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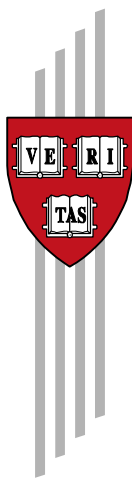
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Norms, Enforcement, and Tax Evasion[*]

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Abstract

This paper studies individual and social motives in tax evasion. We build a simple dynamic model that incorporates these motives and their interaction. The social motives underpin the role of norms and is the source of the dynamics that we study. Our empirical analysis exploits the adoption in 1990 of a poll tax to fund local government in the UK, which led to widespread evasion. The evidence is consistent with the model's main predictions on the dynamics of evasion.

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"A widespread view among tax scholars holds that law enforcement does not explain why people pay taxes. ... Yet large numbers of Americans pay ... Some scholars therefore conclude that the explanation for the tendency to pay taxes must be that people are obeying a norm ..." Posner (2000, p. 1782)

1 Introduction

The size of government in today's advanced economies could not be sustained without high fiscal capacity. This capacity is built not just on material motives (detection and punishment), but on intrinsic motives that curb the desire to cheat. When compliance is a norm, taxpayers may also worry about the reputational cost among their peers of being caught evading. But the interactions between material, intrinsic and social drivers of tax compliance remain poorly understood. Policy-makers need to know the robustness of tax-compliance norms and whether such social motives erode or persist in the wake of compliance shocks. This paper looks as this question, theoretically and empirically.

Theoretically, we propose a model where peoples's tax-compliance motives reflect public enforcement (detection and fines), intrinsic motivation, and how compliance affects their social reputation. The third motive means that interactions across taxpayers can micro-found social motives in tax compliance. We use this model to study the equilibrium dynamics of such social motives and tax evasion. With our empirical application in mind, we predict the impulse responses of tax compliance to a temporary intrinsic-motivation shock.

Empirically, we exploit the poll tax introduced by Margaret Thatcher's government in the early 1990s, which shocked compliance in a low-evasion society. The poll tax was levied equally on all voting-age citizens in each local jurisdiction (council) of the U.K. Deemed unfair by many, it triggered mass evasion, which provoked restoration of a property-based tax system after only three years. Because compliance broke down heterogeneously across councils, the poll-tax reform can be thought of as an array of (council-specific) temporary shocks to the intrinsic motive to pay. The evasion patterns observed *after* this episode gives persuasive evidence on the predictions of our model.

Section 2 formulates our model that builds on insights from three strands of research. The traditional economic literature starts with Allingham and Sandmo (1972), who examine the gamble of citizens who cheat on their taxes, given existing audit-detection probabilities and legal penalties. Slemrod (2007) provides a useful overview of the issues and research on tax compliance. In the work on intrinsic motives for tax compliance, Gordon (1989) refers to "individual morality", Cowell (1990) to "stigma", Erard and Feinstein (1994) to feelings of "guilt and shame", and Torgler (2007) to "tax morale". Luttmer and Singhal (2014) reviews this literature.

Compliance may also reflect social interactions, as in Posner's opening quote. Although

concrete applications to tax compliance are few, social scientists have developed general approaches to social norms. Research in social psychology – started by experiments in Asch (1955) – suggests a clear desire to conform with others.[1] Some scholars put those desires directly into preferences: e.g., Akerlof and Yellen's (1990) model of efficiency wages as a reciprocal norm of fair effort for a fair wage.[2] That social images and peer pressures do influence behavior is confirmed in a range of field experiments reviewed in Burzstyn and Jensen (2017).

In our simple tax-compliance model, individuals are motivated to pay by the threat of punishment, intrinsic motivation, and adherence to a social norm. Compliance depends on the lagged population fraction of evaders, because evasion rates are plausibly observed only with a lag. Evasion follows a simple dynamic process, which converges to a steady state under natural conditions.

We propose a specific micro-foundation based on Benabou and Tirole's (2011) model of laws and norms.[3] Two extensions of their model fit our context: lagged *and* imperfect observability of evasion. Norms matter because tax payers care about their reputation, should evasion be seen by others.[4] The resulting framework does not have to assume *a priori* whether social motives crowd in (complement) or crowd out (substitute) individual motives. But if paying taxes is the modal act – as in our data – we get crowding in, and the difference equation characterizing the time-path of evasion has a positive root. It thus predicts monotone convergence after a shock to the intrinsic motivation to pay, which is how we interpret the introduction of the poll tax.[5]

Section 3 applies the model to new data for tax evasion in the 346 councils of England and Wales for 30 years (1980-2009). This panel data shows that average tax evasion across councils before the poll tax was below 3 percent with little cross-sectional variance.

The poll-tax period 1990-92 saw average evasion rise abruptly to between 10 and 15 percent with large dispersion across councils. This dispersion can only partly be attributed to different demographic, economic and political compositions of councils. We interpret the conditional hikes in tax evasion as proxying for shocks to the intrinsic motives to pay. After the return to property-based taxes in 1993, average evasion returned only gradually towards pre-poll-tax levels. This time pattern squares well with persistent effects of temporary shocks

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[1] For further work in psychology, see e.g., Wenzel (2004) and Hoffman et al (2008).

[2] Another approach to micro-founding norms, as in Kotlikoff, Persson and Svensson (1988) or Kandori (1992), is to embed behavior in a repeated game where the threat of dynamic punishments for norm-violation play a key role.

[3] Jia and Persson (2018) provide another empirical application of Benabou and Tirole's model (to ethnic-identity choices in China).

[4] A somewhat different signalling approach is taken in Posner (2000).

[5] The dynamic model we formulate has some similarities with Lindbeck, Nyberg and Weibull's (2009) model of individual incentives and social norms in unemployment insurance.

to the intrinsic motives to pay, due to dynamically evolving social motives.[6] Moreover, non-parametric estimates after the poll-tax period show clearly that evasion falls more slowly in councils with high evasion during the poll-tax period, just as the theory in Section 2 predicts.

This result does not reflect pre-trends in the data: high-evasion and low-evasion councils were very similar up to the year of the poll-tax shock. We discuss, and rule out, alternative explanations for the observed time patterns of evasion, including initial differences or (endogenous) dynamics in the fiscal capacities of high-evasion and low-evasion councils, and political confounders. We also show that the decay patterns are strongly robust to both parametric and non-parametric controls for time-trends, and to the construction of high versus low evasion groups.

Section 4 considers a theoretical as well as an empirical extension to incorporate endogenous enforcement by the authorities into the analysis. Section 5 concludes the paper. Some details are relegated to an Online Appendix.

2   Theory

We first formulate a dynamic model with the three motives for tax compliance discussed above (Subsection 2.1). We then micro-found it by extending Benabou and Tirole's (2011) model of laws and norms to fit our context (Subsection 2.2). Finally, we derive the predicted impulse responses, following a temporary shock to the intrinsic motives to pay (Subsection 2.3).

2.1   Basic Model

Consider a council (peer group) with a continuum of agents of size (measure) one. Time is denoted by t. In each period, taxpayers must decide whether to comply or evade their taxes: $e_t \in \{0, 1\}$ with $e_t = 1$ denoting evasion.[7] All taxpayers have the same exogenous constant income y and tax liability x. As in the Allingham-Sandmo framework, the material motive to pay m, is the expected cost of getting caught (probability times punishment), determined by the council. The net material motive for evasion is thus $x - m$.

Taxpayers may also comply because of an intrinsic cost from evasion, with average level i_t. However, this cost varies across individuals, with a higher v_t denoting a greater proclivity to pay taxes. Idiosyncratic parameter v is thus positive or negative and we assume that it is drawn from a symmetric, unimodal distribution with unbounded support.[8] By defini-

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[6] This persistence is consistent with the evidence presented in Helliwell, Wang and Xu (2013).

[7] A binary evasion decision fits our context, as nobody partially avoids their council tax.

[8] For example Helliwell (2003) reports a positive correlation between subjective levels of well-being and desires never to evade taxes.

tion, $E(v) = 0$, and we denote the p.d.f. and c.d.f. of the distribution by $g(v)$ and $G(v)$ respectively. We think about v as the taxpayer's *type*.

In general, we write the social component of individual preferences as $S(e_t, \lambda_{t-1})$ where λ_{t-1} is the share of individuals who evade their taxes at $t-1$. This assumes that average tax evasion is only observed with a lag, a plausible assumption as it takes time to audit tax payers, and take any tax evaders to court. In contrast to frameworks where individuals instantaneously find the long-run equilibrium, lagged observability induces the kind of adaptive behavior typical of evolutionary models, which is also typically found in lab experiments. The adaptive dynamics are crucial as they imply that social motives influence compliance with a lag.

Individual preferences Summarizing, the preferences of a type v taxpayer are:

$$u(v, e, \lambda) = y - [x + \mu S(0, \lambda)](1 - e) - [m + i + v + \mu S(1, \lambda)]e, \tag{1}$$

where weight μ parametrizes the importance of the social motive. This motive amounts to comparing the social-utility components $S(0, \lambda_{t-1})$ and $S(1, \lambda_{t-1})$ – evasion is thus influenced by the *relative social payoff*:

$$\Delta(\lambda) = S(0, \lambda) - S(1, \lambda).$$

How evasion affects the social motive hinges on whether $\Delta(\lambda)$ increases or decreases in λ. Before elaborating on this micro-foundation, however, we consider how equilibrium evasion evolves over time.

Equilibrium evasion Suppose currently observed evasion is λ_{t-1} and all other motives for evasion are constant over time. Then, an individual with intrinsic motivation v evades her tax iff

$$x + \mu S(0, \lambda_{t-1}) \geq i + m + v + \mu S(1, \lambda_{t-1}).$$

Individuals with v lower than the threshold defined by this expression will thus evade. Using the c.d.f. G, the equilibrium date t share of evaders follows the non-linear, first-order difference equation:

$$\lambda_t = G(M - \mu \Delta(\lambda_{t-1})), \tag{2}$$

where $M \equiv x - m - i$.

As in a standard model, higher material incentives to pay – such as greater enforcement m – reduces evasion, while a higher tax liability x increases it. Higher (average) intrinsic motivation to pay taxes i reduces evasion.

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Equilibrium dynamics To explore the dynamics, consider a steady state defined by

$$\hat{\lambda} = G\left(M - \mu\Delta(\hat{\lambda})\right) \tag{3}$$

and a linear approximation around it

$$\lambda_t \simeq \hat{\lambda} + \alpha\left[\lambda_{t-1} - \hat{\lambda}\right].$$

Here, $\alpha = -g\left(M + \mu\Delta(\hat{\lambda})\right)\mu\Delta_\lambda(\hat{\lambda})$ is like a social multiplier, when evasion deviates from its steady-state value.

The sign of α can be positive or negative depending on whether individual evasion rates are strategic complements or substitutes, which correspond to $\Delta_\lambda \gtreqless 0$. In either case, we assume that $|\alpha| < 1$ so the steady-state is stable and a shock is "self-correcting" over time. Then, the difference equation has the standard solution

$$\lambda_t = \lambda_0\left(\alpha\right)^t + \hat{\lambda}\left[1 - (\alpha)^t\right]. \tag{4}$$

From any initial value λ_0, the rate of evasion, λ_t, thus converges to the steady state $\hat{\lambda}$. If $\alpha < 0$, convergence is oscillating, whereas it is monotonic if $\alpha > 0$. While we could specify the sign of Δ_λ and α a priori, we will instead rely on a micro-founded model, based on Benabou and Tirole (2011).

2.2 Micro-founded Social Motives

Benabou and Tirole's (2011) model incorporates individual and social motives, where people care about their reputation for being pro-social. Suppose the prevailing social norm dictates that it is honorable to pay your taxes – i.e., to set $e = 0$. Because individuals with high v more likely pay their taxes, people get positive (negative) reputational utility from being perceived as a high-v (low-v) type.

Imperfect observability. Invoking lagged observability of average compliance, we turn Benabou and Tirole's static model into a simple dynamic model. Given our application, we also relax perfect observability: it is plausible that a tax evader, $e = 1$, is imperfectly observed by the tax authorities and her peers. We capture this by a binary signal $\sigma \in \{1, \phi\}$, where 1 means being observed evading, while ϕ means not being observed. Let $\rho \in [0, 1]$ be the conditional probability of observing $\sigma = 1$ when $e = 1$. In general, we expect ρ to depend positively on m – as more resources raise the likelihood to observe and punishes evaders, and thus to publicly observe their evasion.

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Thus there are no false positives: individuals can only be observed evading if they do evade. But there are false negatives: some individuals with low v-values are not observed to evade even though they do. Citizens take this imperfect observability into account in their inference about types.

Relative social payoffs To explore the micro-foundations further, define

$$E\left(0,\lambda\right)=\int_{G^{-1}(\lambda)}^{\infty}v\frac{dG\left(v\right)}{1-\lambda}\text{ and }E\left(1,\lambda\right)=\int_{-\infty}^{G^{-1}(\lambda)}v\frac{dG\left(v\right)}{\lambda}$$

as the conditional (truncated) means above and below the evasion cutoff defined by a particular fraction λ of evaders. Using Bayes' rule, let

$$Q^{\phi}\left(\lambda\right)=\frac{\lambda\left(1-\rho\right)}{1-\lambda\rho}$$

be the probability that an individual has $v\geq G^{-1}\left(\lambda\right)$ conditional on not observing evasion $\sigma=\phi$. Finally, let

$$V^{\phi}\left(\lambda\right)=Q^{\phi}\left(\lambda\right)E\left(1,\lambda\right)+\left(1-Q^{\phi}\left(\lambda\right)\right)E\left(0,\lambda\right)$$

be the expected value of v conditional on not observing evasion.

Given these preliminaries, the social payoff associated with the two actions is:

$$S\left(e,\lambda\right)=\begin{cases}\rho E\left(1,\lambda\right)+\left(1-\rho\right)V^{\phi}\left(\lambda\right) & \text{if }e=1\\ V^{\phi}\left(\lambda\right) & \text{if }e=0.\end{cases}$$

The relative social payoff defined in Subsection 2.1 becomes

$$\Delta\left(\lambda\right)=\rho\left(1-Q^{\phi}\left(\lambda\right)\right)\delta\left(\lambda\right).$$

In the language of Benabou and Tirole (2011), $\delta\left(\lambda\right)=\left[E\left(0,\lambda\right)-E\left(1,\lambda\right)\right]>0$ is "the honor of the pro-social choice less the stigma of the antisocial choice". This expression must be positive by definition of the truncated means of a mean-zero variable. But here, $\delta\left(\lambda\right)$ is "adjusted" for imperfect observability when $e=1$.

Strategic complements or substitutes? To understand the sign and size of $\Delta_{\lambda}\left(\lambda\right)$, we inspect the sign of $\delta_{\lambda}\left(\lambda\right)$. As λ increases, both truncated means in the definition of $\delta\left(\lambda\right)$ go up, so the effect on the reputational term $\delta\left(\cdot\right)$ is generally ambiguous. To sign it we draw on the results in Jewitt (2004). Single-peakedness and symmetry of density $g\left(\cdot\right)$ imply that

$\delta(\lambda) = E(0, \lambda) - E(1, \lambda) > 0$ has a unique minimum at $\lambda = 1/2$. In our data, $\lambda < 1/2$ always: no council-year has evasion above 50 percent. In this region, $\delta_\lambda(\lambda) < 0$. Intuitively, when compliance is the modal choice, a higher number of evaders cuts the stigma of evading by more than it raises the honor of complying.

We can now sign the effect of an higher λ on the relative social payoff:

$$\Delta_\lambda(\lambda) = \rho \left[-\frac{\partial Q^\phi(\lambda)}{\partial \lambda} [E(0, \lambda) - E(1, \lambda)] + (1 - Q^\phi(\lambda)) \delta_\lambda(\lambda) \right]. \tag{5}$$

Since $Q^\phi(\lambda)$ is a fraction, the second term in this expression is negative as long as $\delta_\lambda(\lambda)$ is negative. Because $E(0, \lambda) > E(1, \lambda)$, the sign of the first informational-effect term depends on:

$$\frac{\partial Q^\phi(\lambda)}{\partial \lambda} = \frac{(1 - \rho)}{(1 - \lambda \rho)^2} \geq 0.$$

In words, higher average evasion raises the probability that an individual not observed to cheat is an evader (the expression is zero with perfect observability, $\rho = 1$). Thus the first term in (5) is also negative.

To summarize, $\Delta_\lambda(\lambda) < 0$ when non-evasion is the modal choice. A higher population of evaders reduces the reputational utility from paying taxes – i.e., evading inflicts a negative externality on others. Therefore, individual evasion decisions become strategic complements. As a result, shifting individual motives that raise evasion – weaker intrinsic motives i or material enforcement m – are crowded in by social motives.[9]

Back to the general framework We can map these results into the equilibrium framework of Subsection 2.1. In particular, the root of difference equation (4) becomes:

$$\alpha = -\mu \Delta_\lambda(\hat{\lambda}) g \left(M - \mu \Delta(\hat{\lambda}) \right). \tag{6}$$

As we have seen, $\alpha > 0$ if the steady state $\hat{\lambda} = G\left(M - \mu \Delta(\hat{\lambda})\right) < 1/2$. Moreover, the root of the difference equation that governs the equilibrium evasion dynamics depends on the detection probability conditional on non-compliance and the signalling effect from taking the honorable compliance act.

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[9]When a majority of people evade their taxes, we could instead get crowding out via a strategic-substitutes effect.

2.3 Predictions

We apply the model to the council-specific evasion shifts triggered by the U.K. poll tax, introduced by the 1988 Local Government Act and implemented in 1990 (see further discussion in Section 3). Many taxpayers saw this tax as unfair, which reduced their intrinsic motives to pay.[10] But the poll tax was temporary: it was abolished in 1993 and replaced by a property-value based system akin to the one before 1990. Hence, the treatment period is 1990-1992. In what follows, we treat these years as a single period.

The poll-tax shock Let $c = 1, ..., C$ index local councils that each begin in a steady state at $\hat{\lambda}_c$. At $t = 0$, each council experiences a negative poll-tax shock of size β_c and we order the councils such that $\beta_1 < ... < \beta_C$. The shock is reversed at $t = 1$ and all parameters revert back to their initial steady-state values. In the model, these shocks correspond to a negative downward shift of $i_{c,t}$, the average intrinsic motive to pay taxes, due to the perceived unfairness of the tax.[11] Formally,

$$i_{c,t} = \begin{cases} i'_c < i_c & \text{for } t = 0. \\ i_c & \text{otherwise.} \end{cases} \tag{7}$$

We can define the $t = 0$ shock by

$$\beta_c = G\left(x_c - m_c - i'_{c,0} - \mu\Delta(\hat{\lambda}_c)\right) - G\left(x_c - m_c - i_{c,0} - \mu\Delta(\hat{\lambda}_c)\right),$$

the period-0 hike in the fraction of evaders. Thus, observed average evasion at $t = 1$ including this impact effect becomes

$$\lambda_{c,0} = \hat{\lambda}_c + \beta_c.$$

Predicted impulse response From (4), the time path following the shock at $t = 0$ is given by

$$\lambda_{c,t} = \hat{\lambda}_c + \beta_c\left(\alpha_c\right)^t,$$

where α_c and β_c govern the dynamics in council c. The social motive to comply is important in mediating the shock, unless $\mu = 0$. In that case, $\alpha_c = 0$ and we would see a downward jump at $t = 0$ when i_c falls, followed by a reverse upward jump, returning to previous compliance

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[10]This is consistent with the ideas in Cummings et al. (2009), who show a link between willingness to pay taxes and perceptions of governemnt quality. Evidence discussed in Hoffman et al. (2008) supports the idea that perceptions of tax fairness shape attitudes towards tax compliance.

[11]A largely equivalent formulation would be to suppose that the shock to motives during the poll tax period results form a temporary change in the parameter μ as evasion becomes a virtuous act.

already at $t = 1$. However, as $\mu > 0$ and $\alpha_c > 0$, the equilibrium dynamic adjustment is gradual.

Because the variation in tax evasion prior to the introduction of the poll-tax experiment was small (see Figure 1 below), we impose an approximate common starting value $\hat{\lambda}$ for tax evasion. Then, definition (6) implies that α_c is the same across councils.

We can summarize this discussion as follows:

Prediction *The impulse-response function for the share of tax evaders takes an upward jump to $\hat{\lambda}_c + \beta_c$ at $t = 0$ and falls monotonically back to $\hat{\lambda}_c$ for $t > 0$. Councils with higher β_c will have higher evasion than those with lower β_c throughout the adjustment.*

This prediction serves as a useful guide for the empirical measurement and analysis in the next section. It attributes any differences in initial evasion after the shock to different values of β_c, which in turn reflect different values of $i'_{c,0} - i_{c,0}$. In reality, different initial responses could also reflect different economic, demographic, political, and social factors. It will therefore be important to control directly for these factors in the empirical specification.

3 Evidence

This section presents our data (Subsection 3.1), describes our core empirical analysis (Subsection 3.2), and discusses alternative explanations for our findings (Subsection 3.3).

3.1 Data

We assembled new panel data (from existing, previously unexploited, sources) for tax evasion over 30 years (1980-2009) in the 346 councils of England and Wales. These data do not have individual-level evasion, and hence we focus on average council-level evasion as predicted by the model.

Measuring tax evasion We calculate a measure of yearly average tax evasion for each council and year ($\lambda_{c,t}$ in the model) as the difference between net collected tax revenue and net tax liability ($x_{c,t}$ in the model) in year t, expressed as a percentage of net liability in t. Doing this for the relevant tax base in each regime – i.e., 1980-89, 1990-92 and 1993-2009 (see further below) – we obtain our main measure of evasion. We calculate tax evasion separately for each year. Collected revenue is measured *net of* any tax that was collected from outstanding arrears from previous years. Similarly, net liability is calculated as gross liability minus all exemptions and outstanding arrears. We are thus reasonably confident that our measure of evasion is net of any lagged evasion-related error component, which is important

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for interpreting our decay and dynamic-path results. We can calculate the evasion measure based on the net amounts due and collected for the three main tax bases of interest: domestic rates, poll tax, and council tax. Unfortunately, our measure of business rates evasion (which we use in the robustness section) is based on gross amount due (versus net of exemptions and outstanding arrears), and total amount collected (versus net of outstanding arrears).

Under the present council-tax system (from 1993), as well as the rates system (in 1980-89), councils combined a registry list of all properties with independently assessed valuations of these properties to draw up a tax liability for all households. Under the poll tax (1990-92), councils relied on population registers used in the rates system to count the number of adult individuals liable for the tax. This makes the total liability per household a straightforward calculation. Since no deductions are allowed against other taxes, yearly household payments are known to the councils. This makes it straightforward – for the councils and for research purposes – to measure and track tax evasion.

No publicly available long-run administrative estimates of evasion rates exist for any of the three systems. However, the Department for Communities and Local Government, together with the Office of National Statistics, published estimates of collection and evasion rates for the council tax over the period 2006-2011 (Communities and Local Government, 2011). For 2009, our average measure of evasion for the UK is 2.69 percent, against theirs of 2.90 percent. Reassuringly, the correlation is 0.99 at the council-matched level.

Our data on evasion is constructed from two series produced by the Chartered Institute for Public Finance and Accountancy (CIPFA).[12] We have digitized CIPFA's series for all years prior to 1996, with a resulting sample size of 8,220 council-year evasion observations.[13] To the best of our knowledge, this dataset is the first to measure tax evasion in a consistent way for the three regimes of local household-property taxation in the UK.[14]

A short primer on local U.K. taxation Although the tax base changed during our sample period, the local council has retained responsibility for enforcing and spending the revenue it collects from taxes levied on households.[15] Prior to the introduction of the poll

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[12]CIPFA is a professional accountancy body which collects a large set of statistics on the functioning on the councils. CIPFAStats produces the Revenue Collection series and has been producing local government data for over 100 years.

[13]For years 1980-1989 we relied on the annual "Rate Collection Statistics, Actual". From 1990 to 2009, we use the annual "Revenue Collection Statistics, Actual."

[14]Besley, Preston and Ridge (1997) study the determinants of evasion during the poll-tax era and our data are consistent with theirs during this period.

[15]Councils had complete ownership of revenue collected from business property taxes only up until 1989. Under the 'national non-domestic rates' from 1990, the business property tax continued to be enforced by the council, but the revenue was transfered to central government, and then partially redistributed back to councils, according to a centrally set multiplier.

tax, a system of local rates had been in use since 1601 with minor exceptions. Rates were levied on all properties based on a measure of their rental value. This was assessed by the Valuation Office, which would upgrade the value in line with improvements. The *owner* was liable to pay tax whether a property was used for domestic or business purposes.

In 1990, domestic rates were replaced by the community charge, popularly referred to as the poll tax.[16] This was a flat-rate per-head tax that was levied at any *occupant* in a council, whether they were owning or renting their dwelling house. A few groups – including nuns, criminals, and recipients of income support – were exempted. Other low-income groups, such as students and unemployed, were liable for 20 percent of the standard amount. Otherwise, the poll tax was levied independently of an individual's income and wealth. Ostensibly, this reform was to improve political accountability by creating equal stakes for every citizen. But the tax was deemed unfair since it was not linked to individual circumstances – it broke the link between a property's value and the tax levy, a hallmark of the earlier regime and a feature of almost every existing system of local taxation. The perceived unfairness resulted in major protests and riots, which were accompanied by unprecedented levels of tax evasion by UK standards.[17]

In 1993, the poll tax was abolished and replaced by the present council tax. It is based on the value a property would have sold for in the open market on April 1st 1991. The Valuation Office individually assessed each property and assigned it to one of a given set of preassigned valuation brackets. The council sets the council tax rate, which implies a liability for each bracket. Thus, the council tax results in one bill for each household that occupies a property. Like the poll tax, the council tax was paid by the occupant, whether a renter or an owner. But unlike the poll tax, the council tax reintroduced the link between taxes and property values, thus restoring some semblance of fairness in the local tax system. However, no revaluations have taken place after 1991 and no new bands have been introduced with increasing property prices.[18] As the council tax has become decreasingly detached from actual property values, its fairness have come under debate.

There is no simple way of comparing tax levels across the three tax regimes due to the different tax bases. However, we can make a rough guess of the level of taxation per dwelling.[19] This suggests that domestic rates per dwelling in 1989 were around £501 (with

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[16]See Butler, Adonis and Travers (1994) for a discussion of the factors leading up to the introduction of the poll tax and its subsequent abolition.

[17] It was not the first time in British history that a poll tax had triggered a mass protest – more than 600 years before, in 1381, the poll tax is considered to have a had central place in triggering the peasants' revolt.

[18]There have been talks of re-valuation of properties in England, but these have systematically been postponed. However, in Wales, re-valuation of properties occured in April 2003.

[19]The methodology from CIPFA (1993, page 8, rows 12 and 16-17) is used to calculate the poll tax per dwelling in 1990. However, using this method, poll tax per dwelling is missing for approximately 30% of the

a standard deviation of £110), the poll tax per dwelling in 1990 was £677 (st.dev. £214) and the council tax per dwelling in 1993 was £509 (st.dev. £289). But the poll-tax number is somewhat misleading, because of cuts in 1991 and 1992 – a per-head reduction by £110 in 1991 brought the poll tax per dwelling down to almost exactly the same liability level as under the domestic rates and the council tax. Nevertheless, we may want to condition on each council's poll-tax level when analyzing evasion from the this tax.

Tax evasion across councils and time   Yearly average tax evasion ($\lambda_{c,t}$ in the model) is constructed as the difference between net collected tax revenue and net tax liability in council c and year t, expressed as a percentage of net liability in t. Figure 1 illustrates the distribution of tax evasion across time and councils, according to this measure. The left panel shows average tax evasion across councils for each sample year. Before the poll tax, average evasion was just below 3 percent on a declining trend. The poll-tax period saw an abrupt upward shift, with average evasion reaching 10-15 percent. After the restoration of the property-based tax in 1993, evasion returned gradually towards pre-poll-tax levels. This pattern squares well with the idea that temporary shocks to intrinsic motives have persistent effects attributable to dynamics in social motives.

The right panel shows the density distribution across councils for selected sub-periods. The pre-1990 rates system saw relatively little dispersion around its 2.8 percent mean. In the poll-tax years, the large average evasion hike is accompanied by a huge increase in dispersion. As we will see in Subsection 3.2, large differences remain even as we adjust for a host of economic, social, and political variables. Even though we have no direct way of measuring the intrinsic motives to pay, it is natural to interpret the mounting evasion dispersion as a set of heterogenous shifts in such motives. Subsection C discusses some alternative interpretations.

Figure 1 about here

In 1993-94 – right after the reintroduction of the council tax – the evasion distribution shifts left with a significantly smaller spread. However, average evasion in these transition years is still 6.3 percent, more than double average pre-poll-tax evasion. During the remaining sample (1995-2009), the evasion distribution more closely resembles the pre-poll-tax distribution, but a higher mean as well as a larger spread suggest persistent evasion effects of the poll-tax shock.[20]

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councils. CIPFA (1993) has data on domestic rates per dwelling in 1989 and the council tax per dwelling in 1993.

[20]Another difference between the poll tax and the council tax is that the former was levied on individuals rather than properties. It is difficult to directly translate our evasion measures to per-capita figures. But when trying to measure evasion on a per-capita basis, we get similar results.

3.2 Empirical Analysis

The prediction at the end of Section 2 says that councils with larger poll-tax evasion hikes should return more slowly towards pre-poll-tax evasion levels. Moreover, their evasion rate should stay above that in councils with smaller evasion hikes throughout the adjustment to the steady state. Empirically, we calculate the initial shock to intrinsic motives by the rise in (average) poll-tax evasion relative to (average) evasion in the previous regime:

$$\beta_c = \lambda_{c,90-93} - \lambda_{c,80-89}.$$

We split the councils into two bins. Let $\hat{c}$ be the median-shock council, β^L the average of β_c for $c < \hat{c}$, β^H the average of β_c for $c \geq \hat{c}$, and λ_t^J average evasion rate for group, $J = H, L$. In this notation, the dynamic model for the post-poll-tax years implies:

$$\lambda_t^H - \lambda_t^L = \left(\beta^H - \beta^L\right)(\alpha)^t. \tag{8}$$

The model predicts an initial difference between the two groups that decays over time. In principle, we could use the first year of the data to estimate $(\beta_H - \beta_L)$ and then estimate the social-multiplier, α, from the pattern of decay over time. However, if we find $\lambda_t^H - \lambda_t^L = (\beta^H - \beta^L)(\alpha)^t > 0$ for all $t > 0$ until some convergence year T, this is also evidence for $\alpha > 0$.

Heterogeneous evasion shifts Using (8), we confront the data with the key prediction from the model: $\lambda_t^H - \lambda_t^L$ is positive, but monotonically declining, from $t = 1993$ until some year T.

The left part of Figure 2 plots the raw data for λ_t^H in red and λ_t^L in blue. The graph is striking. No systematic differences in tax evasion are visible in the decade before the poll-tax experiment. But after the poll-tax episode, the share of non-tax compliers in the high poll-tax-evading councils lies everywhere above that in the low poll-tax-evading councils, with a monotonically declining difference. Evidently, something slows down the adjustment process – in our model, that something are the gradually adjusting social motives.

Figure 2 about here

Conditional poll-tax evasion A legitimate concern is that council-specific shifts in poll-tax evasion need not only reflect variation in intrinsic compliance motives. For example, during the poll tax, tax-payers included renters, students and the unemployed, who were only to pay 20 percent of the poll tax, and local inequality in property values may have affected the sense of unfairness. We therefore condition on a number of local demographic and economic variables which may influence poll-tax evasion rates.

Anger against the poll tax had a significant political component. Although some opposition was spontaneous, the Labour Party organized protests. Moreover, councils ruled by Labour rather than Conservatives may have been more reluctant to aggressively enforce the "Thatcher" poll tax. While weaker enforcement would correspond to a lower value of m in our model, a clear confounder, politically grounded anger could arguably correspond to a higher value of i. To mitigate such concerns, we condition on Labour and Conservative vote shares, as well as dummies for Labour and Conservative control.

Specifically, let $\mathbf{y}_{c,t}$ be a vector of economic, demographic, and political council characteristics, and estimate $\{\gamma, \boldsymbol{\theta}\}$ from the OLS regression:

$$\lambda_{c,t} = \gamma + \mathbf{y}_{c,t}\boldsymbol{\theta} + \varepsilon_{c,t}.$$

We then estimate (8), replacing $\lambda_{c,t}$ by $\tilde{\lambda}_{c,t} = \lambda_{c,t} - (\gamma + \mathbf{y}_{c,t}\boldsymbol{\theta})$ – i.e., poll-tax evasion, conditional on observables. In terms of conditional tax evasion, (8) becomes

$$\tilde{\lambda}_t^H - \tilde{\lambda}_t^L = (\tilde{\beta}^H - \tilde{\beta}^L)(\alpha)^t,$$

where $\tilde{\beta}^J$ is calculated from: $\tilde{\beta}_c = \tilde{\lambda}_{c,90-93} - \tilde{\lambda}_{c,80-89}$.

Table 1 reports estimates from a cross-council regression for poll-tax evasion on a range of variables: the size of the poll-tax liability, the share of renters broken down by private and council landlords (a measure of new tax payers in the poll-tax regime), the proportion of houses in the top-council tax band compared to the bottom band (a measure of housing-value inequality), (log) per-capita income, (log) population, the seat shares of the Conservative and Labour parties, dummies for Conservative and Labour majority control in the council, and region fixed effects.

<div align="center">Table 1 about here</div>

The correlations in Table 1 make sense. Poll-tax evasion is positively correlated with a higher poll-tax liability and negatively correlated with higher income. Further, evasion is negatively correlated with greater inequality in housing values and positively correlated with the share of private renters (who were not paying tax directly in the prior regime). The political variables are insignificantly correlated with evasion, except for Labour control.

We rely on the regression in the final column of Table 1 to construct a conditional poll-tax evasion measure which adjusts for observable sources of heterogeneity across councils. Using it makes more plausible our interpretation of the poll-tax evasion hike as a downward shift in the intrinsic motive for tax compliance. Splitting the sample by the (median of the) conditional-evasion measure, we obtain the right panel of Figure 2. The patterns of conditional evasion are comparable to those for unconditional tax evasion. We focus our estimates below on the sample split by conditional poll-tax evasion.

<div align="center">15</div>

Non-parametric estimates   We examine the persistence of evasion in the poll-tax era by within-council non-parametric estimation. Specifically, we regress evasion in the council-tax period on an indicator for high (above-median) conditional poll-tax evasion interacted with a full set of year dummies from 1993 to 2008 (2009 is the left-out indicator). In effect, we estimate separate year effects for the two sub-groups in the right panel of Figure 2. Since we include council fixed effects, year fixed effects, and region-by-year fixed effects, we capture a plethora of fixed socio-demographic factors and general trends, which are likely to affect evasion and thereby capture the 'normal' value of $i_{c,t}$.

All year dummies for high conditional poll-tax evasion councils are significantly different from zero between 1993 and 2002. This suggests a persistent effect up to ten years after the poll tax is abolished. To illustrate this, the estimated coefficients are plotted in Figure 3 together with their 95-percent confidence intervals.

Figure 3 about here

3.3   Robustness

The results in Figures 2 and 3 are consistent with the model predictions, which reflect a gradual adjustment over time of the social motives for tax compliance. In this subsection, we discuss whether the results might reflect other factors not captured by our model.

Pre-trends?   If the poll tax disrupted a tax-paying social norm, we should see no pattern like Figure 3 in the period before the introduction of the poll tax. If we did observe a similar pattern, this would be analogous to a violated assumption of parallel pre-trends in a difference-in-differences estimation.

Figure 4 about here

To investigate this, we repeat the analysis underlying Figure 3, but for the 1980-89 period. Thus, we interact year dummies for 1981-1989 (1980 is the left-out indicator) with the indicator for above-median conditional poll-tax evasion and plot the estimated coefficients in Figure 4. None of these is statistically different from zero. In other words, whatever source of heterogeneity makes poll-tax compliance persist for ten years, it was not observed in the 1980s. This makes it plausible to attribute the evasion patterns to a temporary shift in the intrinsic motives for tax compliance associated with the poll tax.

Political confounders?   We have already emphasized the importance of political motives, and adjusted our measure of conditional poll-tax evasion for relative Conservative-Labour

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strength and for ruling party. The results in Table 1 show that councils controlled by Labour had significantly higher tax evasion during poll-tax years. If this reflects a lower willingness to enforce the poll tax, the results in Figure 3 might capture a gradual increase of enforcement in those councils.

To assess this possibility, we include a poll-tax-Labour-control dummy interacted with year effects in the earlier specification. If initially low and gradually increasing enforcement in Labour-controlled councils were the explanation for the results in Figure 3, then the new variable should weaken or kill the results. The left panel of Figure 5 shows that this is not the case.

<center>Figure 5 about here</center>

Fiscal-capacity confounders?   Another alternative explanation for the results in Figure 3 is that high versus low poll-tax evasion reflected a low versus high capacity to enforce the new tax system, rather than a larger drop in the intrinsic motives to comply. Moreover, learning about capacity over time may gradually have eliminated those capacity differences. To check this possibility, we exploit the fact that local councils also have responsibility for collecting business taxes. If local fiscal capacity were the real culprit, then we should see a similar evolution of evasion in the part of local taxes levied on businesses rather than households.

The right panel of Figure 4 plots the year coefficients on high versus low poll-tax evasion councils in the same specification as in Figure 3, but replaces evasion of personal taxes with evasion of local business taxes.[21]   There is no evidence of similar evasion dynamics on this tax base. This specification also reassures us that Figure 3 does not just capture an initial lack of tax capacity in some councils which is eliminated over time.

Other types of trends and measurements?   Our main result was estimated in a model which included region-by-year fixed effects. In Appendix Figure A1, we show that the result is virtually unchanged when removing these interactive fixed effects. In the same figure, we also find that the results are robust to the inclusion of a council-specific linear trend. This robustness suggests that the differential decay pattern observed over time is not driven by (linear) time-trends that are specific to a subset of councils in either the low conditional-evasion group or the high conditional-evasion group.

Our main result is based on the conditional poll-tax-evasion measure, which adjusts unconditional evasion for observable heterogeneities across councils. In Appendix Figure A2, we obtain identical results across the different specifications when using the unconditional tax evasion measure to classify councils into high versus low poll-tax-evasion groups. Thus, our main result does not reflect the particular set of variables we were abble to collect as

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[21]See the Online Appendix for details about this tax system.

<center>17</center>

prospective drivers of evasion during the poll-tax period.

4 Endogenous Enforcement

Our empirical explanation relies on there being no systematic (non-political) response of tax enforcement to the poll-tax. Formally, our model prediction assumes a constant exogenous level of tax enforcement m, despite increased evasion. However, given the nature of the poll-tax episode, it is reasonable to suppose that tax authorities might have taken steps to recoup lost revenues. In this section, we investigate this possibility theoretically (Subsection 4.1), as well as empirically (Subsection 4.2). We show that our earlier results still stand under reasonable assumptions. In particular, we can rule out that the shrinking evasion difference between high poll-tax-evasion councils and low poll-tax-evasion councils is driven by gradually stricter enforcement in the high poll-tax-evasion councils.

4.1 Theory

When exploring the implications of endogenous enforcement, we will postulate a policy rule where enforcement depends on the level of non-compliance. To motivate this, note that the revenue raised by council c in year t is given by

$$r_{c,t} = (1 - \lambda_{c,t})x_{c,t} \ . \tag{9}$$

Now define:

$$\hat{m}\left(x, \theta, i, \lambda_{t-1}\right) = \arg\max_m \left\{ \left[1 - G\left(x - i - m - \mu\Delta\left(\lambda_{t-1}\right)\right)\right] x - c\left(m, \theta\right) \right\},$$

where $c\left(\cdot, \theta\right)$ is an increasing convex cost function. Variable θ captures (time-varying) factors which shape the costs and benefits of enforcement. We use the convention that $c\left(m, \cdot\right)$ is increasing with $c_{m\theta}\left(m, \theta\right) > 0$, so that higher θ is associated with higher costs of enforcement. The first-order condition is then

$$g\left(x - i - m - \mu\Delta\left(\lambda_{t-1}\right)\right)x = c_m\left(m, \theta\right). \tag{10}$$

Comparative statics This gives the following comparative statics

Result *With $\lambda < 1/2$, optimal enforcement m is increasing in x and λ_{t-1}, and decreasing in i and θ. Moreover, if $z = i + \mu\Delta\left(\lambda_{t-1}\right)$, then $\partial\hat{m}/\partial z > -1$.*

These results make sense. Tax authorities have a higher marginal gain to enforcement when taxes are higher. When intrinsic motivations to pay are higher, optimal material enforcement is lower. As a high level of historical enforcement encourages compliance, it reduces formal enforcement. The final result relies on

$$\frac{\partial m}{\partial z} = -\frac{g'(x-m-z)}{g'(x-m-z) + c_{mm}(m,\theta)} > -1,$$

since for $\lambda < 1/2$, the density is increasing. Factors in θ which increase the marginal cost, or reduce the marginal benefit, to investing in enforcement reduce investments in formal enforcement. More generally, optimal enforcement depends on the slope of the marginal cost curve. In the short-run, when it is difficult to expand the size of an enforcement department or to ratchet up the enforcement process, this function could be quite steep, and we would expected only modest enforcement responses to the poll tax shock.

A policy rule To integrate these insights into the model, we propose a policy rule based on a linear approximation to (10):

$$\hat{m}(x_{c,t}, \theta_{c,t}, i_{c,t}, \lambda_{c,t-1}) = \xi x_{c,t} - \tau i_{c,t} - \chi \theta_{c,t} - \sigma \mu \Delta(\lambda_{c,t-1})$$

where $\xi, \chi > 0$, $1 > \tau > 0$ and $1 > \sigma > 0$. How far τ and σ are from one depends on the steepness of the marginal cost function.

Substituting this expression into (2), equilibrium evasion in council c at date t will now be:

$$\lambda_{c,t} = G\left((1-\xi) x_{c,t} - (1-\tau) i_{c,t} + \chi \theta_{c,t} - (1-\sigma) \mu \Delta(\lambda_{c,t-1})\right).$$

This preserves the essence of our baseline model, but factors which affect the cost of enforcement are now part of $\theta_{c,t}$ and coefficient α which affects the dynamics.

Consequences Endogenous enforcement has implications for how to interpret the poll-tax shocks. First, the effect of an intrinsic-motivation shock is dampened, but *not* eliminated since $\tau < 1$.

As before, consider a temporary shock to intrinsic motivation given by (7) beginning from a steady state. The initial impact on non-compliance is:

$$\beta_c = G\left((1-\xi) x_c - (1-\tau) i'_{c,t} + \chi \theta_c - (1-\sigma) \mu \Delta\left(\hat{\lambda}_c\right)\right) - G\left((1-\xi) x_c + \chi \theta_c - (1-\tau) i_{c,t} - (1-\sigma) \mu \Delta$$

And the root of the core difference equation is now

$$\alpha = -g\left((1-\xi)\,x_c - (1-\tau)\,i_c + \chi\theta_c - (1-\sigma)\,\mu\Delta\left(\hat{\lambda}_c\right)\right)(1-\sigma)\,\mu\Delta_\lambda\left(\hat{\lambda}_c\right).$$

It is clear from these expressions that the effect of a given change in $i_{c,t}$ is dampened by endogenous enforcement since $\tau < 1$ and $\sigma < 1$. While the initial impact on evasion will be smaller, the adjustment path back to steady state is also slower.

4.2   Data

Measuring enforcement   We have also collected a proxy of council-tax enforcement. The data source is the same series of CIPFA publications used to construct the evasion measure. If a household does not comply with council-tax payments, the council's first action is to send out a reminder. If non-payment persists or payment in full is not received, the council can summon the household to attend a court hearing. Only when a summons order has been issued may the council proceed to other methods to recover the debt, including (in order of severity) taking money directly from wages and benefits, ordering bailiffs to collect the amount, placing a lien on the property, and starting proceedings for a prison sentence. Thus, reminders constitute a 'soft' signal of enforcement while issuing a summons is a more directed and costly effort by the council.

Correlations with evasion   Against this background, we use the ratio of the number of court summons relative to the number of reminders in a council-year as a proxy for enforcement. If this measure proxies for exogenous enforcement ($m_{c,t}$ in our theory), it should predict decreases in tax evasion. On the other hand, if it reflects an endogenous response to evasion, we would observe a positive correlation with evasion. In a cross-sectional regression, summons over reminders is positively correlated with evasion. But in a within-council regression –i.e., one with council fixed effects –summons over reminders is negatively correlated with evasion, with an elasticity of -0.61 (std. 0.16). This indicates that our measure is a reasonable proxy of enforcement effort. Moreover, the negative within-council correlation suggest that the declining difference between high poll-tax-evasion councils and low poll-tax-evasion councils is not driven by gradually higher levels of enforcement in high poll-tax-evasion councils.

5   Conclusion

We have studied the persistence of social motives in tax evasion and their interaction with individual motives linked to enforcement. Our theoretical framework of evasion dynamics

extends the model in Benabou and Tirole (2011) to imperfect observability and adaptive dynamics. This motivates our empirical specification and offers a sharp interpretation of the results.

Our empirical analysis exploits a unique policy episode: the early 1990s introduction and abolition of the poll tax in English and Welsh councils. This natural experiment reduced tax compliance in an otherwise law-abiding environment, with higher levels of evasion than in any feasible field experiment. Although we do not have a direct measure, it is plausible to interpret the poll-tax episode as a shock to the intrinsic compliance motive due to the perceived unfairness of the new tax base.

The empirical results we obtain are consistent with our thoretical predictions. The poll tax shifted the intrinsic motive to pay tax, these shifts spilled over into social motives, which then exerted a significant but declining effect on tax evasion for around a decade after the poll tax was abolished. Specifically, councils with high poll-tax evasion had significantly higher tax evasion throughout this decade compared to councils with low poll-tax evasion. However, the same councils have similar levels of evasion before the poll tax was introduced.

To quantify the amount of evasion triggered by the poll-tax shock, we can use the average tax evasion rate over councils and years in the domestic-rate period as a counterfactual. If we apply this evasion rate to all councils from 1990 onwards, we can compute actual evasion less counterfactual evasion rate multiplied by each council's tax liability. To get an aggregate measure, we sum over councils and years. This way, we estimate the cumulative tax foregone due to the poll-tax shock at 4,990,350,000 in 2009 pounds, about 26 percent of the aggregate 2009 council-tax liability. Half of this 5-billion tax loss is due to the poll-tax period itself, and the other half is due to period after abolition when the council-tax was in place, a weighty "echo effect" from the poll tax on subsequent tax revenue. While the context is specific, this reinforces the idea that social motives can be an important part of state capacity, facilitating tax raising.

More generally, our findings fuel debates about the importance of social norms in sustaining fiscal capacity.[22] The UK system proved robust to the short-lived poll-tax episode. But as emphasized by Levi (1988), and many other commentators, norms are built over long periods and policy-makers violate them at their peril.

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[22]Besley (2018) ties such norms to debates about the political motives to build state capacity and the importance of institutions in supporting voluntary compliance.

References

[1] Akerlof, George and Janet Yellen [1990], "The Fair Wage-Effort Hypothesis and Unemployment," *Quarterly Journal of Economics* 105, 255-283.

[2] Allingham, Michael and Agnar Sandmo [1972], "Income Tax Evasion: A Theoretical Analysis," *Journal of Public Economics* 1, 323–338.

[3] Asch, Solomon E. [1955], "Opinions and Social Pressure," *Scientific American* 193, 31-35.

[4] Benabou, Roland, and Jean Tirole [2011], "Laws and Norms," NBER Working Paper, No 17579.

[5] Besley, Timothy, Ian Preston, and Michael Ridge [1997], "Fiscal Anarchy in the UK: Modelling Poll Tax Noncompliance," *Journal of Public Economics* 64, 137-152.

[6] Besley, Timothy [2018], "State Capacity, Reciprocity and the Social Contract," Presidential Address to the Econometric Society.

[7] Bursztyn, Leonardo and Robert Jensen [2017], "Social Image and Economic Behavior in the Field: Identifying, Understanding, and Shaping Social Pressure," *Annual Review of Economics*, 9,131-153.

[8] Butler, David, Andrew Adonis and Tony Travers [1994], *Failure in British Government: Politics of the Poll Tax*, Oxford: Oxford Paperbacks.

[9] Chartered Institute for Public Finance and Accountancy [1993], *Council Tax Demands and Precepts 1993-4*, London, CIPFA.

[10] Communities and Local Government [2011], "Statistical Release - Collection Rates and Receipts of Council Tax and Non-Domestic Rates in England 2006-2011", accessed at www.gov.uk/government/publications.

[11] Cowell, Frank [1990], *Cheating the Government*, Cambridge, MA: MIT Press.

[12] Erard, Brian and Jonathan Feinstein [1994], "The Role of Moral Sentiments and Audit Perceptions on Tax Compliance," *Public Finance* (Special Issue on Public Finance and Irregular Activities) 49, 70–89.

[13] Gordon, James P.F. [1989], "Individual Morality and Reputation Costs as Deterrents to Tax Evasion," *European Economic Review* 33, 797-804.

[14] Helliwell, John [2003], "How's Life? Combining Individual and National Variables to Explain Subjective Well-being," *Economic Modelling*, 20, 331-60.

[15] Helliwell, John, Shun Wang and Jinwen Xu [2013], "How Durable are Social Norms? Immigrant Trust and Generosity in 132 Countries," NBER Working Paper No. 19855.

[16] Hofmann, Eva, Erik Hoelzl, and Erich Kirchler [2008], "Preconditions of Voluntary Tax Compliance: Knowledge and Evaluation of Taxation, Norms, Fairness, and Motivation to Cooperate," *Journal of Psychology* 216, 209-217.

[17] Jewitt, Ian [2004], "Notes on the Shape of Distributions," mimeo, Oxford.

[18] Jia, Ruixue and Torsten Persson [2018], "Individual and Social Motives in Identity Choice: Theory and Evidence from China," mimeo, IIES and UCSD.

[19] Kandori, Michihiro [1992], "Social Norms and Community Enforcement," *Review of Economic Studies* 59, 63-80.

[20] Kotlikoff, Laurence J, Torsten Persson, and Lars E.O. Svensson [1988], "Social Contracts as Assets: A Possible Solution to the Time–Consistency Problem," *American Economic Review* 78, 662-677.

[21] Levi, Margaret [1988], *Of Rule and Revenue*, Berkeley: University of California Press.

[22] Lindbeck, Assar, Sten Nyberg, and Jörgen Weibull [2003], "Social Norms and Welfare State Dynamics," *Journal of the European Economic Association* 1, 533-542.

[23] Luttmer, Erzo F.P. and Monica Singhal [2014], "Tax Morale," NBER Working Paper No.20458.

[24] Posner, Eric [2000], "Law and Social Norms: The Case of Tax Compliance," *Virginia Law Review*, (Symposium on The Legal Construction of Norms) 86, 1781-1819.

[25] Slemrod, Joel [2007], "Cheating Ourselves: The Economics of Tax Evasion," *Journal of Economic Perspectives*, 21(1), 25-48.

[26] Torgler, Benno [2007], *Tax Morale and Tax Compliance: A Theoretical and Empirical Analysis*, Cheltenham U.K.: Edward Elgar.

[27] Wenzel, Michael [2004], "An Analysis of Norm Processes in Tax Compliance," *Journal of Economic Psychology* 25, 213-228.

Figure 1
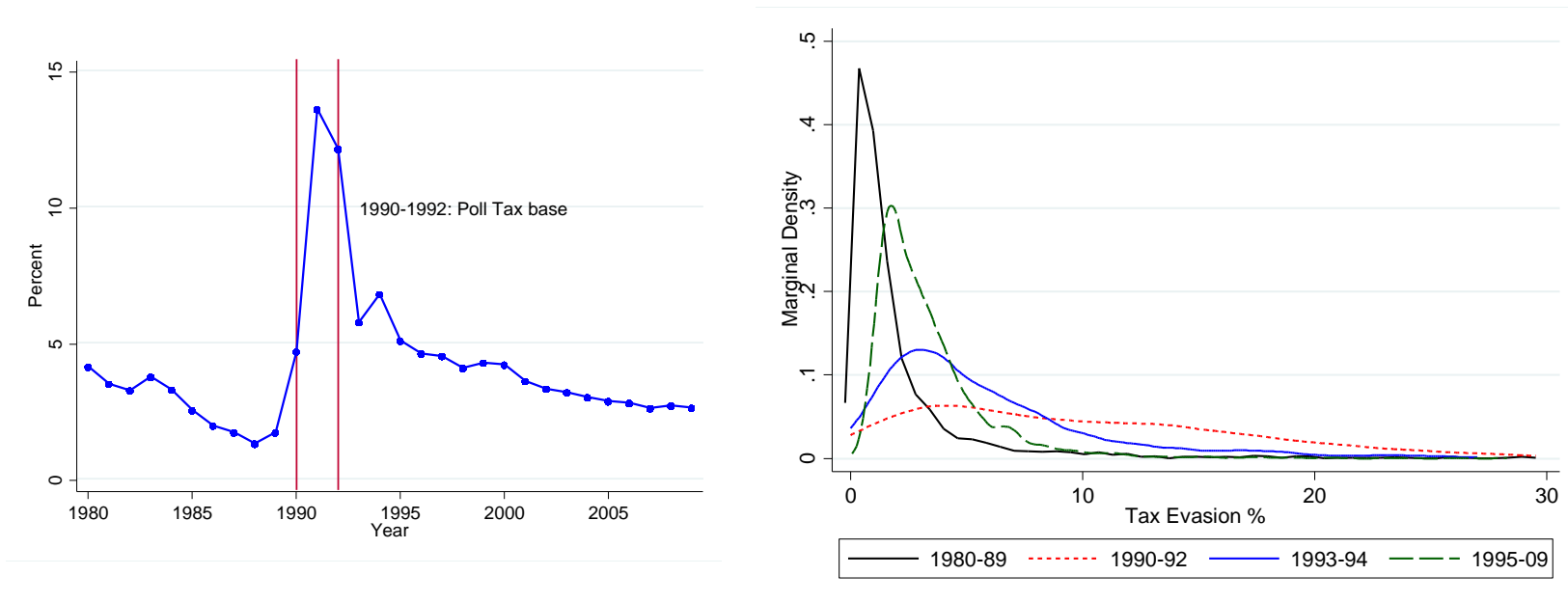
Notes: In the left graph, each observation is a yearly average across all councils of our tax evasion measure, the difference between net collected tax revenue and net tax liability on the local tax base. During 1990-1992, a property tax was replaced by the poll tax, which was levied at a flat rate per head. The right graph plots the marginal density distribution of tax evasion across four time-periods: 1980-1989 (Domestic Rates tax base); 1990-1992 (Poll Tax base); 1993-1994 (first 2 years of Council Tax base); 1995-2009 (remaining years of Council Tax base). Tax evasion is truncated at 30%, which equals the 99th percentile for all time-periods (for 1995-2009, it equals the 99.99[th] percentile).
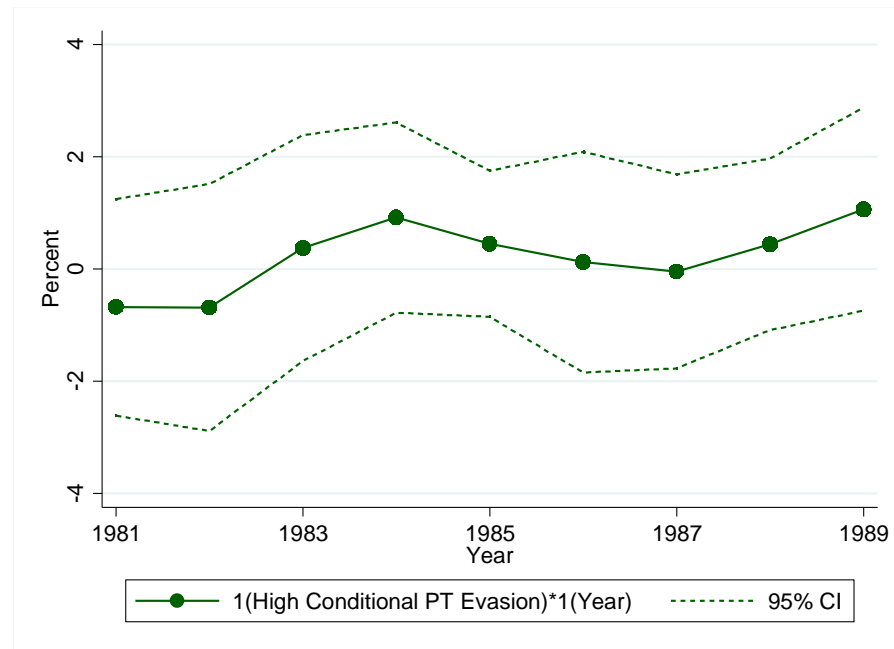
Figure 2
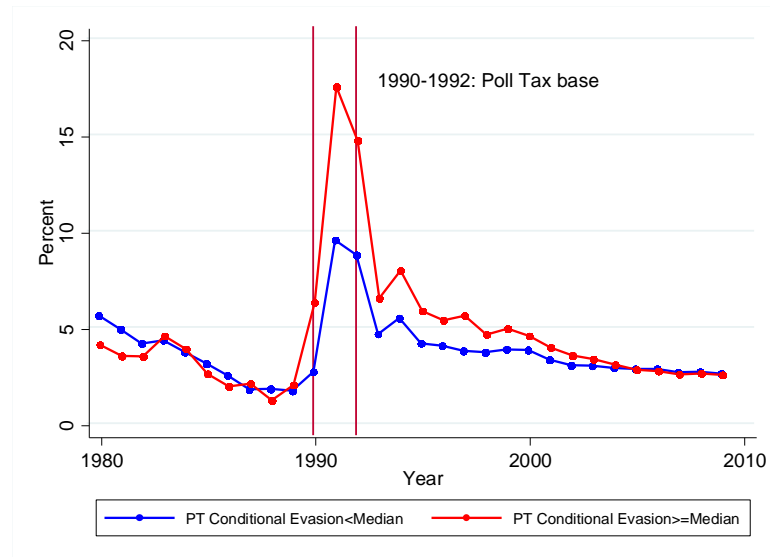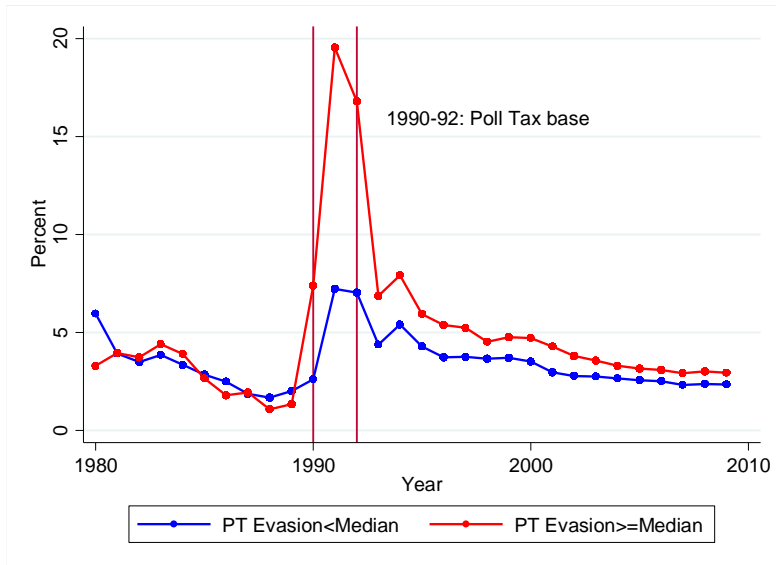
Notes: Each yearly observation in the left (right) graph is an average of tax evasion across all councils in one of two subsamples: the blue line refers to councils where average tax evasion (average conditional tax evasion) in the poll-tax period was below the median; the red line refers to councils where average tax evasion (average conditional tax evasion) was above the median. Section 3.2 and Table 1 give more details on the construction of conditional poll tax evasion.
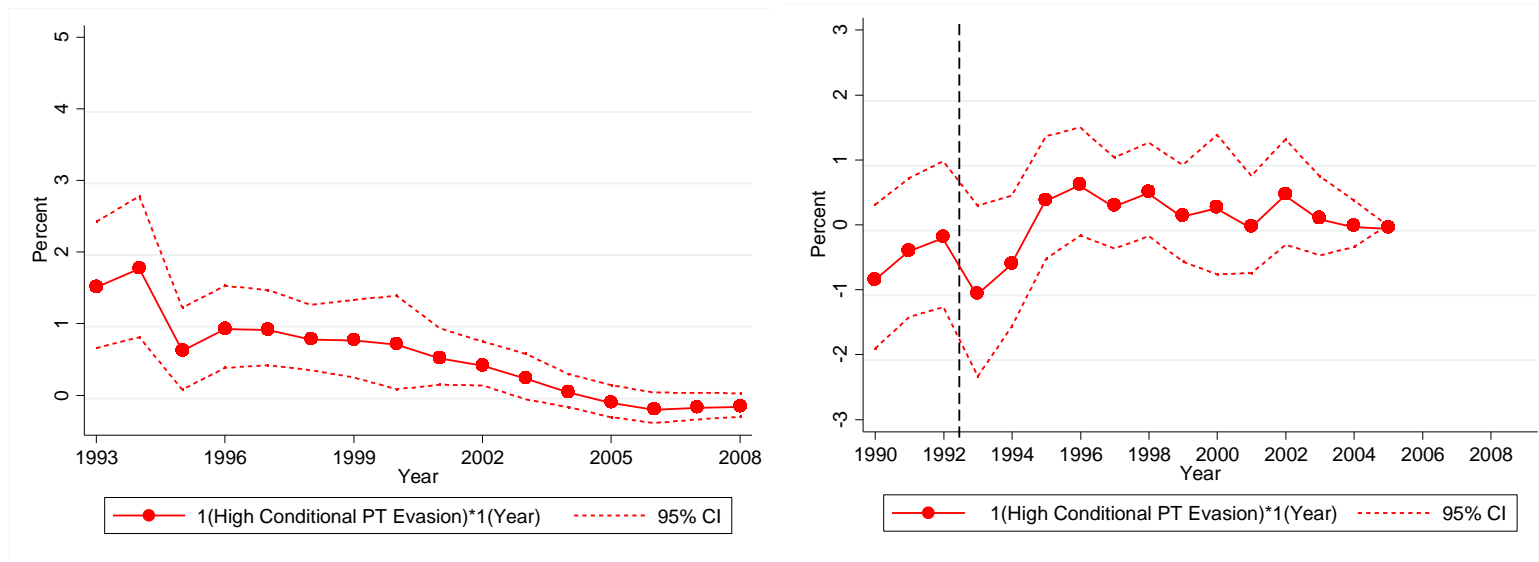
Figure 3
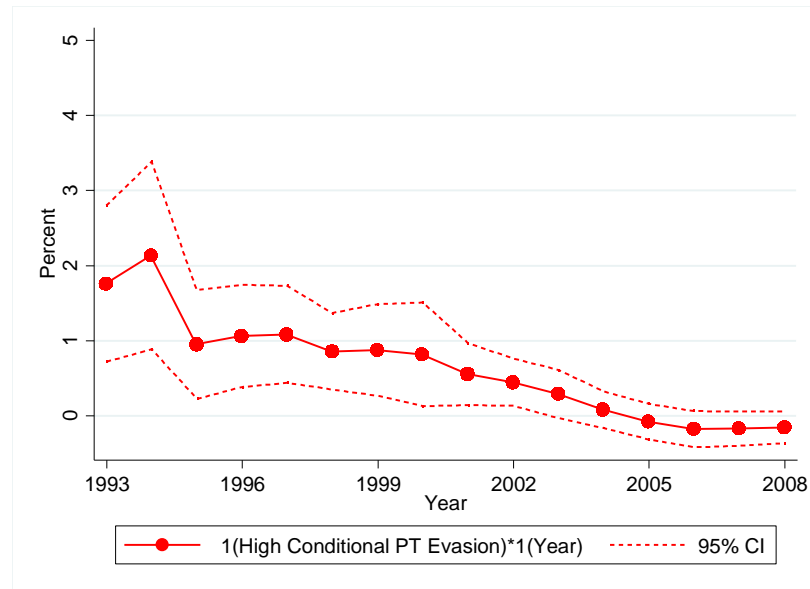
Notes: This graph plots the **1**(Year)***1**(High Conditional PT Evasion) coefficients from a regression of council-tax evasion on a set of year dummies, year-dummies interacted with a dummy for conditional poll-tax evasion above the median, council fixed effects, and region-by-year fixed effects. The sample period is 1993-2009, which corresponds to the Council-Tax period. The omitted year is 2009. Dashed lines denote 95% confidence interval on the interaction term, where standard errors are clustered at the council level. Section 3.2 and Table 1 give more details on the construction of conditional poll-tax evasion.

Figure 4

Notes: This graph plots estimates from the same specification as Figure 3, when the outcome variable is evasion on the Domestic Rates base during 1980-1989. The omitted year is 1980. Section 3.2 and Table 1 give more details on the construction of conditional poll-tax evasion.

Figure 5

Notes: The left graph is based on the same specification as Figure 3, but additionally includes year-dummies interacted with a dummy which is 1 if the Labor party had majority control of the council in any year of the Poll-Tax period (1990-1992). The right graph is based on the same specification as Figure 3, but the outcome variable is evasion on the business rate. The sample period is 1990-2005, and the omitted year is 2005.

Table 1

|	(1)	(2)	(3)	(4)	(5)
	Poll Tax Evasion = [Net Collectable - Net Collected] / [Net Collectable]				
Poll Tax Liability	.0285	.0283	.0287	.0240	.0245
	(.0059)	(.0060)	(.0062)	(.0061)	(.0061)
Log (per capita income)		-8.7395	-9.9374	-5.8293	.2652
		(4.2970)	(4.6981)	(4.9016)	(5.9762)
Log (population)			-.3425	-.8100	-.7249
			(.5905)	(.5200)	(.6215)
Conservative Seat Share				-.0144	-.0185
				(.0193)	(.0236)
Conservative Control				.4824	1.0993
				(.9176)	(1.0369)
Labour Seat Share				-.0107	.0105
				(.0207)	(.0210)
Labour Control				3.7423	3.9873
				(.9494)	(.9780)
(Top Band Houses)/(Bottom Band Houses)					-.1703
					(.0732)
Share Households Renting from Private					34.6561
					(9.0165)
Share Households Renting from Council					-6.9202
					(2.3311)
Year Dummies	X	X	X	X	X
Region Dummies	X	X	X	X	X
Observations	684	684	684	684	619

Notes: This table estimates a cross-council model of determinants of evasion during the Poll Tax period (1990-1992). The unit of observation is a council-year. Conditional poll-tax evasion in the main text is defined as the residual component of poll-tax evasion from the regression in Column 5.

Figure A1
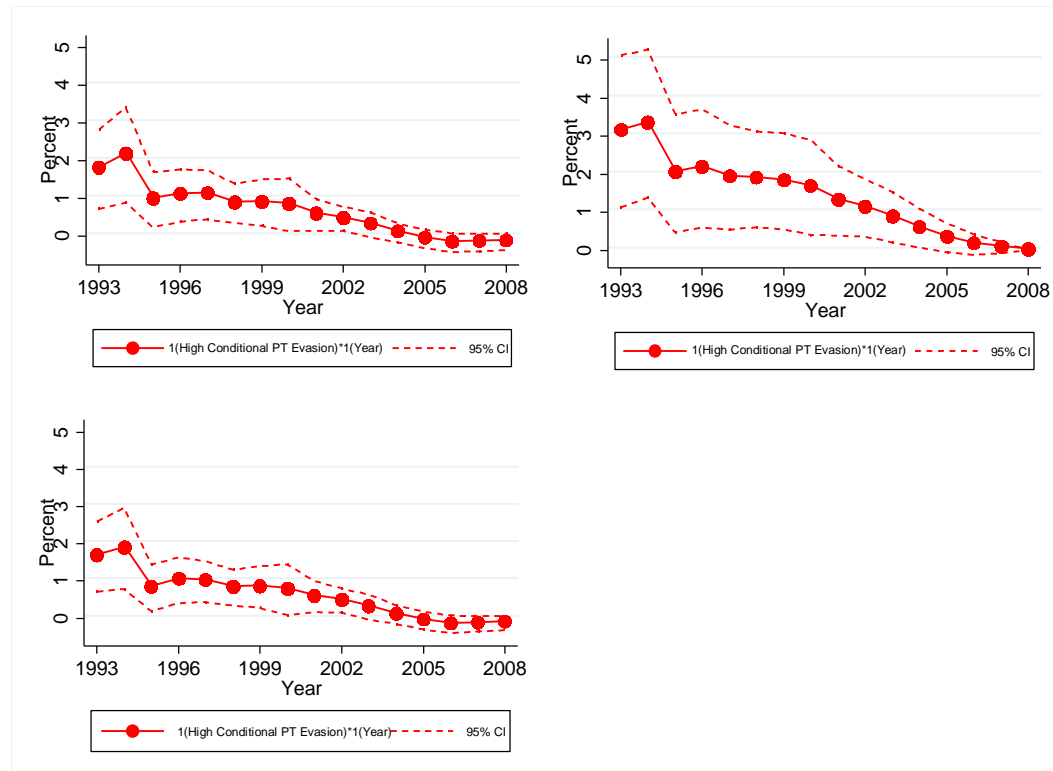
Notes: The upper-left panel plots the **1**(Year)***1**(High Conditional Poll Tax Evasion) coefficients from a regression of council-tax evasion on a set of year dummies, year-dummies interacted with a dummy for conditional poll tax evasion above median, and council fixed effects. The upper-right panel plots the coefficients when the upper-left regression model is augmented by a council-specific linear trend. The lower panel reports the coefficients when the upper-left regression model is augmented with a full set of year-by-region interactive fixed effects. In all panels, the sample period is 1992-2009, and the omitted year 2009. Dashed lines denote the 95% confidence interval on the interaction term between year-dummies and high conditional poll-tax evasion, where standard errors are clustered at the council. Section 3.2 and Table 1 give more details on the construction of conditional poll-tax evasion.

Figure A2
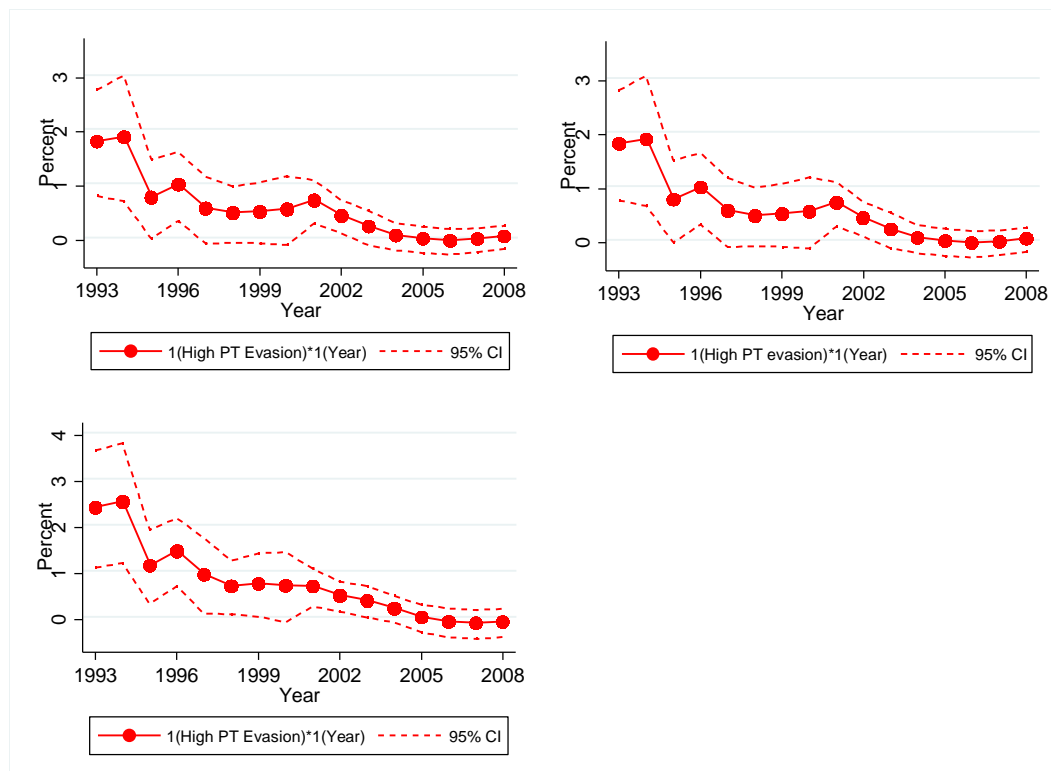
Notes: the panels in this graph are based on the same regression models as in Figure A2, but where the high conditional poll-tax evasion dummy is replaced with a high poll-tax evasion dummy. The upper-left panel plots the **1**(Year)***1**(High Poll Tax Evasion>=Median) coefficients from a regression of council-tax evasion on a set of year dummies, year-dummies interacted with a dummy for poll tax evasion above median, and council fixed effects. The upper-right panel plots the coefficients when the upper-left regression model is augmented by a council-specific linear trend. The lower panel reports the coefficients when the upper-left regression model is augmented with a full set of year-by-region interactive fixed effects. In all panels, the sample period is 1992-2009, and the omitted year is 2009. Dashed lines denote the 95% confidence interval on the interaction term between year-dummies and high conditional poll-tax evasion, where standard errors are clustered at the council. Section 3.2 gives more details on the poll-tax evasion dummy, and the construction of the conditional poll-tax evasion measure.