higher audit probabilities as communicated by the tax notification letters T4-T6. These p-treatments inject uniform audit probabilities of $p = .1$, .2, or .5 into the zero enforcement baseline. To make the variation completely unambiguous and increase power, we compare the T4-T6 positive p-treatments to the T3 Misperception treatment in which $p = 0$. This eliminates noise from idiosyncratic variation in perception. If individuals are extrinsically motivated to comply as in the standard Becker-Allingham-Sandmo framework, then they should respond to these treatments in entirely predictable ways on the extensive and intensive margins as described in Propositions 1A and 2A.

In Panel A of Table 3 we first consider the positive p-treatments pooled together. On the extensive margin, Column 1a shows that deterrence significantly reduces the likelihood of evading: an individual is only 76.1% as likely to evade as she is to comply when assigned to a $p > 0$ treatment relative to the $p = 0$ treatment. In contrast, Column 1b shows that deterrence has no significant impact on the likelihood of donating. Taken together, these results imply that deterrence moves individuals from evasion to exact compliance without affecting the share of donors, a pattern of responses that exactly replicates the predictions in Proposition 1A.

On the total response, Columns 2a-2b show that baseline evaders are significantly impacted by deterrence: pooling p-treatments, they are almost 30% more likely to increase payments and their tax gap falls by 2.81%. Columns 3a-3b, on the other hand, show that baseline compliers

and donors are not significantly impacted by deterrence. These results are again consistent with our conceptual model, which predicts positive deterrence effects on the extrinsically motivated and zero deterrence effects on the intrinsically motivated for whom enforcement is not a binding constraint. Figure 2C again digs deeper by showing the distributional effects of the treatment: we see that the reduction in tax gap is mostly driven by baseline evaders turning fully compliant.

Panel B of Table 3 shows separate effects for each p-treatment. These results largely replicate the earlier findings qualitatively, but reveal the additional insight that the deterrence effects are quite similar across treatments T4 to T6. In fact, we cannot reject the null of equal treatment effects of T4 to T6, as reported at the foot of Panel B. This lack of gradient could be an artefact of how individuals perceive audit-threat letters like T4-T6: they may respond to the general message of stronger deterrence rather than the specific probability provided. Audit probabilities communicated through such letters are likely to be perceived differently than audit probabilities inferred from actual audit experiences over time. This is of course a generic issue for all tax enforcement experiments, not just ours. In the following section, we consider a different kind of audit-threat letter than what has been considered in the previous literature—one involving an audit notch—which works very powerfully and suggests that there *is* a gradient.

A final point to emphasize relates to the lack of response to these deterrence treatments among the baseline intrinsically motivated. While this is in line with the general conceptual framework laid out above, the finding also helps to shed light on other more specific models of intrinsic motivation. A leading explanation has been that such prosocial behaviors are driven by image concerns (Gneezy and Rustichini 2000, Fehr and Falk 2002, Benabou and Tirole 2006), so that individuals give because it allows them to signal (to others or themselves) their good type. In our design, if such intrinsically motivated individuals know that under the p-treatments, other individuals are now motivated to pay because of increased deterrence, this could potentially crowd out their own intrinsic motivation to comply because it creates doubt about any given individual's true motive for compliance. Our results suggest no such strong crowd out among the intrinsically motivated exists in this setting. We return to this issue when we later consider the impacts of treatments that provide social and monetary rewards for compliance.[32]

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[32]Evidence on social image concerns driving pro-social behavior is foundby Lacetera and Matis (2010), Harbaugh (1998), and Ariely *et al.* (2009). Gneezy *et al.* (2011) review the evidence on the extrinsic-intrinsic crowd out hypothesis, and Frey (1997) provides a review of the evidence specifically in the context of tax compliance. On the other hand, there are other field settings in which the experimentally induced provision of extrinsic incentives has been found to lead to no crowding-out of intrinsic motivations, including Dal Bo *et al.* (2013), Ashraf *et al.* (2014) and Chetty *et al.* (2014).

5.4.2 Notched Audit Probabilities

We now consider compliance responses to a notched audit probability as communicated by the tax notification letter T7. This letter announces $p = 0.5$ for payments less than or equal to €10 and $p = 0$ for payments above €10. Such a notch provides a strong incentive for individuals who would otherwise pay less than or equal to €10 to pay just above €10, thereby creating a hole in the payment distribution below the cutoff and excess bunching in the payment distribution just above the cutoff. The theory of notches and how to use them to estimate behavioral responses has been developed by Kleven and Waseem (2013). Here we build on their methodology by taking advantage of the fact that the notch is randomized.

The top panels of Figure 3 illustrate conceptually how individuals should respond to notches by comparing (hypothetical) density distributions of payments for individuals in the audit notch treatment group (solid red line in Panel A) and the control group (dashed black line in Panel A). The density for the audit notch group features missing mass at and below the cutoff along with excess bunching just above, whereas the density for the control group is smooth around the cutoff as they do not face the notch. Panel B shows the *difference* in densities between the treatment and control groups: this difference will be zero above the bunch due to random assignment.

The bottom panels of Figure 3 show empirical density differences between the audit notch treatment group and different comparison groups. The comparison group in Panel C is the T2 Tax Salience treatment, while the comparison group in Panel D is the T3 Misperception treatment. Since the raw distributions are lumpy due to the fact that most individuals pay in one of the statutory tax bins (0, 5, 10, 25, 45, 70, 100), we show the distributions in €5 bins with averaging of densities within statutory tax bins. The qualitative findings are similar for the two comparison groups and consistent with the conceptual model: there is a large hole in the bins below €10 and large excess bunching just above €10. The amount of excess bunching between €10-€25 (scaled by the average density in the comparison group below the notch) is shown by the estimate b, with bootstrapped standard errors as in Chetty *et al.* (2011) and Kleven and Waseem (2013). When comparing to the tax salience treatment in Panel C, we have $b = 0.42$: the excess mass above the notch is 42% of the average density in the comparison group below the notch. When comparing to the zero audit probability treatment in Panel D, effects are even stronger: the excess mass above the notch is 62% of the average density in the comparison group. These bunching estimates are strongly significant, much more so than the uniform audit probability treatments considered above (and in the previous literature). That is, randomizing a notched audit probability vastly increases power compared to conventional randomizations of uniform audit probabilities.

Table 4 digs deeper by comparing the T7 Notched Audit Probability treatment (with $\Delta p = 0.5$

below a cutoff) to the T6 Uniform Audit Probability (with $\Delta p = 0.5$ everywhere). Columns 1a-1b consider impacts on tax payment, while the next three Columns (2a-2c) consider impacts on the probability of paying. The comparison group is the T3 Misperception treatment (with $p = 0$) as in Figure 3D. Column 1a starts by considering the *total* average treatment effect of the notched and uniform audit probabilities. The effects are roughly similar in size (slightly larger for the notch) and strongly significant for both treatments. However, the audit notch estimate obtained this way is attenuated, because it does not account for the fact that individuals initially above the cutoff (where p remains zero) are untreated. Hence, Column 1b uses the bunching estimate in Figure 3D to obtain the correct *local* average treatment effect on tax payments.[33] The estimated audit notch impact of 45% constitutes the correct comparison with the uniform audit probability impact of 29%, and so the notched audit-threat letter induces a much stronger response than the uniform audit-threat letter. Columns 2a-2c probe further by considering impacts on the probability of paying in different ranges (any positive amount, more than €10, and between €15-€30). These estimates confirm that the effects of the uniform audit-threat letter are always smaller and not as strongly significant as the notched audit threat letter.

5.5   Penalties Versus Duty to Comply

As shown in our conceptual framework, the asymmetric treatment of evaders (who face an expected penalty of $p[1 + \theta]$ at the margin) and donors (who face no monetary incentive at the margin) produces a *kink* in the consumption possibility set at the point of exact compliance $T(z) = T(\bar{z})$. As a result, the model predicts excess bunching at exact compliance whenever the expected penalty $p[1 + \theta]$ is positive and, assuming *smooth* preferences, zero bunching when $p[1 + \theta] = 0$ (Corollary 1). If there is bunching at exact compliance even under a zero expected penalty, this can *only* be explained by a discontinuity in intrinsic motivation at exact compliance, what we naturally label a 'duty to comply' (Remark 1). Our setting is ideally suited for identifying both duty-to-comply preferences (bunching in the baseline of zero expected penalties) and compliance responses to penalties (*changes* in bunching when the positive p-treatments make the expected penalty positive). This constitutes among the first non-parametrically identified evidence of such effects.

The evidence is presented in Figure 4. The top panels show distributions of $T(z) - T(\bar{z})$: payment made minus payment owed, among those who pay a strictly positive amount in the T1 Control group (Panel A) and the T3 Misperception group (Panel B). Both of these groups face expected penalties $p[1 + \theta]$ equal to zero, but in the T3 Misperception group we ensure that

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[33]We use the bunching methodology developed by Saez (2010) for kinks and by Kleven and Waseem (2013) for notches.

there is no misperception about this. Both panels show extremely strong bunching precisely at $T(z) = T(\bar{z})$ despite no monetary incentive to locate there. Hence, individuals have a strongly discontinuous intrinsic motivation to be in exact compliance with the law, consistent with a sense of duty to obey the law. The bunch is not naturally explained by intrinsic motivations to contribute to the public good (as this should be smooth around exact compliance), although the significant amount of individuals above the kink point (the donors) suggests that such continuous warm-glow intrinsic motivations are also present.

The evidence in Figure 4B is also informative of whether intrinsic motivation is driven by guilt or shame: such motives create a *notch* in preferences at exact compliance (utility drops discretely as the individual starts evading). In contrast, duty-to-comply preferences create a *spike* in preferences at exact compliance. Both sets of underlying preferences should create a mass point at exact compliance, but if intrinsic motivations are drive by guilt/shame, this should create asymmetric bunching above and a hole below exact compliance. Figure 4B clearly shows the bunch appears symmetric, with a tendency for a hole on both sides of the spike. This evidence strongly favours duty-to-comply over fixed guilt/shame costs explaining these intrinsic motivations.

Having established a duty-to-comply effect, we explore if there is an additional effect of the expected penalty $p[1 + \theta]$. While we do not observe the perceived value of $1 + \theta$, we note that its natural minimum is equal to 1, corresponding to a situation where the audited taxpayer is asked to pay the evaded tax without imposing any additional penalty on top. Our findings are presented in Panel C, which shows the difference in the densities of $T(z) - T(\bar{z})$ between the T4-T6 Positive Audit Probability groups and the T3 Misperception group. A compliance response to penalties corresponds to a spike in this density difference around exact compliance. We do indeed find such a spike, which is indicative of a penalty effect. However, this kind of differential bunching analysis requires a lot of statistical power and the graph is too noisy to make this analysis fully compelling. This caveat notwithstanding, the evidence in Panel C represents the first non-parametric evidence of penalty responses in the field.

5.6   Intrinsic Motivation

5.6.1   Social and Monetary Rewards

The final batch of treatments probe intrinsic motivations for tax compliance. We first pool together those treatments that offer some reward to the individual for complying/donating. These treatments are of three types: (i) T8: providing compliers with a *social* reward through the possibility of their compliance being publicly announced in a local newspaper; (ii) T9-T10: providing compliers with *monetary* rewards through their entry into small/high valued prize draws; (iii)

T11: combined social and large monetary rewards in that compliers have the opportunity to be recognized in a local newspaper *and* to be entered in the high valued prize draw.

Table 5 presents the results using the same format as in Tables 2 and 3, with extensive responses shown in the first two columns and the heterogeneous total responses across baseline types shown in the remaining columns. Panel A considers the impact of the pooled reward treatments T8-T11, while Panel B shows the impacts of each individual reward treatment. In both panels the comparison group is the T2 Tax Salience treatment. When considering the total response among the intrinsically motivated, we focus on baseline donors (rather than combining donors and exact compliers). Given the earlier evidence that exact compliance is largely driven by (discontinuous) duty-to-comply motivation, focusing on strict donors allows us to study the implications of reward treatments on individuals whose behavior is driven by a form of (continuous) intrinsic motivation.

On the extensive margin, we see that the provision of rewards for compliance has little impact: individuals are no less likely to evade nor more likely to donate in the presence of such treatments relative to the T2 Tax Salience group. This is true both when pooling the rewards treatments and when considering them individually.

On the total response, the evidence shows starkly heterogenous impacts for baseline evaders (the extrinsically motivated) and baseline donors (the intrinsically motivated). Among baseline evaders, the provision of social and monetary rewards *further reduces* compliance: relative to baseline evaders in the T2 Tax Salience treatment, the likelihood of higher tax payments is significantly reduced and the tax gap is significantly increased. Panel B shows that these impacts arise from both the offer of a social reward (T8) and the offer of a monetary reward (T9-T10). However, the combined provision of social and monetary rewards (T11) has no significant impact on baseline evaders, and this null effect is driven by a smaller point estimate rather than a larger standard error. We can reject the null that treatments T8 to T11 have the same impact on the total response outcomes considered, as reported at the foot of Columns 2a-2b in Panel B.

Figure 2D allows us to probe further what drives these total response estimates for the extrinsically motivated. The figure plots the difference in densities of the tax gap distribution between the pooled rewards treatments T8-T11 and the tax salience treatment T2. This shows the total response documented in Table 5 is driven by baseline evaders turning to full evasion. This pattern of response to social and monetary rewards among baseline evaders is qualitatively similar to the pattern of response to the T3 misperception treatment that clarifies zero deterrence (as shown in Figure 2B).

Among baseline donors (intrinsically motivated), we see the *opposite* pattern of total response: Column 3a shows that such individuals are significantly more likely to increase their payments

(donations) in response to social and monetary rewards. As Panel B shows, this total response arises from the offer of both social and monetary rewards. Indeed, we cannot reject the null that the individual treatments T8 to T11 have the same impact. Column 3b shows the total response as measured by the donation gap to be weak. However, probing the data further and using an indicator equal to one if the donation gap increases, Column 3c reinforces the idea that social and monetary rewards for compliance further increase the already generous behavior of those identified to be intrinsically motivated in the zero deterrence baseline. Panel B again emphasizes that these impacts on baseline donors arise both from the offer of social rewards, monetary rewards, and their combination, although the provision of monetary rewards alone has a point estimate that is only half the magnitude of those treatments involving a social reward.

To map the results from the reward treatments back to our conceptual framework, we first note that rewarding taxpayers for contributing to the public good (rather than punishing them for not paying their taxes) highlights the *voluntary* aspect of a poorly enforced tax system. At the same time, such rewards downplay the *mandatory* aspect of a legally binding tax system.

For baseline evaders, by highlighting the voluntary aspect of tax compliance in this setting, the reward treatments induce qualitatively similar responses to those documented for the T3 Misperception treatment that made $p = 0$ explicit and thus clarified that tax payments are effectively voluntary.[34] Among baseline donors, the similarity in treatment responses from the separate provision of social and monetary rewards, or their combined provision, again suggests little evidence of intrinsic motivations being crowded-out by extrinsic incentives, in line with other recent field evidence (Ashraf *et al.* 2014, Chetty *et al.* 2014). Indeed, baseline donors respond to all the reward treatments as if they crowd-in intrinsic motivations (namely they respond to these treatments as if $\Delta u'_T > 0$). While the response to the T8 Social Recognition treatment is in line with their intrinsic motivations being driven by social-image concerns, the *similarity* of responses across social and monetary rewards is more consistent with intrinsic motivations being driven by self-image concerns (Gneezy and Rustichini 2000, Fehr and Falk 2002, Benabou and Tirole 2006, Perez-Truglia and Cruces 2014).[35]

Three further points are of note. First, the similarity in response between social and monetary rewards mitigates against the notion that individuals respond to social rewards simply because they are scarcer than monetary rewards. Second, our finding that individuals respond to small

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[34]Along similar lines, DellaVigna *et al.* (2012) document evidence from a natural field experiment that some donors to charitable causes are driven by social pressures: once such pressures are experimentally removed, they choose to no longer contribute.

[35]Evidence of social image concerns driving charitable giving are found in Andreoni and Petrie (2004), Andreoni and Bernheim (2009) and Karlan and McConnell (2012). However, none of these studies provide a direct experimental comparison of social and monetary rewards.

monetary payments (relative to annual income) further suggests intrinsic motivations might be driven by self-image concerns, and fit findings from other contexts (Goette and Stutzer 2008, Chetty *et al.* 2014).[36]

Finally, the strongly heterogeneous effects across individuals highlight the importance of being able to cleanly classify individuals as predominantly extrinsically or intrinsically motivated based on their pre-treatment behaviors: if we had simply pooled all individuals, as the extrinsically motivated outnumber the intrinsically motivated, our results would have led to the (incomplete) conclusion that, *on average*, the provision of social and monetary rewards *reduces* tax compliance. By precisely identifying individual tax payer types, our findings uncover a more subtle trade-off for a social planner trying to induce tax compliance through social and monetary rewards: the net benefit depends both on the magnitude of responses for the extrinsically and intrinsically motivated, and the underlying distribution of those taxpayer types in the population.

5.6.2 Social Norms and Moral Appeal

Our final two treatments explore two other channels through which intrinsic motivations might operate: (i) a *social norms* treatment (T12) that notifies individuals of the average payment among those who made a positive payment in the previous tax year (€31); (ii) a *moral appeal* treatment (T13) that emphasizes the social benefits of making a payment to the local public good of parish services. Table 6 presents the results following the same format as earlier, where the natural comparison is with the T2 Tax Salience treatment. When considering the intrinsically motivated, we focus on baseline donors (thus removing baseline compliers whom the evidence suggests are largely motivated by duty-to-comply).

On the extensive margin, we find the provision of information on social norms or moral appeal have no impact. In short, individuals do not switch types in response to these treatments. Columns 2a onwards also show that such treatments are equally weak in impacting the total response among individuals. This is the case both among baseline evaders and baseline donors.[37] The sole exception is that there is a statistically significant impact at the 10% level of the social norm treatment in raising the likelihood of an increased donation gap. Taken together, these findings suggest that such forms of intervention are unlikely to induce large changes in behavior related to

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[36]Goette and Stutzer (2008) find that offering lottery tickets increases blood donations. Chetty *et al.* (2014) report offering a $100 gift card to journal referees significantly reduces the time taken to send reports.

[37]We also probed both results to further explore heterogeneous responses. Among baseline donors, we tested whether the social norm treatment had heterogenous impacts among those that paid more or less than the stated norm in the 2010 tax year. We found no evidence that either subset of baseline donors responds to this information (not shown). On moral appeal, we explored whether this treatment had differential impacts depending on the church membership, or the involvement of church members in church activities, across the 68 parishes in our data. Again, no robust heterogeneous impacts were found.

tax compliance ($\Delta u'_T = 0$). As such, our findings on moral appeal are in line with some of the earlier literature (Blumenthal *et al.* 2001, Fellner *et al.* 2013), and confirm these non-responses uniformly apply even when extrinsically and intrinsically motivated tax payers can be identified based on their pre-treatment behavior.[38]

6 Conclusion

This paper contributes to a growing literature using field experiments to study tax compliance behavior (e.g. Blumenthal *et al.* 2001, Slemrod *et al.* 2001, Kleven *et al.* 2011, Fellner *et al.* 2013, Hallsworth *et al.* 2013, Pomeranz 2013). Our context is the local church tax in Germany, a setting which allows us to overcome a key hurdle normally faced by tax compliance studies: that the outcome variable of interest is not observed (Slemrod and Weber 2012).

Two additional features of this setting are crucial for our study. First, the fact that there is zero deterrence prior to our experiment (and that this is common knowledge) allows us to distinguish between intrinsically and extrinsically motivated individuals. This enables us to measure the accuracy of the Becker-Allingham-Sandmo assumption that taxpayers are rational, self-interested individuals, *and* to study the interaction between individual motivation and various policy levers designed to raise tax compliance. Second, the fact that the system encourages overpayments (donations) creates the coexistence of evaders and donors, which allows us integrate the study of tax compliance with the study of charitable giving. While these topics have so far been studied separately by economists, they naturally belong together as *any* imperfectly enforced tax system involves some element of voluntary giving.

As discussed above, our setting poses a trade-off with external validity: the features that make the setting uniquely suited to study motivations for tax compliance, are also features that distinguish our setting from conventional taxes such as the personal income tax.[39] Due to these differences, our focus is mainly to provide *qualitative insights* on what motivates tax compliance, while such insights would be very difficult to obtain based on the types of taxes usually examined. However, we note that concerns over the external validity are somewhat ameliorated if we examine

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[38]This is of course not to suggest that appeals to social norms would not be effective in determining other forms of prosocial behavior. For example, such social norms treatments have been found to effectively raise political contributions (Frey and Meier 2004), Perez-Truglia and Cruces (2014) show how this is driven by which peers are expected to observe such contributions.

[39]As discussed earlier, we can rule out one external validity concern based on Kleven *et al.* (2011): church members are not more compliant than the overall population, conditional on individual deterrence variables. The observed correlation between compliance and church membership (religiosity) is driven by the fact that church members have less purely self-reported income on average. Controlling for differences in self-reporting, the correlation disappears.

the robustness of our treatment effects to two important forms of heterogeneity. First, we find homogeneous impacts of all the treatments considered across income payment bins: those in the highest tax brackets respond in qualitatively similar ways as those in the lowest tax brackets. Second, our baseline estimates do not differ much across church parishes that have high and low levels of participation in religious services. Taken together, these results suggest our findings might have relevance in settings where the income distribution is different, to contexts where taxes comprise a slightly larger share of income, and scenarios where slightly different baseline levels of prosocial behavior exist.

We present a set of novel empirical findings. First, the Becker-Allingham-Sandmo framework is 80% accurate in our setting: this is the fraction of individuals who evade taxes (most of them fully evading) in the zero deterrence baseline. On the other hand, 20% of individuals pay at least true taxes owed in the zero deterrence baseline, and so intrinsically motivated compliance is substantial. Second, deterrence has strong effects on compliance for baseline evaders (the extrinsically motivated), but small and insignificant effects for baseline donors (the intrinsically motivated). This is consistent with the fact that the enforcement constraint is not binding for the intrinsically motivated, which makes them unresponsive to deterrence at the margin.

Third, we provide direct evidence of a particular form of intrinsic motivation: a duty to obey the law. The identification is based on sharp bunching at *exact* compliance in the baseline with zero deterrence, a finding that can only be explained by a spike in intrinsic motivation at the point of exact compliance. Finally, recognition through social and monetary rewards for compliance has fundamentally different effects on baseline donors (who increase their payments) and baseline evaders (who further decrease their payments). These treatments provide further new insights on the behavior of the intrinsically motivated: (i) their payments are not crowded-out when deterrence is increased (contrary to intrinsic motivations being crowded-out by extrinsic incentives or reduced signaling values of prosocial behavior); (ii) their payments are crowded-in when the voluntary aspect of the system is highlighted; (iii) they respond similarly to social and monetary rewards (consistent with intrinsic motivations being driven more by self-image than social-image concerns).

Moving beyond our setting, the strongly heterogeneous effects of deterrence and recognition across tax payer types poses a difficult trade-off for a social planner aiming to raise tax compliance: whether or not policies are effective depend crucially on the (unobserved) distribution of intrinsic and extrinsic motivations in the population. While our study represents a first step in the study of social motivations for tax compliance, future work will hopefully build on our approach and extend the analysis to other settings involving prosocial behaviors.

A Appendix

A.1 Attrition

To investigate the correlates of attrition from our linked panel data, we estimate a linear probability model that has a dependent variable equal to one if the individual is in our sample in tax year 2007, and has attritted by the 2011 tax year in which our field experiment takes place. This analysis is based on the $31,238$ individuals observed in tax year 2007. Of these, 86.5% are observed in all tax years 2007-11 and hence do not attrit. We are primarily interested in how attrition is correlated to treatment assignment, and whether there is heterogeneous attrition across treatments. The most important form of individual heterogeneity considered in our analysis is by whether the individual is a baseline evader, complier or donor. Hence we control throughout for this individual type, as defined based on observed behavior in the 2007 tax year.

Column 1 shows that those that evade in 2007 are 2.4 percentage points more likely to attrit by the 2011 tax year than exact compliers in 2007, an effect significant at the 1% level; 2007 donors are not significantly more or less likely to attrit than 2007 exact compliers. Column 2 shows this to be robust to including individual controls and parish fixed effects.[40] Column 3 additionally controls for the treatment assignment dummies. An F-test of their joint significance does not reject the null [p-value .872]. Hence we find no evidence that individuals are more likely to attrit because of the treatment they are assigned to. This ameliorates concerns that the field experiment caused individuals to opt-out of the Protestant church. Finally, in Column 4 we include a complete series of interactions between treatment assignments and the individual's type based on their 2007 behavior. We find there is no differential attrition across treatments by past compliance behavior: the three F-tests on the joint significance of the treatment dummies, all treatment dummy-evader 2007 interactions, and all treatment dummy-donor 2007 interactions, all do not reject the null.

A.2 Persistence in Type

To provide further evidence on the degree of persistence in individual compliance behavior over time, we use a multinomial logit model to estimate the correlates of behavior in the 2010 tax year, the tax year immediately prior to our field experiment. We do so among those individuals assigned to our T1 Control group, and we report relative risk ratios where the omitted base category is exact compliance in the 2010 tax year. In Column 1 we only condition on the individuals lagged type, namely whether they evaded or donated in the 2009 tax year. This evidence suggests a high

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[40]The individual controls are whether the individual is male, their age, the number of children, whether they are a joint filer, receive wage income, are liable for trade taxes, and their church tax payment bin.

degree of persistence over time in individual types: For the extrinsically motivated, those that evade in 2009 are 83.3 times as likely to evade the following year as comply. For the intrinsically motivated, those that donate in 2009 are 10.8 times as likely to continue donating the following year than comply. Column 2 shows this finding to be robust when we additionally control for individual characteristics. The relevant relative risk ratio for persistence in evasion is 87.1, and for persistence in donating it is 9.01. We further note that most of the individual controls do not predict compliance behavior, and those that do have relatively small relative risk ratios compared to the individual's own past compliance behavior.

A.3   Robustness Checks

Table A5 presents robustness checks related to the T2 Tax Salience total response impacts documented in Panel A of Table 2. These probe the sensitivity of our findings to small changes in controls and the sample of individuals considered in the empirical specification in (8). As a point of comparison, the first row shows our baseline total response estimates among baseline evaders and baseline compliers/donors, and in each robustness check, we report the p-value on the cross-equation test of whether the estimated total response differs significantly from our preferred baseline estimate. The remaining rows show the sign, significance and magnitude of these estimates to be almost unchanged if: (i) (8) is estimated unconditional on all other controls except the indicator for assignment to T2, $\mathbf{I}(T_{i1} = 2)$; (ii) we condition only on the randomization strata, λ_s; (iii) we exclude the control for past compliance behavior, $\bar{y}_{i,pre}$; (iv) we estimate (8) and additionally control for a full set of individual controls given in Table A4; (v) we estimate (8) based only on the balanced panel of individuals that are observed in all tax years 2007-11. This final result very much affirms the earlier result that attrition is uncorrelated to treatment assignment, and nor is there differential attrition between baseline evaders and baseline compliers/donors.

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Table 1: Compliance Under Zero Deterrence

Behavior in the T1 Control Group

Mean, column percentage in brackets

	(1) Compliers/Donors (Intrinsically Motivated)	(2) Evaders (Extrinsically Motivated)
Number of Individuals	528	2004
Percentage of All Individuals	20.9%	79.1%
Complete Evaders: $s \leq 0$		72.8% [91.9]
Partial Evaders: $s \in (0, \bar{s}_1)$		6.40% [8.08]
Exact Compliers: $s \in [\bar{s}_1, \bar{s}_2]$	11.5% [55.5]	
Donors: $s > \bar{s}_2$	9.28% [44.5]	
Payment Amount (€)	42.4	1.87
Tax Gap (%)	0%	96.3%
Donation Gap (%)	47.1%	0%

Notes: The sample of individuals included is all those assigned to the T1 Control Group in the 2011 tax year (2532 individuals). The Column headings refer to behavior of individuals in the 2011 tax year. Compliers are defined to be those that pay exactly their true liability, donors overpay. An evader is defined to be an individual that pays strictly less than their true tax liability. Column percentages are reported in brackets. The tax gap and donation gaps are defined as in the main text, where the donation gap is capped at two.

Summary: This shows that in our baseline setting where zero it is well understood that there is zero deterrence, the majority of individuals behave as rational, extrinsically motivated individuals. Almost 80% of all individuals evade and 73% fully evade. At the same time, there coexists a substantial proportion of individuals among whom some degree of intrinsic motivation drives compliance behavior: about 20% comply or overpay and about 27% pay at least something even though the tax system is completely unenforced.

Table 2: Tax Salience and Correcting Misperceptions of Audit Probabilities

Extensive Margin: Multinomial Logit Estimates, Relative Risk Ratios Reported (Base Category = Complier)
    Controls: Randomization Strata, Past Compliance Behavior
Total Response: OLS Estimates
    Controls: Randomization Strata, Past Compliance in the Same Outcome and Parish Fixed Effects
Robust Standard Errors in Parentheses

| | Extensive Margin | | Total Response | | | |
| | All Individuals | | Baseline Evaders (Extrinsically Motivated) | | Baseline Compliers/Donors (Intrinsically Motivated) | |
Panel A: Tax Salience	(1a) Evader	(1b) Donor	(2a) Increased Payment (%)	(2b) Tax Gap (%)	(3a) Increased Payment (%)	(3b) Donation Gap (%)
T2: Tax Salience Effect	.706***	.856	64.8***	-3.36***	-17.5	3.51
	(.082)	(.125)	(13.7)	(.732)	(14.6)	(7.62)
Compliance in omitted reference group [T1: Control]			6.12%	92.3%	14.6%	40.6%
Number of Observations	5076		4007	4007	1069	1069
Panel B: Correcting Misperception						
T3: Zero Audit Probability	1.07	.908	-11.0	1.41**	-11.6	-5.33
	(.106)	(.111)	(7.55)	(.720)	(14.2)	(5.96)
Compliance in omitted reference group [T2: Tax Salience]			10.5%	88.7%	12.4%	43.6%
Number of Observations	7668		6049	6049	1592	1592

Notes: *** denotes significance at 1%, ** at 5%, and * at 10% level. The unit of observation throughout is the individual. Columns 1a and 1b show extensive margin effects based on a multinomial logit model, where relative risk ratios (RRR) are reported and the omitted base category is exact compliance. A relative risk ratio below (above) one corresponds to a reduced (increased) probability of being an evader or donor, respectively. In these specifications we control for the number of times individual i has been of type k (evader, complier, donor) in the pre-treatment tax years, and dummy variables for the randomization strata. The next four Columns show total response effects, distinguishing between baseline evaders (extrinsically motivated) in Columns 2a and 2b, and baseline compliers/donors (intrinsically motivated) in Columns 3a and 3b. These classifications are based on behavior of the individual in the 2010 tax year, the year prior to our field experiment. A baseline evader is defined to be an individual that paid strictly less than their true tax liability in the 2010 tax year. Compliers paid exactly their true liability, and donors overpaid, in the 2010 tax year. We consider two types of outcomes for the total response: the probability of increasing tax payments and the size of the tax gap (donation gap) for evaders (compliers/donors), where the donation gap is capped at two. In these specifications we control for the individual's average pre-treatment value of the outcome, and dummy variables for the randomization strata. Robust standard errors are in parentheses. Panel A reports the impact of the T2 Tax Salience treatment relative to the T1 Control Group. Panel B reports the impact of the T3 Misperception (p=0) treatment relative to the T2 Tax Salience treatment. At the foot of each panel we report the level of the outcome in the comparison group. For the total response, we report each treatment effect (and its standard error) scaled as a percentage of this average in the comparison group.

Summary: Panel A shows that tax salience significantly reduces the probability of being an evader. Overall, there is a strong tendency for the type distribution of individuals to become concentrated at exact compliance under the tax salience treatment. On the total response, we see strongly heterogeneous effects of tax salience depending on baseline compliance type: among baseline evaders, the tax salience treatment raises the tax payments. Among baseline compliers and donors the tax salience treatment has no significant impacts on the total response behavior. Panel B shows there is little *ex ante* misperception of the true audit probability of zero among individuals in this setting.

Table 3: Deterrence Effects of Strictly Positive Audit Probabilities

Extensive Margin: Multinomial Logit Estimates, Relative Risk Ratios Reported (Base Category = Complier)
   Controls: Randomization Strata, Past Compliance Behavior
Total Response: OLS Estimates
   Controls: Randomization Strata, Past Compliance in the Same Outcome and Parish Fixed Effects
Robust Standard Errors in Parentheses

| | Extensive Margin | | Total Response | | | |
| | All Individuals | | Baseline Evaders (Extrinsically Motivated) | | Baseline Compliers/Donors (Intrinsically Motivated) | |
Panel A: Pooled Audit Probabilities	(1a) Evader	(1b) Donor	(2a) Increased Payment (%)	(2b) Tax Gap (%)	(3a) Increased Payment (%)	(3b) Donation Gap (%)
T4-T6: Pooled positive audit probabilities	.761***	1.12	29.8***	-2.81***	18.6	5.62
	(.053)	(.102)	(6.64)	(.534)	(12.0)	(4.81)
Compliance in reference group [T3: Zero Audit Probability]			9.00%	90.4%	11.0%	39.6%
Number of Observations	12741		9979	9979	2713	2713
Panel B: Separate Audit Probabilities						
T4: Audit probability = .1	.717***	.938	34.9***	-2.74***	11.3	2.86
	(.066)	(.116)	(9.19)	(.732)	(16.2)	(6.58)
T5: Audit probability = .2	.776***	1.17	29.9***	-3.48***	27.2*	6.24
	(.072)	(.137)	(9.17)	(.752)	(16.0)	(6.24)
T6: Audit probability = .5	.793**	1.25*	24.5***	-2.23***	15.8	7.64
	(.074)	(.148)	(9.10)	(.744)	(16.2)	(6.44)
Equality of treatment effects [p-value]			[.637]	[.382]	[.683]	[.808]
Compliance in reference group [T3: Zero Audit Probability]			9.00%	90.4%	11.0%	39.6%
Number of Observations	12741		9979	9979	2713	2713

Notes: *** denotes significance at 1%, ** at 5%, and * at 10% level. The unit of observation throughout is the individual. Columns 1a and 1b show extensive margin effects based on a multinomial logit model, where relative risk ratios (RRR) are reported and the omitted base category is exact compliance. A relative risk ratio below (above) one corresponds to a reduced (increased) probability of being an evader or donor, respectively. In these specifications we control for the number of times individual i has been of type k (evader, complier, donor) in the pre-treatment tax years, and dummy variables for the randomization strata. The next four Columns show total response effects, distinguishing between baseline evaders (extrinsically motivated) in Columns 2a and 2b, and baseline compliers/donors (intrinsically motivated) in Columns 3a and 3b. These classifications are based on behavior of the individual in the 2010 tax year, the year prior to our field experiment. A baseline evader is defined to be an individual that paid strictly less than their true tax liability in the 2010 tax year. Compliers paid exactly their true liability, and donors overpaid, in the 2010 tax year. We consider two types of outcomes for the total response: the probability of increasing tax payments and the size of the tax gap (donation gap) for evaders (compliers/donors), where the donation gap is capped at two. In these specifications we control for the individual's average pre-treatment value of the outcome, and dummy variables for the randomization strata. Robust standard errors are in parentheses. Panel A reports the impact of the pooled T4-T6 p-treatments relative to T3 Misperception (p=0) treatment. Panel B reports the impact of the separate T4-T6 p-treatments relative to T3 Misperception (p=0). At the foot of each panel we report the level of the outcome in the T3 comparison group. For the total response, we report each treatment effect (and its standard error) scaled as a percentage of this average in the comparison group. At the foot of Panel B we also report the p-value of a F-test on the equality of the T4-T6 treatment effects.

Summary: Panels A and B lead to similar conclusions being drawn. On the extensive margin, deterrence significantly reduces the likelihood of evading, and has no impact on the likelihood to donate. On the total effect, the evidence suggests baseline evaders are significantly more likely to increase payments and their tax gap falls. In line with the conceptual framework developed, baseline compliers and donors are unaffected by deterrence.

Table 4: Deterrence Effects of an Audit Probability Notch

Regression Controls: Randomization Strata, Past Compliance in the Same Outcome and Parish Fixed Effects
Sample: Baseline Evaders

	Effect on Payment (in %)		Effect on Probability of Paying			Number of Observations
			Pos. Amount (in %)	> 10 Euro (in %)	15-30 Euro (in %)	
	(1a) Mean Comparison	**(1b) Bunching Estimate**	**(2a) Mean Comparison**	**(2b) Mean Comparison**	**(2c) Mean Comparison**	
Compared to T3: Zero Audit Probability Letter						
T7: Audit probability = .5 if payment ≤ 10 Euro and 0 for payment above	32.2***	45.13***	12.4**	41.2***	41.0***	6035
	(9.66)	(5.72)	(5.42)	(9.91)	(13.8)	
T6: Audit probability = .5	28.6***		8.44	33.0***	19.2	6024
	(9.68)	-	(5.30)	(9.80)	(13.1)	
Compliance in omitted reference group [T3: Zero Audit Probability]	€4.05	-	14.1%	8.43%	4.68%	

Notes: Estimations at the individual taxpayer level. *** denotes significance at 1%, ** at 5%, and * at 10% level. Robust standard errors are in parentheses. Regressions include strata variables (payment owed and the number of times the individual was observed in the panel at the time of the intervention) as well as parish fixed effects. The bunching estimates in column (2) are based on the analysis in Figure IV and show by how much (in %) the average buncher increases the payment in order to locate above the notch point at 10 Euro. All regressions are based on the sample of baseline evaders with a non-negative tax gap prior to treatment (baseline year 2011).

Summary: The results show that the audit probability notch significantly increases individuals' probability of paying and payments. Compared to the uniform audit probability treatment, the audit probability notch treatment increases both the size and the precision of the estimated effect.

Table 5: Social and Monetary Rewards

Extensive Margin: Multinomial Logit Estimates, Relative Risk Ratios Reported (Base Category = Complier)
   Controls: Randomization Strata, Past Compliance Behavior
Total Response: OLS Estimates
   Controls: Randomization Strata, Past Compliance in the Same Outcome and Parish Fixed Effects
Robust Standard Errors in Parentheses

| | Extensive Margin | | Total Response | | | | |
| | All Individuals | | Baseline Evaders (Extrinsically Motivated) | | Baseline Donors (Intrinsically Motivated) | | |
Panel A: Pooled Social/Monetary Rewards	(1a) Evader	(1b) Donor	(2a) Increased Payment (%)	(2b) Tax Gap (%)	(3a) Increased Payment (%)	(3b) Donation Gap (%)	(3c) Increased Donation Gap (%)
T8-T11: Pooled Social and Monetary Rewards	1.04	1.04	-15.6**	1.20*	48.3*	-.198	83.2**
	(.096)	(.115)	(6.90)	(.666)	(25.3)	(5.10)	(32.8)
Compliance in omitted reference group [T2: Salience]			10.5%	88.7%	8.57%	75.1%	5.71%
Number of Observations	12685		9909	9909	1247	1247	1247
Panel B: Separate Social/Monetary Rewards							
T8: Social recognition [newspaper]	1.04	1.10	-16.8**	1.20	41.0	.591	109**
	(.120)	(.155)	(8.57)	(.829)	(34.0)	(6.41)	(46.7)
T9-T10: Monetary reward	1.07	.978	-19.4***	1.67**	45.8*	-2.49	59.8*
	(.107)	(.120)	(7.40)	(.713)	(27.7)	(5.64)	(35.7)
T11: Social and monetary reward interacted	.977	1.10	-6.95	.300	61.9*	4.02	107**
	(.112)	(.151)	(8.75)	(.837)	(34.6)	(6.62)	(46.2)
Equality of treatment effects [p-value]			[.039]	[.058]	[.260]	[.737]	[.048]
Compliance in omitted reference group [T2: Salience]			10.5%	88.7%	8.57%	75.1%	5.71%
Number of Observations	12685		9909	9909	1247	1247	1247

Notes: *** denotes significance at 1%, ** at 5%, and * at 10% level. The unit of observation throughout is the individual. Columns 1a and 1b show extensive margin effects based on a multinomial logit model, where relative risk ratios (RRR) are reported and the omitted base category is exact compliance. A relative risk ratio below (above) one corresponds to a reduced (increased) probability of being an evader or donor, respectively. In these specifications we control for the number of times individual i has been of type k (evader, complier, donor) in the pre-treatment tax years, and dummy variables for the randomization strata. The next four Columns show total response effects, distinguishing between baseline evaders (extrinsically motivated) in Columns 2a and 2b, and baseline donors (intrinsically motivated) in Columns 3a and 3b. These classifications are based on behavior of the individual in the 2010 tax year, the year prior to our field experiment. A baseline evader is defined to be an individual that paid strictly less than their true tax liability in the 2010 tax year. Compliers paid exactly their true liability, and donors overpaid, in the 2010 tax year. We consider two types of outcomes for the total response: the probability of increasing tax payments and the size of the tax gap (donation gap) for evaders (donors), where the donation gap is capped at two. In these specifications we control for the individual's average pre-treatment value of the outcome, and dummy variables for the randomization strata. Robust standard errors are in parentheses. Panel A reports the impact of the pooled T8-T11 Social and Monetary Reward treatments relative to the T2 Tax Salience treatment. Panel B reports the impact of the separate T8-T11 Social and Monetary Reward treatments. At the foot of each panel we report the level of the outcome in the T2 comparison group. For the total response, we report each treatment effect (and its standard error) scaled as a percentage of this average in the comparison group. At the foot of Panel B we also report the p-value of a F-test on the equality of the T8-T11 treatment effects.

Summary: Panels A and B lead to similar conclusions being drawn. On the extensive margin, the provision of Social/Monetary rewards has little impact on individual behavior. In terms of the total response, these treatments have opposite signed effects on baseline evaders and baseline donors. Among baseline evaders, the provision of social/monetary rewards significantly reduces the likelihood that they increase their payment, and significantly increases their tax gap. In contrast, baseline donors (intrinsically motivated) are significantly more likely to increase their tax payment (donations) further in response to such social and monetary rewards.

Table 6: Social Norms and Moral Appeal

Extensive Margin: Multinomial Logit Estimates, Relative Risk Ratios Reported (Base Category = Complier)
   Controls: Randomization Strata, Past Compliance Behavior
Total Response: OLS Estimates
   Controls: Randomization Strata, Past Compliance in the Same Outcome and Parish Fixed Effects
Robust Standard Errors in Parentheses

| Social Norms and Moral Appeal | Extensive Margin | | Total Response | | | | |
| | All Individuals | | Baseline Evaders (Extrinsically Motivated) | | Baseline Donors (Intrinsically Motivated) | | |
	(1a) Evader	(1b) Donor	(2a) Increased Payment (%)	(2b) Tax Gap (%)	(3a) Increased Payment (%)	(3b) Donation Gap (%)	(3c) Increased Donation Gap (%)
T12: Social Norm	1.15	1.15	-13.0	1.10	32.9	5.33	71.1*
	(.128)	(.163)	(8.64)	(.834)	(33.2)	(6.87)	(42.5)
T13: Moral Appeal	.920	.816	-10.9	1.02	20.6	3.95	28.8
	(.101)	(.116)	(8.86)	(.852)	(33.6)	(6.79)	(42.6)
Compliance in omitted reference group [T2: Salience]			10.5%	88.7%	8.57%	75.1%	5.71%
Number of Observations	7658		6002	6002	724	724	724

Notes: *** denotes significance at 1%, ** at 5%, and * at 10% level. The unit of observation throughout is the individual. Columns 1a and 1b show extensive margin effects based on a multinomial logit model, where relative risk ratios (RRR) are reported and the omitted base category is exact compliance. A relative risk ratio below (above) one corresponds to a reduced (increased) probability of being an evader or donor, respectively. In these specifications we control for the number of times individual i has been of type k (evader, complier, donor) in the pre-treatment tax years, and dummy variables for the randomization strata. The next four Columns show total response effects, distinguishing between baseline evaders (extrinsically motivated) in Columns 2a and 2b, and baseline donors (intrinsically motivated) in Columns 3a, 3b and 3c. These classifications are based on behavior of the individual in the 2010 tax year, the year prior to our field experiment. A baseline evader is defined to be an individual that paid strictly less than their true tax liability in the 2010 tax year. Compliers paid exactly their true liability, and donors overpaid, in the 2010 tax year. We consider two types of outcomes for the total response: the probability of increasing tax payments and the size of the tax gap (donation gap) for evaders (compliers/donors), where the donation gap is capped at two. In these specifications we control for the individual's average pre-treatment value of the outcome, and dummy variables for the randomization strata. Robust standard errors are in parentheses. We report the impacts of the T12 Social Norms and T13 Moral Appeal treatments relative to the T2 Tax Salience treatment. At the foot of each panel we report the level of the outcome in the T2 comparison group. For the total response, we report each treatment effect (and its standard error) scaled as a percentage of this average in the comparison group.

Summary: The provision of information related to norms (the average payment among those that paid some strictly positive amount in the previous tax year) or moral appeal have little significant impacts on individual behavior, either on the extensive margin or in terms of total effects.

Table A1: Sample Representativeness

Personal Income Tax Statistics 2007 and Our Sample in 2007

	Sample (Metropolitan Area Studied, Protestants)		Metropolitan Area Studied		Metropolitan Area Studied, Non Church Members	
	Single Filers (1a)	Joint Filers (1b)	Single Filers (2a)	Joint Filers (2b)	Single Filers (3a)	Joint Filers (3c)
Number of taxpayers	21.353	24.950	353.248	448.686	156.734	151.872
Share of taxpayers that are men	44,1%	50,0%	48,8%	50,0%	53,9%	50,0%
Share of taxpayers with children entitled to child allowances	15,1%	59,1%	16,1%	53,0%	18,9%	52,3%
Average number of children entitled to child allowances	0,2	1,0	0,2	0,9	0,3	0,9
Average age	40,4	47,0	43,3	49,2	42,9	46,8
Share of Protestants	100,0%	50,0%	16,0%	14,4%	0,0%	0,0%
Share of Catholics	0,0%		39,5%	41,5%	0,0%	0,0%
Share of taxpayers who are not member of a tax raising community	0,0%	50,0%	44,4%	43,9%	100,0%	100,0%
Average taxable income	39.034	85.090	40.709	73.942	46.177	72.126
Share of declarations with wage income	87,8%	87,8%	83,2%	91,0%	81,4%	91,8%
Share of declarations with capital income	21,8%	31,0%	26,6%	31,2%	23,3%	23,0%
Share of declarations with business income liable for trade tax	2,5%	4,8%	4,5%	7,0%	5,8%	7,2%

Notes: This table shows the mean characteristics (separately for single and joint files) in three groups: our sample (filing Protestants in the large metropolitan area in Bavaria, Columns 1a and 1b), the overall population of single and joint filers in the large metropolitan area in Bavaria (Columns 2a and 2b), and filing non-church members in the same large metropolitan area in Bavaria (Columns 3a and 3b). The source of data is in Columns 2a onwards are personal income statistics for 2007 (the last year of available data). Single filers comprise unmarried individuals and married couples who choose to file two separate tax returns. The vast majority of married couples are joint filers and benefit from the associated reduction in the progressivity of the personal income tax. One parent of each underage child (and of each child who is not older than 25 years and studies/or is in apprenticeship) is entitled to child allowances, which can either be a tax credit or a cash transfer. Tax raising communities in Germany refer to religious communities that collect taxes within the scope of the personal income tax. The Protestant and Catholic churches are by far the largest tax raising communities and cover about 60% of the population; 3.3% of the population belong to other tax raising communities.

Summary: There are relatively minor differences in gender, age, the presence of children entitled to child allowances, taxable incomes and income sources, between our sample and these others subpopulations considered.

Table A2: Correlates of Attrition

Dependent Variable: =1 if in taxpayer sample in tax year 2007 and attrited by tax year 2011, 0 otherwise
Linear Probability Model
Robust Standard Errors in Parentheses

	(1) Individual Type As Defined in 2007 Tax Year	(2) Individual Controls	(3) Treatment Assignment in 2011 Tax Year	(4) Heterogeneity Within Treatment
Evader in 2007 [yes =1]	.024***	.025***	.025***	.046**
	(.006)	(.006)	(.006)	(.021)
Donor in 2007 [yes=1]	.008	-.005	-.004	.023
	(.009)	(.009)	(.009)	(.032)
Parish Fixed Effects	No	Yes	Yes	Yes
Individual Controls	No	Yes	Yes	Yes
Joint F-test of Significance [p-value]				
Treatment Dummies	No	No	Yes [.872]	Yes [.628]
Treatment Dummy x Evader in 2007 Interactions	No	No	No	Yes [.324]
Treatment Dummy x Donor in 2007 Interactions	No	No	No	Yes [.706]
Observations	31238	31238	31238	31238

Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.Notes: *** denotes significance at 1%, ** at 5%, and * at 10%. The dependent variable is a dummy equal to one if the individual is in our linked sample in tax year 2007, but has attrited by the 2011 tax year in which our field experiment takes place, and zero otherwise. The analysis is based on the 31,238 individuals observed in tax year 2007. A linear probability model is estimated throughout with robust standard errors reported. In Column 1 we control for whether the individual is an evader or donor in the 2007 tax year (exact compliers being the omitted group). Column 2 additionally controls for whether the individual is male, their age, the number of children, whether they are a joint filer, receive wage income, are liable for trade taxes, their payment bin for the local church tax and parish fixed effects. Column 3 additionally controls for the series of treatment assignment dummies, and reports the p-value on an F-test of their joint significance. The specification in Column 4 includes a complete series of interactions between treatment assignments and the individual's type based on their 2007 behavior. We report the p-values on three F-tests on the joint significance of the treatment dummies, all treatment dummy-evader 2007 interactions, and all treatment dummy-donor 2007 interactions.

Summary: Attrition from our sample is uncorrelated to treatment assignment, and there is no differential attrition across treatments by past compliance behavior.

Table A3: Random Assignment to Treatment

Means, standard errors in parentheses.

	Number of individuals	Male	Age	Married	Number of Children	Joint Filer [yes=1]	Wage Income [yes=1]	Liable for Trade Tax [yes=1]	Income (in Euro)	F-test on Joint Sign. p-value [Relative to Control] {Relative to Salient Letter}	F-test on Joint Sign. p-value, Baseline Evaders [Relative to Control] {Relative to Salient Letter}	F-test on Joint Sign. p-value, Baseline Compliers [Relative to Control] {Relative to Salient Letter}	F-test on Joint Sign. p-value, Baseline Donors [Relative to Control] {Relative to Salient Letter}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
T1: Control Group	2532	.511	45.5	.421	.495	.368	.877	.030	43644	-	-	-	-
		(.500)	(13.0)	(.494)	(.839)	(.482)	(.329)	(.170)	(38040)	-	-	-	
T2: Tax Salience	2564	.509	45.1	.420	.477	.369	.870	.027	44573	[.600]	[.521]	[.881]	[.875]
		(.500)	(13.0)	(.494)	(.831)	(.482)	(.337)	(.161)	(39572)	-	-	-	
T3: Zero Audit Probability	5104	.502	45.2	.408	.462	.355	.878	.024	44226	[.642]	[.214]	[.474]	[.640]
		(.500)	(13.4)	(.491)	(.805)	(.479)	(.327)	(.153)	(40014)	{.892}	{.956}	{.848}	{.515}
T4: Audit Probability p=.1	2572	.507	44.8	.394	.481	.346	.896	.026	42148	[.540]	[.609]	[.438]	[.317]
		(.500)	(13.1)	(.489)	(.830)	(.476)	(.306)	(.159)	(34143)	{.070}	{.083}	{.631}	{.423}
T5: Audit Probability p=.2	2532	.507	45.0	.415	.457	.362	.877	.021	42482	[.161]	[.156]	[.392]	[.021]
		(.500)	(13.5)	(.493)	(.825)	(.481)	(.329)	(.143)	(33717)	{.678}	{.810}	{.276}	{.075}
T6: Audit Probability p=.5	2533	.512	45.2	.423	.489	.368	.880	.022	43506	[.828]	[.739]	[.760]	[.498]
		(.500)	(13.3)	(.494)	(.833)	(.482)	(.325)	(.147)	(37207)	{.895}	{.857}	{.997}	{.832}
T7: Audit Probability Notch	2551	.510	44.8	.412	.495	.353	.885	.022	42710	[.331]	[.325]	[.541]	[.106]
		(.500)	(13.1)	(.492)	(.833)	(.478)	(.319)	(.147)	(35746)	{.374}	{.480}	{.917}	{.238}
T8: Social Recognition	2533	.523	45.2	.415	.482	.363	.868	.025	44279	[.466]	[.044]	[.411]	[.303]
		(.500)	(13.2)	(.493)	(.819)	(.481)	(.339)	(.157)	(36317)	{.825}	{.627}	{.746}	{.215}
T9: Small Monetary Reward	2521	.503	45.0	.412	.480	.358	.881	.026	42036	[.640]	[.512]	[.516]	[.503]
		(.500)	(13.1)	(.492)	(.823)	(.480)	(.323)	(.158)	(32940)	{.432}	{.495}	{.814}	{.484}
T10: Large Monetary Reward	2525	.513	45.4	.442	.514	.392	.885	.022	44085	[.611]	[.763]	[.599]	[.099]
		(.500)	(13.1)	(.497)	(.839)	(.488)	(.319)	(.147)	(39008)	{.376}	{.846}	{.877}	{.196}
T11: Social and Monetary Reward Interacted	2542	.517	44.7	.416	.500	.354	.884	.027	43351	[.383]	[.320]	[.406]	[.174]
		(.500)	(13.0)	(.493)	(.852)	(.478)	(.320)	(.164)	(36518)	{.183}	{.156}	{.924}	{.280}
T12: Social Norm	2585	.491	45.3	.406	.471	.347	.884	.026	43520	[.522]	[.426]	[.347]	[.003]
		(.500)	(13.3)	(.491)	(.822)	(.476)	(.320)	(.160)	(38166)	{.251}	{.245}	{.483}	{.028}
T13: Moral Appeal	2509	.511	44.9	.419	.458	.357	.873	.022	43397	[.151]	[.198]	[.886]	[.723]
		(.500)	(13.3)	(.493)	(.809)	(.479)	(.333)	(.148)	(36753)	{.829}	{.511}	{.828}	{.743}

Notes: This table presents randomization checks for all treatments in our natural field experiment. Column 1 shows the number of individuals assigned to each treatment. Approximately twice as many individuals were purposefully assigned to the T3 Misperception (p=0) treatment. Columns 2 to 9 present the average sample characteristics for the 2011 tax year (in which the field experiment took place), and standard errors in parentheses. Column 10 shows a joint F-test on the significance of the covariate set on being assigned to that specific group relative to the T1 control group (in brackets) and relative to T2 Tax Salience (in braces). Columns 11-13 repeat this but for the subsamples of baseline evaders, baseline compliers and baseline donors (as defined by their behavior in the 2010 tax year that immediately precedes our natural field experiment).

Summary: The samples are well balanced on these observables across treatments. The same is true when looking among individual types, as shown in Columns 11 to 13.

Table A4: Persistence of Type in Control Group

Multinomial Logit Estimates, Relative Risk Ratios Reported
(Base Category = Complier in 2010 Tax Year)
Robust Standard Errors in Parentheses

Outcome:	Evader in 2010	Donor in 2010	Evader in 2010	Donor in 2010
	(1) Past Behavior		(2) Individual Controls	
Evader in 2009 Tax Year [yes =	83.3***	2.16***	87.1***	2.02***
	(16.1)	(.563)	(17.5)	(.536)
Donor in 2009 Tax Year [yes=1	2.32***	10.8***	2.45***	9.01***
	(.601)	(2.50)	(.672)	(2.22)
Male			.916	1.04
			(.168)	(.223)
Age			1.00	1.03***
			(.008)	(.009)
Number of Children			1.23*	.786
			(.152)	(.117)
Joint Filer [yes=1]			.771	1.03
			(.165)	(.234)
Wage Income [yes=1]			1.85**	1.29
			(.539)	(.377)
Liable for Trade Tax [yes=1]			4.30***	3.07
			(2.32)	(2.33)
Payment Owed = €10 [Income Bracket €10000-€25000]			1.41	.858
			(.685)	(.434)
Payment Owed = €25 [Income Bracket €25000 - €40000]			1.47	1.30
			(.743)	(.691)
Payment Owed = €45 [Income Bracket €40000 - €55000]			1.10	1.46
			(.564)	(.837)
Payment Owed = €70 [Income Bracket €55000 - €70000]			1.70	1.24
			(.953)	(.779)
Payment Owed = €100 [Income Bracket €70000+]			1.21	.292*
			(.646)	(.198)
Observations	2521		2521	

Notes: *** denotes significance at 1%, ** at 5%, and * at 10%. The sample is based on individuals assigned to the T1 Control Group. The outcome is the individual's compliance behavior on the extensive margin in the 2010 tax year (evader, complier, donor), the year preceding our natural field experiment. The table reports a multinomial logit model. We report relative risk ratios where the omitted base category is exact compliance in the 2010 tax year. In Column 1 we only condition on the individuals lagged type, namely whether they evaded or donated in the 2009 tax year (where exact compliers in the 2009 tax year are the omitted category). Column 2 additionally control for the individual characteristics shown.

Summary: There is a high degree of persistence over time in individual types: For the extrinsically motivated, those that evade in 2009 are 83.3 times as likely to evade the following year as comply. For the intrinsically motivated, those that donate in 2009 are 10.8 times as likely to continue donating the following year than comply. Column 2 shows this finding to be robust when we additionally control for individual characteristics.

Table A5: Robustness Checks on Tax Salience

Total Response: OLS Estimates
Robust Standard Errors in Parentheses
Test for equality with baseline coefficient [p-value] reported in square brackets
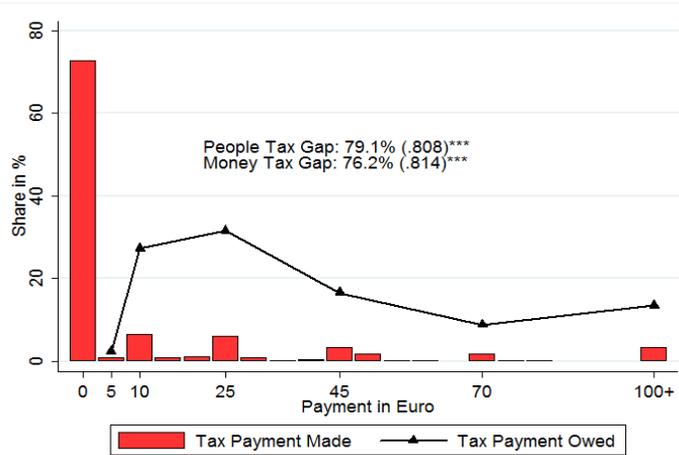
	Baseline Evaders (Extrinsically Motivated)		Baseline Compliers/Donors (Intrinsically Motivated)	
	(1a) Increased Payment (%)	(1b) Tax Gap (%)	(2a) Increased Payment (%)	(2b) Donation Gap (%)
Baseline specification (randomization strata, past average compliance, parish fixed effects)	64.8***	-3.36***	-17.5	3.51
	(13.7)	(.732)	(14.6)	(7.62)
Unconditional	72.5***	-3.96***	-15.7	6.77
	(14.3)	(.905)	(14.3)	(9.83)
	[.590]	[.503]	[.904]	[.740]
Randomization strata	71.2***	-3.96***	-15.8	5.97
	(14.2)	(.911)	(14.4)	(8.87)
	[.652]	[.504]	[.907]	[.781]
Baseline specification excluding past compliance control	71.8***	-3.97***	-16.8	8.28
	(14.3)	(.908)	(14.4)	(8.92)
	[.626]	[.501]	[.961]	[.592]
Baseline specification plus full set of individual controls	65.2***	-3.40***	-17.7	4.63
	(13.7)	(.734)	(14.6)	(7.62)
	[.976]	[.957]	[.989]	[.883]
Baseline specification, balanced panel individuals	63.0***	-3.56***	-15.6	3.15
	(16.1)	(.856)	(16.7)	(9.44)
	[.910]	[.812]	[.911]	[.970]
Compliance in omitted reference group [T1: control]	6.12%	92.3%	14.6%	40.6%
Number of Observations (balanced panel sample)	4007 (2704)	4007 (2704)	1069 (753)	1069 (753)

Notes: *** denotes significance at 1%, ** at 5%, and * at 10%. The unit of observation throughout is the individual. The Columns show total response effects, distinguishing between baseline evaders (extrinsically motivated) in Columns 1a and 1b, and baseline compliers/donors (intrinsically motivated) in Columns 2a and 2b. These classifications are based on behavior of the individual in the 2010 tax year, the year prior to our field experiment. A baseline evader is defined to be an individual that paid strictly less than their true tax liability in the 2010 tax year. Compliers paid exactly their true liability, and donors overpaid, in the 2010 tax year. We consider two types of outcomes for the total response: the probability of increasing tax payments and the size of the tax gap (donation gap) for evaders (compliers/donors), where the donation gap is capped at two. In these specifications we control for the individual's average pre-treatment value of the outcome, and dummy variables for the randomization strata. Robust standard errors are in parentheses. As a point of comparison, the first row shows our baseline total response estimates among baseline evaders and baseline compliers/donors, for the impact of the T2 Tax Salience treatment relative to the T1 Control Group. At the foot of each panel we report the level of the outcome in the T1 comparison group. For the total response, we report each treatment effect (and its standard error) scaled as a percentage of this average in the comparison group. In each subsequent robustness check, we report the p-value on the cross-equation test of whether the estimated total response differs significantly from our preferred baseline estimate. The first robustness check row estimates our baseline specification unconditional on all other controls except the indicator for assignment to T2. The next additionally conditions on the randomization strata, the third excludes the control for past compliance behavior, the fourth augments our baseline specification with additionally controls for individual characteristics (male, age, number of children, joint filer, receive wage income, liable for trade taxes, and payment bin for the local church tax). The final row estimates our baseline specification in the balanced subsample of individuals that are observed in all tax years 2007-11.
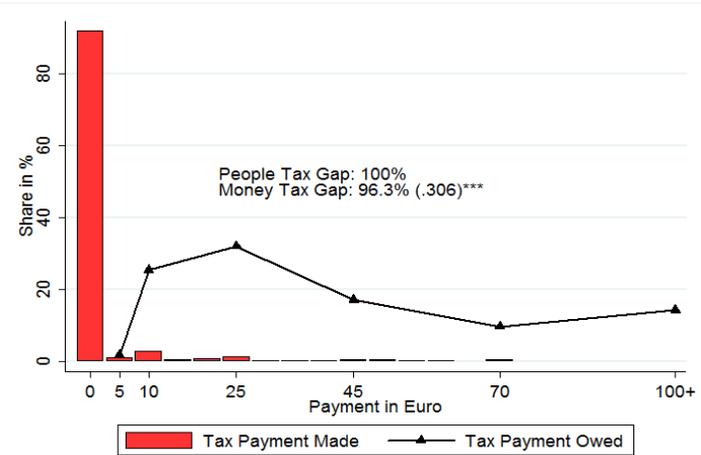
Summary: The sign, significance and magnitude of our baseline estimates are robust to these changes in specification.

Figure 1: Baseline Compliance Under Zero Deterrence
Distributions of Payment Made vs. Payment Owed

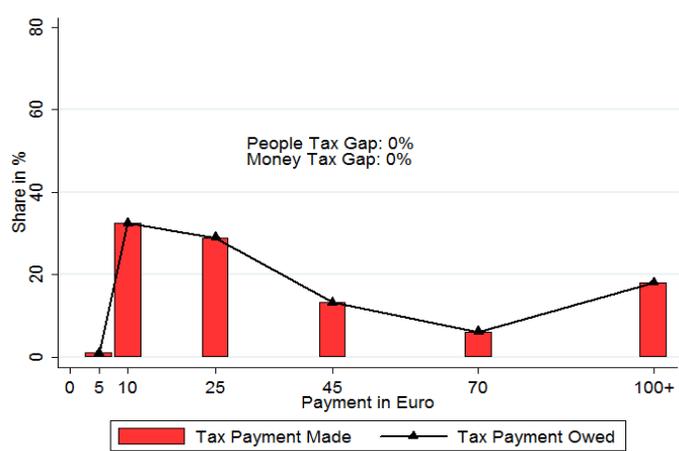### A. All Individuals In Control Group
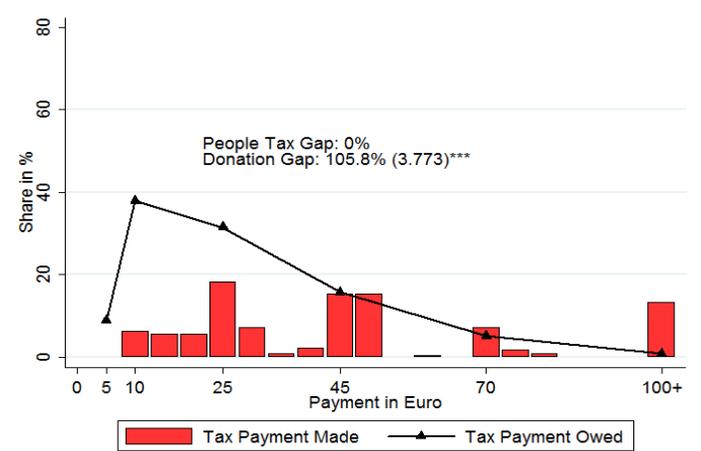
B. Baseline Evaders in Control Group

Intrinsically Motivated Individuals in Control Group
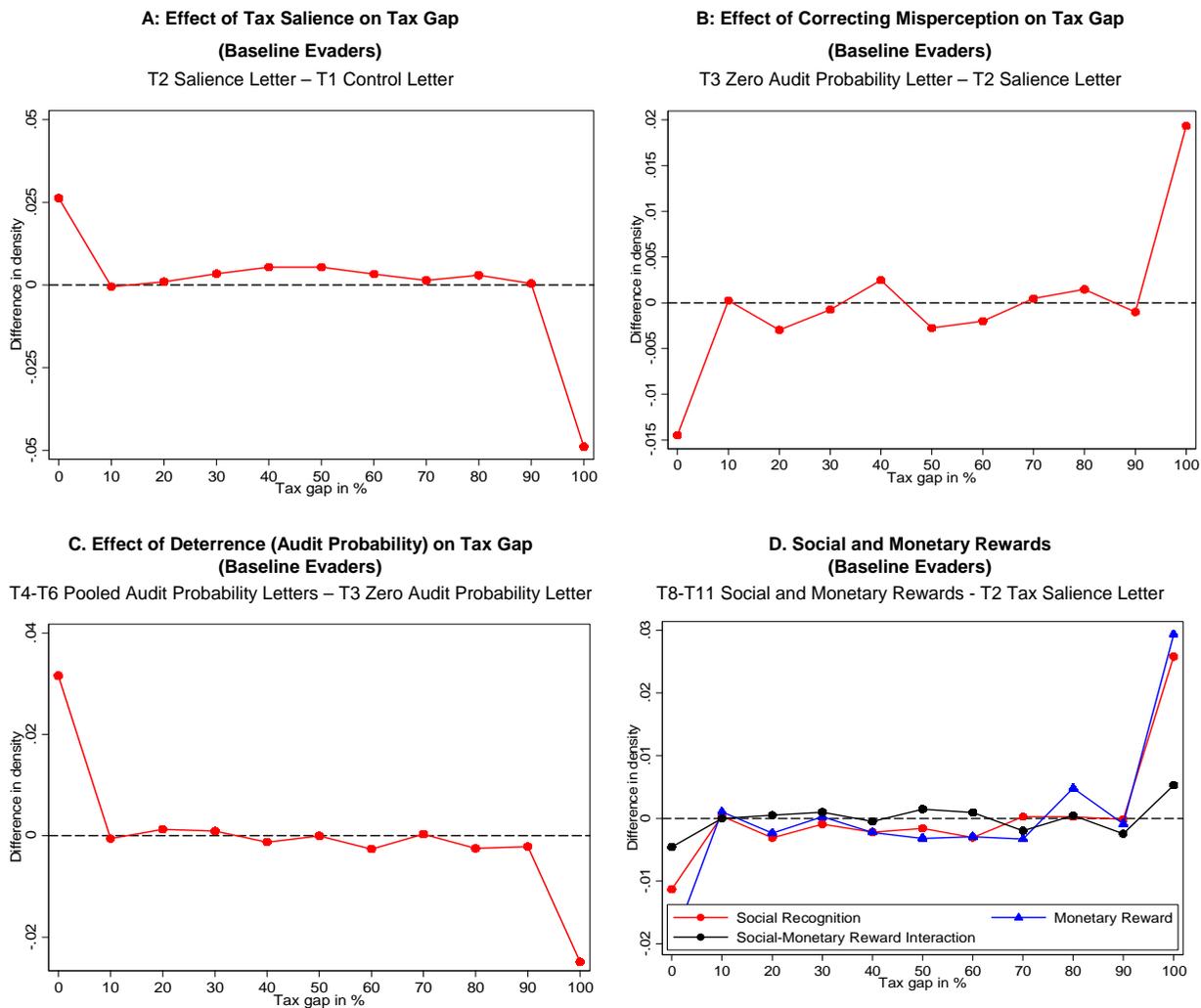
C. Baseline Compliers in Control Group

D. Baseline Donors in Control Group

Notes: The figure displays the difference in empirical densities between payments made (red bars) and payments owed (black line with triangles) in the T1 Control Group in the year of the natural field experiment (tax year 2011). Panel A refers to all individuals in the control group. Panel B refers to the sample of baseline evaders, who paid less than or exactly the amount owed. Panel C refers to the sample of baseline compliers. Panel D refers to the sample of baseline donors and shows the donation gap (rather than the money tax gap). The bin size in both panels is 5 Euro.

Summary: Panel A shows that most individuals underpay. The people tax gap is 80%, and in aggregate the money tax gap, a measure of foregone tax revenue, is 77%. By definition, among baseline evaders the people tax gap is 100%. Among baseline compliers, the money and people tax gaps are zero, and among baseline donors, the people tax gap is zero.
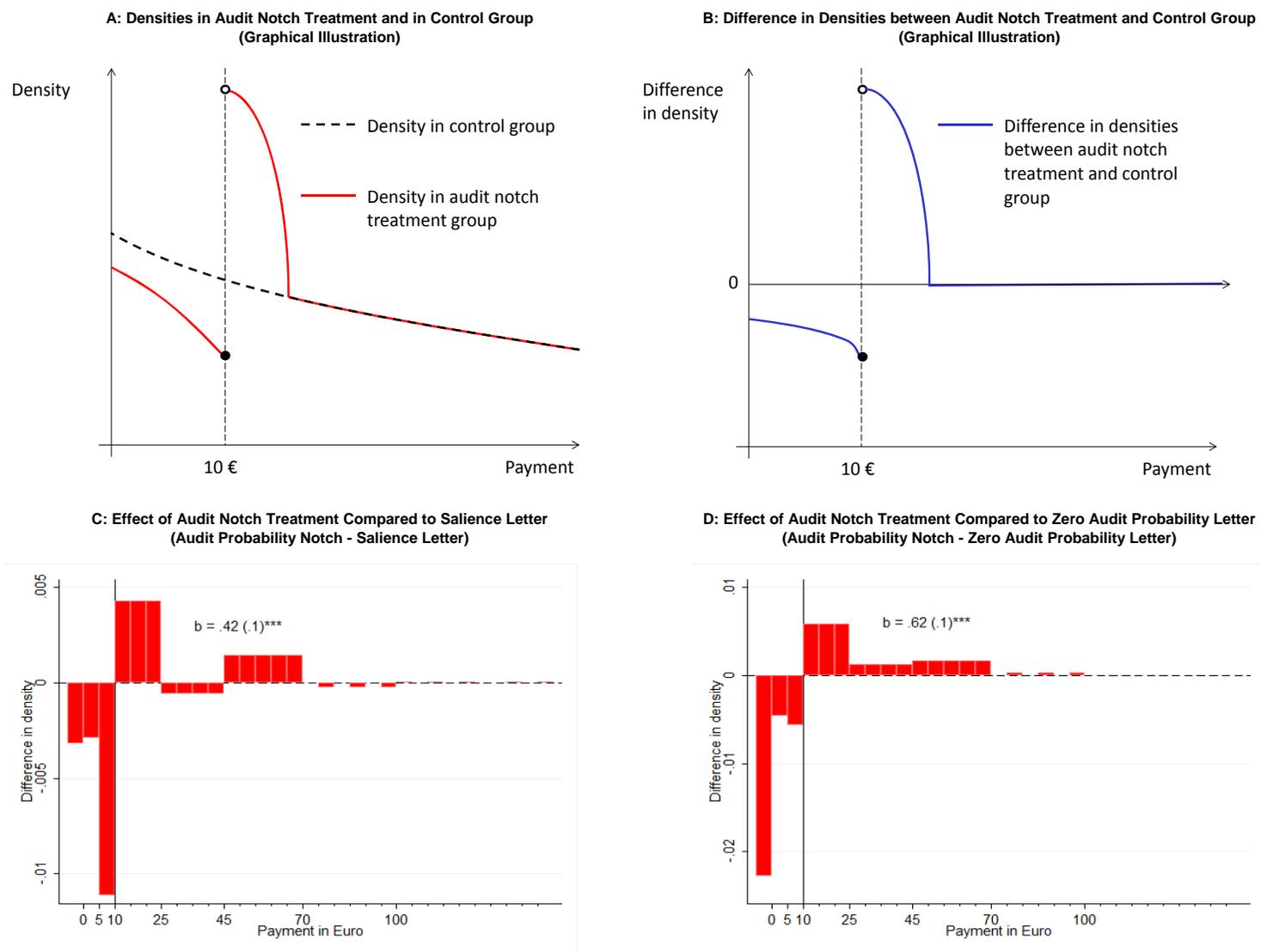
Figure 2: Distributional Effects Of Treatments on Tax Gap (%)

A: Effect of Tax Salience on Tax Gap
(Baseline Evaders)
T2 Salience Letter – T1 Control Letter

B: Effect of Correcting Misperception on Tax Gap
(Baseline Evaders)
T3 Zero Audit Probability Letter – T2 Salience Letter

C. Effect of Deterrence (Audit Probability) on Tax Gap
(Baseline Evaders)
T4-T6 Pooled Audit Probability Letters – T3 Zero Audit Probability Letter

D. Social and Monetary Rewards
(Baseline Evaders)
T8-T11 Social and Monetary Rewards - T2 Tax Salience Letter

Notes: The figure displays the difference in the empirical density distributions of the tax gap (difference between payment owed and payment made as percentage of payment owed). Panel A shows the effect of tax salience on the tax gap by comparing the density distribution of the salience (simplification) letter to the density distribution of the control letter. Panel B shows the effect of correcting misperception about audit probability on the tax gap by comparing the density distribution of the zero audit probability letter to the density distribution of the salience letter. Panel C compares the pooled p-treatments with strictly positive audit probabilities with the T3 Misperception treatment that states p=0. Panel D compares the various rewards treatments with the T2 Tax Salience treatment. In all panels: (i) the dashed horizontal line denotes zero difference in density distributions between the compared letter groups; (ii) the sample consists of baseline evaders, who paid less than or exactly the amount owed prior to treatment; (iii) the bin size in both panels is 0.1.

Summary: Panel A shows that individuals receiving the salience letter are more likely to exhibit a zero tax gap and are less likely to exhibit a 100% tax gap, with only very small effects in the middle of the distribution. Panel B shows that individuals receiving the zero audit probability letter are less likely to exhibit a zero tax gap and are more likely to exhibit a100% tax gap, with only very small effects in the middle of the distribution. Panel C shows the impact of positive audit probabilities is to shift baseline evaders to full compliance. Panel F shows the impacts of social and monetary rewards to shift baseline evaders to full evasion.
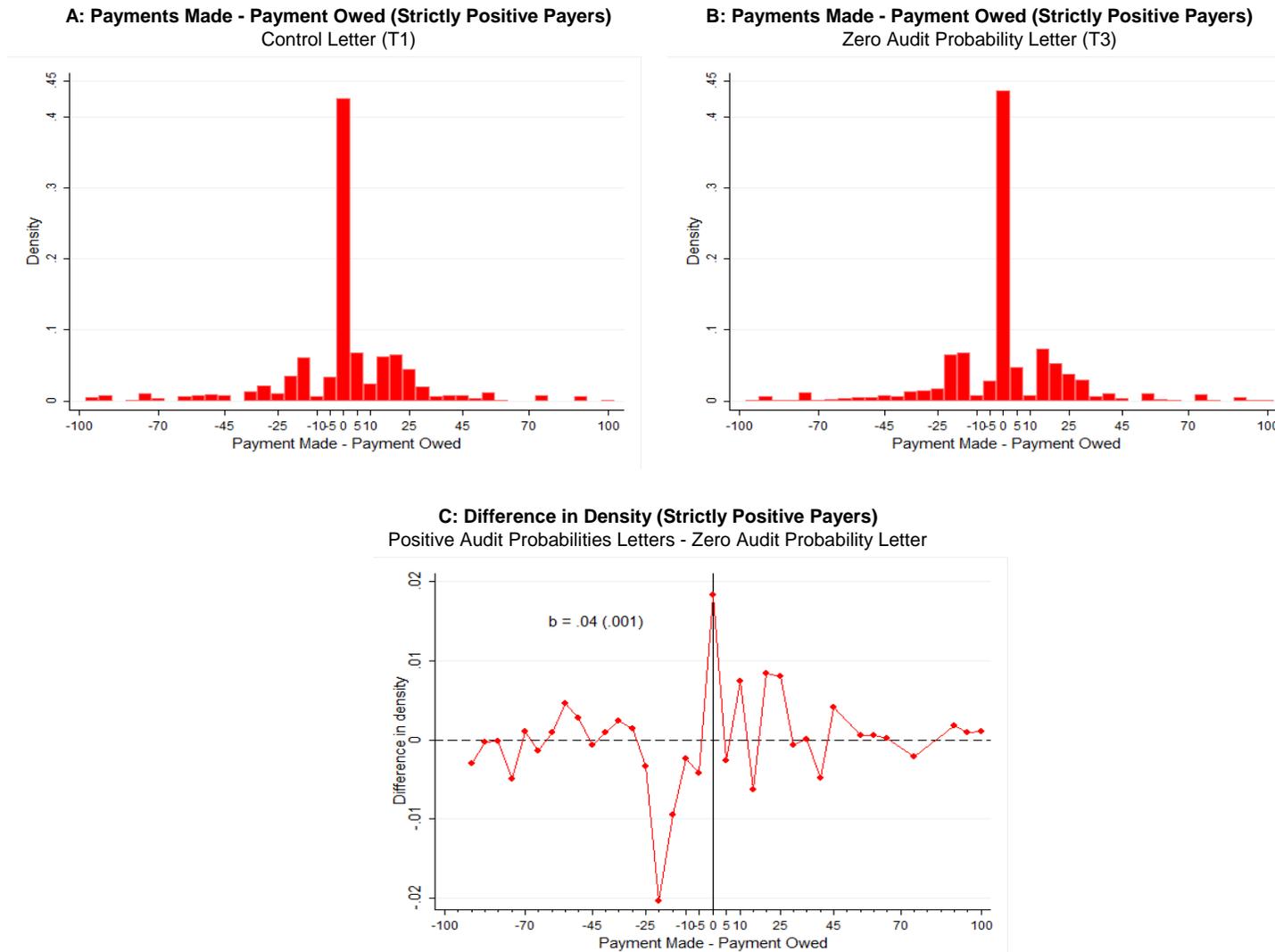
Figure 3: Distributional Effects of Audit Probability Notch on Tax Gap

A: Densities in Audit Notch Treatment and in Control Group
(Graphical Illustration)

B: Difference in Densities between Audit Notch Treatment and Control Group
(Graphical Illustration)

C: Effect of Audit Notch Treatment Compared to Salience Letter
(Audit Probability Notch - Salience Letter)

D: Effect of Audit Notch Treatment Compared to Zero Audit Probability Letter
(Audit Probability Notch - Zero Audit Probability Letter)

Notes: Panel A provides a graphical illustration of the distribution of payments made expected for the audit probability notch treatment (compared to the distribution of payments in the control group). Panel B graphically illustrates the expected difference in densities between the audit probability notch treatment and the control group. Panels C and D display the difference in the empirical density distributions of payments made. The density distribution of the audit probability notch letter group is compared to the density distribution of the salience letter group in panel C and to the density distribution of the zero audit probability letter group in panel D. In both lower panels, the dashed horizontal line denotes zero difference in density distributions between the compared letter groups. The vertical line denotes the threshold at which the audit probability dips from 50% (payments below) to 0% (payments above). Bunching b is the excess mass just above the threshold (scaled by the average counterfactual density below the notch). In both panels, the sample consists of baseline evaders, who paid less than the amount owed prior to treatment (baseline year 2011). The sample is limited to those with payments weakly smaller than 150 Euro. The bin size is 5 Euro. We account for differences in the size of tax brackets below and above the threshold by averaging densities within tax brackets.

Summary: Both panels C and D show that individuals receiving the audit probability notch letter are less likely to pay amounts subject to a positive audit probability but instead move to the payment bin just above the threshold. Excess bunching is .42 the height of the counterfactual distribution in Panel C and .62 the height of the counterfactual distribution in Panel D. Both estimates are strongly significant.

Figure 4: Bunching at Exact Compliance

A: Payments Made - Payment Owed (Strictly Positive Payers)
Control Letter (T1)

B: Payments Made - Payment Owed (Strictly Positive Payers)
Zero Audit Probability Letter (T3)

C: Difference in Density (Strictly Positive Payers)
Positive Audit Probabilities Letters - Zero Audit Probability Letter

Notes: The upper panel displays the raw distributions of the difference between payment made and payment owed. Panel A shows the distribution for the control letter and Panel B displays the distribution for the zero audit probability letter. In both panels, the difference between payment made and payment owed is zero for more than 40% of taxpayers. Panel C shows the excess bunching at exact compliance comparing the density distribution of the pooled positive audit probability letters (T4-T6) to the density distribution of the zero audit probability letter (T3). In all panels, the sample consists of the intrinsically motivated compliers and donors with strictly positive payments. The bin size in all panels is 5 Euro.

Summary: In both Panels A and B the mode of the distribution clearly is at exact compliance. Bunching at exact compliance even under zero deterrence is in line with a duty to obey the law as proposed by the conceptual framework. Panel C shows a spike at exact compliance, which suggests that exact compliance is indeed driven by duty-to-comply (and not by guilt/shame which would create a notch at exact compliance).

Figure A1: Local Church Tax Schedule
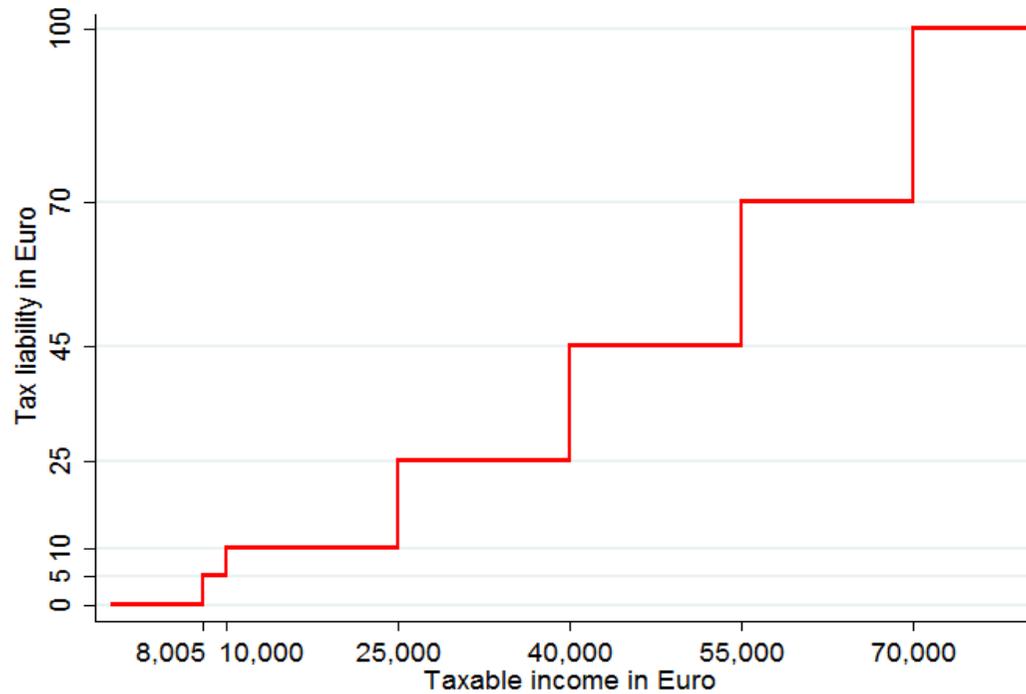
Level	Annual income or benefits	Annual Church Tax	% of Sample in Tax Bracket, 2011
1	€ 8,005 to € 9,999	€ 5	2,37
2	€ 10,000 to € 24,999	€ 10	26,5
3	€ 25,000 to € 39,999	€ 25	32.0
4	€ 40,000 to € 54,999	€ 45	16,8
5	€ 55,000 to € 69,999	€ 70	9,43
6	€ 70,000 and above	€ 100	12,9

Notes: Figure A1 shows the local church tax schedule: the x-axis shows taxable income. This is a progressive tax schedule with six payment bins. The lower table shows the percentage of the sample in the year of the field experiment that falls into each payment bin.

T1 (Control) Letter

[Letter head, including addressee, postal address, phone number of service hotline, and email address of local church administration]

[place & date]

Dear Ms/Mr [addressee's family name],

As every year, we kindly ask you herewith for your annual local church tax payment, with which you directly support the work of your Evangelical-Lutheran congregation and the social work of the deaconry. The local church tax forms part of the general church tax and is collected once yearly by the Evangelical-Lutheran Church in […].

What do you get from the local church tax?
Many congregations and services use the local church tax funds for very elementary purposes, such as church maintenance or to cover heating costs. With your local church tax you help the churches to stay open and offer a home to those who need it.

Be it the Baptism and Confirmation of your children, or a church wedding, we are always there when you need us. Or when tragedy or a crisis hits. You will always find someone who listens and provides concrete support in your congregation and at our Evangelical counselling centres. With your local church tax, you also support more than 60 Evangelical kindergartens that instil Christian values in our children and thus provide a solid basis for the development of their character.

The Evangelical Church is also engaged in the region's social hotspots. Your local church tax supports important on-going projects dedicated to the social reintegration of troubled youths, keeping them from sliding into social alienation. Your contribution also helps to sustain 17 nursing services for elderly and sick people. You can also find further examples of our work in the enclosed bulletin.

Why is the local church tax so important?
The local church tax has become increasingly important for the Church District of the Evangelical-Lutheran Church of […] because the grants received by the local parishes have declined over the years. 60% of the gross revenue goes to the congregations, 28% to the deaconry and 12% to supra-congregational services (such as counselling centres). In 2011, the local church tax collected 1.7 million euros. We express our heartfelt gratitude to all those who, with their contribution, make possible the continued provision of the various church services in […].

How much Local church tax do you have to pay?
The Local church tax is staggered according to income and ranges from € 5 to € 100 annually, depending on your own income assessment. This letter has the legal status of a tax bill. We would therefore kindly ask that each tax bill recipient in a household (e.g., husband and wife) transfer the respective amount of local church tax separately, specifying your local church tax number (cf. remittance slip). We apologise for any inconvenience in this regard.

You will find further information on the back of this page. If you have any questions, we would be glad to answer them at our service hotline […] or per e-mail at […]. We appreciate your financial support.

With kind regards,

[signature in handwriting]

Regional Dean of the Church District

[bank transfer slip printed on lower part of letter]

Information regarding the local church tax

1. The local church tax
is, together with the church payroll tax and the church income tax, a compulsory contribution that is collected once a year and that benefits your local congregation directly. All congregation members over 18 years of age receive the local church tax payment notice, so that a family can receive several such notices. (For technical reasons, it is not possible to do otherwise. We apologize for any inconvenience.) The local church tax revenues remain in the Church District of […] and are then allotted to the local congregations as well as to supra-congregational and deaconry projects in the […] district, in accordance with the guidelines set forth by the District Synod. In Bavaria, the rate for both the church payroll tax and the church income tax is at 8%, lower than in most other federal states (where it is 9% of the general payroll and income tax). In Bavaria, the church collects the local church tax in addition to the aforementioned taxes.

2. The legal foundation
for collecting the local church tax is the Kirchensteuergesetz (KirchStG) as published on November 21, 1994 (GVBI, p. 250), last amended on 22 December 2008 (GVBI, p. 973) and the Kirchensteuererhebungsgesetz of December 9, 2002 (KABI. 2003, p. 19), as well as by the Implementing Regulation on the Kirchensteuererhebungsgesetz of October 15, 2003 (KABI. 2003 p. 306). You can find the corresponding legal texts at […]. We would also be happy to send them to you upon request.

3. Subject to the local church tax
are all members of the Evangelical-Lutheran Congregation who, as of January 1st, fulfill all the following conditions (Article 7 para. 3 of the Church Levy Collection Act):
• Have turned 18 years old before January 1st of the current year
• Had an income of more than € 8,004 (the tax-exempt amount in accordance with Article 32a para. I No. 1 of the Income Tax Law [EStG]). As a general rule, this is the taxable income, but other income such as alimony or child support, benefit payments, pensions or regular stipends must also be considered.
• Residence within the area of the […].

4. Exempt taxation are
• All congregants under the age of 18,
• Congregants above the age of 18 whose income does not exceed € 8,005 (see point 3 above).
Should any of the conditions above apply, you can file an objection within one month of receipt of this notification. To this end, simply return the notification, together with a short explanation, to […], or send an e-mail with an explanatory statement, including your local church tax number (indicated on the bank transfer form), your first and family names and your address to […].

5. The amount of local church tax
is staggered according to income from €5 to €100. We suggest that, in making the self-assessment, you take as a basis the yearly income used to sustain your livelihood (see Point 3 above). We ask you to make your payment no later than **September 15, 2012**. We thank you in advance.

Tier	Yearly Income or Benefits	Annual Local Church Tax
1	€ 8,005 to € 9,999	€ 5
2	€ 10,000 to € 24,999	€ 10
3	€ 25,000 to € 39,999	€ 25
4	€ 40,000 to € 54,999	€ 45
5	€ 55,000 to € 69,999	€ 70
6	€ 70,000 and above	€ 100

6. Tax-reducing expenditure
The local church tax payment can be claimed as a deductible church tax in your tax filing.

7. Donations
Every sum above €100 is considered a donation, which we gratefully appreciate. For donations between €100 and €300, the tax office accepts a plain certificate of donation, such as a bank transfer slip where the beneficiary institution and the intended purpose are shown. For donations above €300, we will automatically send you a donation certificate.

8. Payment already effected
Should you have already paid the local church tax, please disregard this notice. For technical reasons, it is not possible for us to identify payments made before the payment notice is issued and thus exempt you from receiving it.

9. Further information
is available at […]

T2 (Salience) Letter

[Letter head, including addressee, postal address, phone number of service hotline, and email address of local church administration]

[place & date]

Dear Ms/Mr [addressee's family name],

With this letter, we want to inform you that your annual local church tax payment is due. The local church tax forms part of the general church tax and is a compulsory payment that is collected once yearly by the Evangelical-Lutheran Church in the […] region.

Subject to the local church tax are all members of the Evangelical-Lutheran congregation who are at least 18 years of age by January 1st of the current year, earned an income of more than €8,004, and who reside within the area of the Church District. The amount of the local church tax is staggered according to income and ranges from €5 to €100 annually, depending on your own income assessment. We suggest that, in making the self-assessment, you take as a basis the yearly income used to sustain your livelihood. As a general rule, this is your taxable income, but other sources of income such as alimony or child support, benefit payments, pensions or regular stipends must also be considered.

Additional paragraph in treatments T2-T13 here

Tier	Yearly Income or Benefits	Annual Local Church Tax
1	€ 8,005 to € 9,999	€ 5
2	€ 10,000 to € 24,999	€ 10
3	€ 25,000 to € 39,999	€ 25
4	€ 40,000 to € 54,999	€ 45
5	€ 55,000 to € 69,999	€ 70
6	€ 70,000 and above	€ 100

This letter has the legal status of a tax bill. We would therefore kindly ask that each tax bill recipient in a household (e.g., husband and wife) transfer the respective amount of local church tax separately, specifying your local church tax number (cf. remittance slip). We request that your payment be made no later than September 30, 2012.

You will find further information on the back of this page. If you have any questions, we would be glad to answer them at our service hotline […] or per e-mail at […].

With kind regards,

[signature in handwriting]

Regional Dean of the Church District

[bank transfer slip printed on lower part of letter]

Information regarding the local church tax

1. The local church tax
is, together with the church payroll tax and the church income tax, a compulsory contribution that is collected once a year and that benefits your local congregation directly. The local church tax revenues remain in the Church District of […] and are then allotted to the local congregations as well as to supra-congregational and deaconry projects in the […] district, in accordance with the guidelines set forth by the District Synod. In Bavaria, the rate for both the church payroll tax and the church income tax is at 8%, lower than in most other federal states (where it is 9% of the general payroll and income tax). In Bavaria, the church collects the local church tax in addition to the aforementioned taxes.

2. The legal foundation
for collecting the local church tax is the Kirchensteuergesetz (KirchStG) as published on November 21, 1994 (GVBl, p. 1026), last amended on December 22, 2008 (GVBl, p. 973), and the Kirchensteuererhebungsgesetz of December 9, 2002 (KABl. 2010, p. 9), as well as the Implementing Regulation on the Kirchensteuererhebungsgesetz of December 7, 2006 (KABl. 2007 p. 18). You can find the corresponding legal texts at …]. We would also be happy to send them to you upon request.

3. What do you get from the local church tax?
Many congregations and services use the local church tax funds for very elementary purposes, such as church maintenance or to cover heating costs. With your local church tax, you help the churches to stay open and to offer a home to those who need it. With your local church tax, you also support more than 60 Evangelical kindergartens that instil Christian values in our children and thus provide a solid basis for the development of their character.

The Evangelical Church is also engaged in the region's social hotspots. Your local church tax supports important on-going projects dedicated to the social reintegration of troubled youths, keeping them from sliding into social alienation. Your contribution also helps to sustain 17 nursing services for elderly and sick people. You can also find further examples of our work in the enclosed bulletin.

4. Why is the local church tax so important?
The local church tax has become increasingly important for the Church District of the Evangelical-Lutheran Church of […] because the grants received by the local parishes have declined over the years. 60% of the gross revenue goes to the congregations, 28% to the deaconry and 12% to supra-congregational services (such as counselling centres). In 2011, the local church tax collected 1.7 million Euros.

5. Exempt from taxation are
• all congregants under the age of 18,
• congregants above the age of 18 whose income does not exceed € 8,005.
Should any of the conditions above apply, you can file an objection within one month of the receipt of this notification. To this end, simply return the notification, together with a short explanation, to the Church District of […], or send an e-mail with an explanatory statement, including your local church tax number (indicated on the bank transfer form), your first and family names and your address to […].

6. Tax-reducing expenditure
The local church tax payment can be claimed as a deductible church tax in your tax filing.

7. Donations
Every sum above €100 is considered a donation, which we gratefully appreciate. For donations between €100 and €300, the tax office accepts a plain certificate of donation, such as a bank transfer slip where the beneficiary institution and the intended purpose are shown. For donations above €300, we will automatically send you a donation certificate.

8. Payment already effected
Should you have already paid the local church tax, please disregard this notice. For technical reasons, it is not possible for us to identify payments made before the payment notice is issued and thus exempt you from receiving it.

9. Further Information
is available at […]

T1 (Control) Letter in German

[Letter head, including addressee, postal address, phone number of service hotline, and email address of local church administration]

[place & date]

Sehr geehrte/r Frau/Herr [Nachname],

mit diesem Brief bitten wir Sie auch dieses Jahr um Ihr Kirchgeld, mit dem Sie direkt die Arbeit Ihrer Gemeinde und die sozialdiakonischen Dienste der evangelischen Kirche unterstützen. Das Kirchgeld ist ein Teil der Kirchensteuer, der einmal im Jahr von der Evangelisch-Lutherischen Kirche in der Region […] erhoben wird.

Was haben Sie vom Kirchgeld?
Viele Gemeinden und Dienste verwenden das Kirchgeld für ganz elementare Dinge wie die Instandhaltung ihrer Kirchen oder für Heizkosten. Mit dem Kirchgeld tragen Sie dazu bei, dass die Kirchen offen sind und den Menschen ein Zuhause bieten.

Ob bei der Taufe und Konfirmation Ihres Kindes oder bei Trauungen: Wir sind für Sie da, wenn Sie uns brauchen. Auch im Trauerfall und in Krisenzeiten stehen wir Ihnen bei. In Ihrer Gemeinde und unseren evangelischen Beratungsstellen finden Sie Gehör und konkrete Hilfestellungen. Mit dem Kirchgeld unterstützen wir auch über 60 evangelische Kindergärten, die unseren Kindern christliche Werte vermitteln und so zu einer stabilen Basis ihrer Persönlichkeit beitragen.

Die evangelische Kirche kümmert sich zudem um die sozialen Brennpunkte in der Region. Mit dem Kirchgeld können wichtige Projekte im Rahmen der Jugendsozialarbeit zur Resozialisierung von Jugendlichen weitergeführt werden. Wir verhindern so, dass junge Menschen ins soziale Abseits geraten. Darüber hinaus unterstützen Sie mit Ihrem Beitrag beispielsweise 17 Pflegedienste für alte und kranke Menschen. Konkrete Beispiele unserer Arbeit finden Sie auch in der beigefügten Mitgliederzeitung.

Warum ist das Kirchgeld so wichtig?
Das Kirchgeld gewinnt für die […] zunehmend an Bedeutung, weil die Zuweisungen der Landeskirche an die Gemeinden zurückgegangen sind. 60 % des Reinertrags gehen an die Gemeinden, 28 % an die Diakonie und 12 % an die übergemeindlichen Dienste (z.B. Beratungsstellen). Im Jahr 2011 wurden 1,7 Millionen Euro Kirchgeld eingezahlt. Herzlichen Dank sagen wir allen, die mit ihrem Beitrag die vielfältigen Angebote der evangelischen Kirche in der Region […] ermöglicht haben.

Wie hoch ist der Kirchgeldbeitrag?
Der Pflichtbeitrag Kirchgeld ist nach Einkommen gestaffelt und beträgt einmal jährlich entsprechend Ihrer Selbsteinstufung 5 bis 100 Euro. Da der Kirchgeldbrief ein Steuerbescheid ist, bitten wir Sie, den entsprechenden Betrag für jeden Bescheid gesondert (z.B. Herr und Frau) und mit Angabe der Kirchgeldnummer (siehe Überweisungsformular) zu überweisen. Vielen Dank für Ihr Verständnis.

Weitere Hinweise finden Sie auf der Rückseite. Bei Fragen wenden Sie sich gerne an unser Servicetelefon […] oder schreiben Sie eine E-Mail an […]. Wir bitten Sie um Ihre finanzielle Unterstützung.

Mit herzlichen Grüßen

Ihre

[signature in handwriting]

Stadtdekanin

[bank transfer slip printed on lower part of letter]

Informationen zum Kirchgeld

1. Das Kirchgeld
ist neben der Kirchenlohn- und Kircheneinkommensteuer ein Pflichtbeitrag, der einmal jährlich erhoben wird und direkt Ihrer Kirchengemeinde vor Ort zu Gute kommt. Alle Kirchenmitglieder über 18 Jahren erhalten den Kirchgeldbrief, so dass eine Familie mehrere Briefe erhalten kann. (Aus technischen Gründen ist das nicht anders möglich. Wir bitten um Verständnis.) Das Kirchgeld verbleibt in […], die den Ertrag nach den Vorgaben der Dekanatssynode an die Kirchengemeinden sowie übergemeindliche und diakonische Projekte im Dekanatsbezirk […] verteilt. In Bayern liegt der Hebesatz für die Kirchenlohn- bzw. Kircheneinkommensteuer mit 8 % niedriger als in den meisten anderen Bundesländern (dort 9 % von der Lohn- und Einkommensteuer). In Bayern gibt es zusätzlich das Kirchgeld.

2. Gesetzliche Grundlage
für die Erhebung des Kirchgeldes ist das staatliche Kirchensteuergesetz (KirchStG) in der Fassung der Bekanntmachung vom 21.11.1994 (GVBl. S. 1026), zuletzt geändert durch Gesetz vom 22.12.2008 (GVBl. S. 973) und das Kirchensteuererhebungsgesetz vom 09.12.2002 (KABl. 2003, S. 19) sowie die Ausführungsverordnung zum Kirchensteuererhebungsgesetz vom 15.10.2003 (KABl. 2003 S. 306). Sie finden die entsprechenden Gesetzestexte im Internet unter […]. Wir sind auch gerne bereit, sie Ihnen zuzusenden.

3. Kirchgeldpflichtig
sind evangelisch-lutherische Gemeindeglieder, die am 1. Januar alle folgenden Voraussetzungen erfüllen
(§ 7 Abs.3 KirchensteuererhebungsGesetz)
- Vollendung des 18. Lebensjahres vor dem 1. Januar des laufenden Jahres
- Jährlich mehr als 8.004 € eigene Einkünfte (Grundfreibetrag gemäß §32a Abs.1 Satz 2 Nr.1 EStG) , in der
- Regel das zu versteuernde Einkommen. Zu berücksichtigen sind aber auch andere Bezüge zur Bestreitung
- des Lebensunterhalts wie Unterhaltsleistungen, Versorgungsbezüge, Renten oder regelmäßige Stipendien.
- Wohnsitz im Bereich der […]

4. Befreit vom Kirchgeld sind
- Alle Gemeindeglieder unter 18 Jahren
- Gemeindeglieder über 18 Jahre, wenn ihre jährlichen Einkünfte (s. Punkt 3) unter 8.005 € liegen.

Sollte einer dieser Punkte auf Sie zutreffen, können Sie innerhalb eines Monats Einspruch einlegen. Dazu schicken Sie einfach diesen Brief mit einer kurzen Begründung zurück an die Evangelisch-Lutherische […], […], oder eine entsprechende E-Mail mit Angabe Ihrer Kirchgeldnummer (s. Überweisungsträger), Ihrem Vor- und Nachnamen und Ihrer Anschrift an […].

5. Die Höhe des Kirchgelds
ist nach dem Einkommen gestaffelt zwischen 5 € und 100 €. Wir empfehlen, bei Ihrer Selbsteinschätzung Ihre jährlichen Einkünfte zur Bestreitung des Lebensunterhalts (s. Punkt 3) zu Grunde zu legen. Wir erbitten Ihre Kirchgeldzahlung bis zum **30.09.2012** und bedanken uns im Voraus.

Stufe	Jährliche Einkünfte oder Bezüge	Jährliches Kirchgeld
1	8.005 bis 9.999 €	5 €
2	10.000 bis 24.999 €	10 €
3	25.000 bis 39.999 €	25 €
4	40.000 bis 54.999 €	45 €
5	55.000 bis 69.999 €	70 €
6	70.000 € und mehr	100 €

6. Steuermindernde Sonderausgabe
Die Kirchgeldzahlung können Sie bei Ihrer Steuererklärung als Kirchensteuer geltend machen.

7. Spenden
Jeder Betrag, der die Höchstgrenze von 100 € übersteigt, gilt als Spende (Zuwendung), für die wir herzlich danken. Bei Zahlung eines Betrages zwischen 100 € und 300 € gilt der vereinfachte Zuwendungsnachweis. Hier genügt die Buchungsbestätigung des Kreditinstitutes für das Finanzamt, wenn daraus die begünstigte Körperschaft und der Zweck ersichtlich sind. Bei Zahlung über 300 € erhalten Sie von uns automatisch eine Zuwendungsbescheinigung.

8. Bereits erfolgte Zahlung
Sollten Sie das Kirchgeld bereits gezahlt haben, betrachten Sie diese Kirchgeldaufforderung als gegenstandslos. Aus technischen Gründen ist es uns nicht möglich, eine bereits vor der Kirchgeldaufforderung getätigte Zahlung für das Jahr 2012 zu erfassen und damit zu verhindern, dass Sie einen Kirchgeldbrief erhalten.

9. Weitere Informationen
finden Sie im Internet unter […]

T2 (Salience) Letter in German

[Letter head, including addressee, postal address, phone number of service hotline, and email address of local church administration]

[place & date]

Sehr geehrte/r Frau/Herr [Nachname],

mit diesem Brief möchten wir Sie darüber informieren, dass Ihre diesjährige Kirchgeldzahlung fällig ist. Das Kirchgeld ist ein Teil der Kirchensteuer und damit ein Pflichtbeitrag, der einmal im Jahr von der Evangelisch-Lutherischen Kirche in der Region […] erhoben wird.

Kirchgeldpflichtig sind alle evangelisch-lutherischen Gemeindeglieder, die am 1. Januar des laufenden Jahres das 18. Lebensjahr vollendet haben, deren eigene Einkünfte den Betrag von 8.004 Euro übersteigen und deren Wohnsitz im Bereich der […] liegt. Die Höhe des zu zahlenden Kirchgeldes ist nach Einkommen gestaffelt und beträgt einmal jährlich entsprechend Ihrer Selbsteinstufung 5 bis 100 Euro. Wir empfehlen, bei Ihrer Selbsteinschätzung Ihre jährlichen Einkünfte zur Bestreitung des Lebensunterhalts zu Grunde zu legen. In der Regel entsprechen diese dem zu versteuernden Einkommen. Zu berücksichtigen sind aber auch andere Bezüge zur Bestreitung des Lebensunterhalts wie Unterhaltsleistungen, Versorgungsbezüge, Renten oder regelmäßige Stipendien.

Additional paragraph in treatments T2-T13 here

Stufe	Jährliche Einkünfte oder Bezüge	Jährliches Kirchgeld
1	8.005 bis 9.999 €	5 €
2	10.000 bis 24.999 €	10 €
3	25.000 bis 39.999 €	25 €
4	40.000 bis 54.999 €	45 €
5	55.000 bis 69.999 €	70 €
6	70.000 € und mehr	100 €

Da der Kirchgeldbrief ein Steuerbescheid ist, bitten wir Sie, den entsprechenden Betrag für jeden Bescheid gesondert (z.B. bei Ehepaaren) und mit Angabe der Kirchgeldnummer (siehe Überweisungsformular) zu überweisen. Ihre Kirchgeldzahlung ist zum 30.09.2012 fällig.

Weitere Hinweise finden Sie auf der Rückseite. Bei Fragen wenden Sie sich gerne an unser Servicetelefon […] oder schreiben Sie eine E-Mail an […].

Mit freundlichen Grüßen

Ihre

[signature in handwriting]

Stadtdekanin

[bank transfer slip printed on lower part of letter]

Informationen zum Kirchgeld

1. Das Kirchgeld

ist neben der Kirchenlohn- und Kircheneinkommensteuer ein Pflichtbeitrag, der einmal jährlich erhoben wird und Ihrer Kirchengemeinde vor Ort zu Gute kommt. Das Kirchgeld verbleibt in der […], die den Ertrag nach den Vorgaben der Dekanatssynode an die Kirchengemeinden sowie übergemeindliche und diakonische Projekte im Dekanatsbezirk verteilt. In Bayern liegt der Hebesatz für die Kirchenlohn- bzw. Kircheneinkommensteuer mit 8 % niedriger als in den meisten anderen Bundesländern (dort 9 % von der Lohn- und Einkommensteuer). In Bayern gibt es zusätzlich das Kirchgeld.

2. Gesetzliche Grundlage

für die Erhebung des Kirchgeldes ist das staatliche Kirchensteuergesetz (KirchStG) in der Fassung der Bekanntmachung vom 21.11.1994 (GVBl. S. 1026), zuletzt geändert durch Gesetz vom 22.12.2008 (GVBl. S. 973) und das Kirchensteuererhebungsgesetz vom 09.12.2002 (zuletzt geändert mit Gesetz vom 11.12.2009, KABl. 2010 S. 9) sowie die Ausführungsverordnung zum Kirchensteuererhebungsgesetz vom 15.10.2003 (zuletzt geändert durch Verordnung vom 07.12.2006, KABl. 2007 S. 18). Sie finden die entsprechenden Gesetzestexte im Internet unter […]. Wir sind auch gerne bereit, sie Ihnen zuzusenden.

3. Was haben Sie vom Kirchgeld?

Viele Gemeinden und Dienste verwenden das Kirchgeld für ganz elementare Dinge wie die Instandhaltung ihrer Kirchen oder für Heizkosten. Mit dem Kirchgeld tragen Sie dazu bei, dass die Kirchen offen sind und den Menschen ein Zuhause bieten. Mit dem Kirchgeld unterstützen wir auch über 60 evangelische Kindergärten, die unseren Kindern christliche Werte vermitteln und so zu einer stabilen Basis ihrer Persönlichkeit beitragen.

Die evangelische Kirche kümmert sich zudem um die sozialen Brennpunkte in der Region. Mit dem Kirchgeld können wichtige Projekte im Rahmen der Jugendsozialarbeit zur Resozialisierung von Jugendlichen weitergeführt werden. Wir verhindern so, dass junge Menschen ins soziale Abseits geraten. Darüber hinaus unterstützen Sie mit Ihrem Beitrag beispielsweise 17 Pflegedienste für alte und kranke Menschen. Konkrete Beispiele unserer Arbeit finden Sie auch in der beigefügten Mitgliederzeitung.

4. Warum ist das Kirchgeld so wichtig?

Das Kirchgeld gewinnt für die Evang.-Luth. […] zunehmend an Bedeutung, weil die Zuweisungen der Landeskirche an die Gemeinden zurückgegangen sind. 60 % des Reinertrags gehen an die Gemeinden, 28 % an die Diakonie und 12 % an die übergemeindlichen Dienste (z.B. Beratungsstellen). Im Jahr 2011 wurden 1,7 Millionen Euro Kirchgeld eingezahlt.

5. Befreit vom Kirchgeld sind

• Alle Gemeindeglieder unter 18 Jahren

• Gemeindeglieder über 18 Jahre, wenn ihre jährlichen Einkünfte unter 8.005 € liegen.

Sollte einer dieser Punkte auf Sie zutreffen, können Sie innerhalb eines Monats Einspruch einlegen. Dazu schicken Sie einfach diesen Brief mit einer kurzen Begründung zurück an die Evangelisch-Lutherische […], […], oder eine entsprechende E-Mail mit Angabe Ihrer Kirchgeldnummer (s. Überweisungsträger), Ihrem Vor- und Nachnamen und Ihrer Anschrift an […].

6. Steuermindernde Sonderausgabe

Die Kirchgeldzahlung können Sie bei Ihrer Steuererklärung als Kirchensteuer geltend machen.

7. Spenden

Jeder Betrag, der die Höchstgrenze von 100 € übersteigt, gilt als Spende (Zuwendung), für die wir herzlich danken. Bei Zahlung eines Betrages zwischen 100 € und 300 € gilt der vereinfachte Zuwendungsnachweis. Hier genügt die Buchungsbestätigung des Kreditinstitutes für das Finanzamt, wenn daraus die begünstigte Körperschaft und der Zweck ersichtlich sind. Bei Zahlung über 300 € erhalten Sie von uns automatisch eine Zuwendungsbescheinigung.

8. Bereits erfolgte Zahlung

Sollten Sie das Kirchgeld bereits gezahlt haben, betrachten Sie dieses Schreiben als gegenstandslos. Aus technischen Gründen ist es uns nicht möglich, eine bereits vor der Kirchgeldaufforderung getätigte Zahlung für das Jahr 2012 zu erfassen und damit zu verhindern, dass Sie einen Kirchgeldbrief erhalten.

9. Weitere Informationen

finden Sie im Internet unter […]